

DEVELOPING A RELIGIOUS ECOPEDAGOGY PROTOTYPE FOR ISLAMIC RELIGIOUS EDUCATION IN MUNA REGENCY

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Abstract

This study develops an initial prototype of the Religious Ecopedagogy Model for Islamic Religious Education (ER-PAI) to support environmentally responsible character among senior high school students in Muna Regency. The study employed an educational research and development approach focused on preliminary investigation and prototype development. Data were collected from nine purposively selected schools drawn from twenty-four senior high schools between January and May 2025. Participants in the needs analysis comprised school leaders, twenty Islamic Religious Education teachers, and one hundred students; three experts in Islamic Religious Education content, environmental education, and instructional design contributed formative design consultation. Observation, semi-structured interviews, student group discussions, and document analysis were used to identify design requirements. The prototype integrates five components: Qur'anic foundations, participatory learning, spiritual-ecological reflection, concrete ecological action, and ecological character assessment. Its six-stage syntax consists of spiritual orientation, environmental exploration, reflection on Islamic values, spiritual-ecological reflection, ecological action, and continuing evaluation. The model's scientific contribution lies in translating contextual, participatory, reflective, action-oriented, and authentic-assessment principles of ecopedagogy into Islamic Religious Education practices grounded in khalifah fi al-ardh, amanah, mizan, islah, ihsan, and the prohibition of fasad. Formal expert validation, practicality testing, and effectiveness testing have not yet been completed; therefore, the findings are limited to needs-based design characteristics and the prototype's conceptual contribution.

Keywords: *Religious Ecopedagogy; Islamic Religious Education; Ecological Character; Environmental Education; Prototype Development.*



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Abstrak

Penelitian ini mengembangkan prototipe awal Model Ekopedagogi Religius untuk Pendidikan Agama Islam (ER-PAI) guna mendukung pembentukan karakter bertanggung jawab terhadap lingkungan pada siswa sekolah menengah atas di Kabupaten Muna. Penelitian menggunakan pendekatan penelitian dan pengembangan pendidikan yang difokuskan pada investigasi pendahuluan dan pengembangan prototipe. Data dikumpulkan pada sembilan sekolah yang dipilih secara purposif dari dua puluh empat sekolah menengah atas selama Januari–Mei 2025. Partisipan analisis kebutuhan terdiri atas pimpinan sekolah, dua puluh guru PAI, dan seratus siswa; tiga ahli pada bidang materi PAI, pendidikan lingkungan, dan desain pembelajaran terlibat dalam konsultasi formatif terhadap rancangan. Observasi, wawancara semi-terstruktur, diskusi kelompok siswa, dan analisis dokumen digunakan untuk mengidentifikasi kebutuhan desain. Prototipe mengintegrasikan lima komponen: landasan Al-Qur'an, pembelajaran partisipatif, refleksi spiritual-ekologis, aksi ekologis konkret, dan asesmen karakter ekologis. Sintaks pembelajarannya meliputi orientasi spiritual, eksplorasi lingkungan, refleksi nilai Islam, refleksi spiritual-ekologis, aksi ekologis, dan evaluasi berkelanjutan. Kontribusi ilmiah model terletak pada penerjemahan prinsip ekopedagogi yang kontekstual, partisipatif, reflektif, berorientasi tindakan, dan berasesmen autentik ke dalam praktik PAI yang berlandaskan khalifah fi al-ardh, amanah, mizan, islah, ihsan, dan larangan fasad. Validasi ahli formal, uji kepraktisan, dan uji efektivitas belum diselesaikan; karena itu, temuan dibatasi pada karakteristik desain berbasis kebutuhan dan kontribusi konseptual prototipe.

Kata Kunci: *Ekopedagogi Religius; Pendidikan Agama Islam; Karakter Ekologis; Pendidikan Lingkungan; Pengembangan Prototipe.*

INTRODUCTION

The environmental crisis is not limited to physical damage to nature; it also reflects problems of values, worldviews, and patterns of human relationships with the environment. Environmental education therefore cannot be reduced to conveying information about pollution, waste, climate change, or conservation. Education must develop knowledge, attitudes, skills, identity, and the capacity to act so that learners can make responsible ecological decisions. The systematic review by Ardoin, Bowers, and Gaillard (2020) shows that environmental education programs are more likely to produce conservation outcomes when they begin with local problems, build partnerships, and provide space for concrete action. The meta-analysis by van de Wetering, Leijten, Spitzer, and Thomaes (2022) likewise indicates that environmental education can strengthen children's and adolescents' environmental knowledge, attitudes, intentions, and behavior, although its success

is strongly influenced by instructional design quality and the context of implementation.

These findings imply that environmental learning must move beyond an informational approach toward learning experiences that are relevant, participatory, and action-oriented. Monroe, Plate, Oxarart, Bowers, and Chaves (2019) identified that effective environmental education strategies commonly connect issues with learners' lives, use engaging learning methods, encourage discussion, and provide opportunities for action. Otto and Pensini (2017), meanwhile, emphasize that environmental knowledge alone is insufficient to produce ecological behavior unless it is accompanied by an emotional connection with nature. The development of environmentally responsible character must therefore integrate cognitive, affective, moral, spiritual, and psychomotor dimensions within a single learning sequence.

Studies of education for sustainable development provide a pedagogical foundation for this integration. Bascopé, Perasso, and Reiss (2019) found that sustainability-oriented learning should be built on three foundations: science-based action, community-based learning, and value orientation, supported by projects, problem solving, outdoor activities, and authentic experiences. Through a holistic climate education model, Cantell, Tolppanen, Aarnio-Linnanvuori, and Lehtonen (2019) also position knowledge, thinking skills, values, identity, worldview, motivation, participation, emotions, hope, and action as interrelated elements. This framework is relevant to Islamic Religious Education because its purpose is not merely the mastery of religious knowledge, but also the internalization of values and the actualization of Islamic teachings in everyday behavior.

At the institutional level, successful sustainability education requires the support of school culture and consistency of practice. Olsson, Gericke, and Chang Rundgren (2016) show that the implementation of education for sustainable development in schools should be assessed through sustainability consciousness encompassing knowledge, attitudes, and behavior. Wals and Benavot (2017) stress the importance of a whole-institution approach so that sustainability messages do not remain classroom content but are reflected in school governance, habits, and social relations. Leal Filho et al. (2018) further explain that sustainability education requires transformative learning, namely a process that changes frames of thinking, student engagement, and orientations toward action. Ecologically oriented Islamic Religious Education should therefore be supported by teacher modeling, collective activities, a green school culture, and continuous behavioral assessment.

Environmentally responsible character also has a moral dimension. Jordan and Kristjansson (2017) propose harmony with nature as a virtue within character

education because sustainability requires a fundamental change in how humans understand their relationships with other beings and ecosystems. From an Islamic perspective, this idea has a theological basis in tawhid, khalifah fi al-ardh, amanah, mizan, ihsan, the prohibition of fasad, and the responsibility to cultivate the earth. Muhamad, Syihab, and Ibrahim (2020) show that the Qur'an and Sunnah provide strong principles for preserving human-nature interaction through balance, the prohibition of misuse, responsible utilization, and sustainability. Within this framework, environmental concern is not treated as an additional value outside religion, but as an ethical consequence of faith and obedience.

A number of studies have demonstrated the relevance of integrating Islamic values into environmental education. Abd Rahman, Zabidi, and Halim (2020) found that tauhidic elements can be integrated into environmental education through teacher modeling, advice, and the study of Qur'anic verses and hadith related to nature. However, their study also identified a gap between students' knowledge and conservation practices. The textbook analysis by Zabidi, Abd Rahman, and Halim (2021) shows that the values of khalifah, tawhid, mizan, qana'ah, mahabbah, ihsan, and ta'awun can be incorporated into content, activities, exercises, and learning illustrations, although cross-curricular integration still needs strengthening. These findings confirm the need for an operational model that not only presents ecological religious texts but also connects them with learners' experiences, reflection, and action.

In the Indonesian context, Rohmatulloh, Hasanah, Sahlani, and Zuhri (2023) developed a framework for internalizing Islamic ethics in energy conservation through the integration of subject learning, religious education, and daily school activities. Begum et al. (2021) also found that environmental moral education is associated with pro-environmental behavior, while Islamic religiosity plays an important role in strengthening this relationship. Both studies demonstrate that the religious dimension can drive ecological behavior when it is translated into norms, habituation, empowerment, and real experience rather than delivered only as a normative message.

Studies of the Islamic Religious Education curriculum in Indonesia reveal both opportunities and limitations. Wakhidah and Erman (2022) found that environmental education content has appeared in the curriculum at several levels, including human beings as social creatures, natural resources, personal hygiene, and the environment. However, the presence of such content does not automatically produce integrated ecological learning. Cholil and Parker's (2021) study of faith-based schools in Indonesia shows that eco-theology can build students' ecological identity, but the translation of teaching into practice is often influenced by

household life and the broader social context. Religious learning therefore requires a design that explicitly bridges religious texts, environmental realities, inner reflection, and collective action.

Similar findings appear in Islamic educational settings. Fua, Nurlila, Gunawan, and Wekke (2018) show that Islamic education can develop environmental awareness through cleanliness management, habituation, and Qur'anic and hadith values in pesantren. Ceesay and Sonko (2024) emphasize the importance of integrating Islamic environmental ethics into basic education curricula so that environmental concern is developed systematically. Alanazi et al. (2025), meanwhile, demonstrate that the concepts of khalifah and amanah can be actualized through community-based education and waste-reduction action. Together, these studies reinforce the argument that Islamic values possess pedagogical power when embodied in concrete, participatory, contextual, and sustainable activities.

Although research on environmental education, eco-theology, and Islamic ecological values continues to expand, a gap remains in secondary-level Islamic Religious Education designs that fully integrate five elements: Qur'anic foundations, participatory learning, spiritual-ecological reflection, concrete ecological action, and ecological character assessment. Some studies focus on curriculum analysis, textbooks, school culture, or a particular type of behavior, whereas operational models that connect spiritual orientation, exploration of the local environment, reflection on Islamic values, internalization, action, and authentic assessment remain limited. This gap is particularly relevant in Muna Regency, where Islamic Religious Education requires a design that uses the school environment and local ecological problems as both learning resources and spaces for practicing Islamic values.

Based on this gap, the study aims to formulate a prototype design of the Religious Ecopedagogy Model for Islamic Religious Education (ER-PAI) to strengthen environmentally responsible character among senior high school students in Muna Regency. The model combines ecopedagogical principles, Qur'anic values, participatory pedagogy, spiritual reflection, ecological action, and character assessment. Its novelty lies not merely in placing environmental themes within Islamic Religious Education, but in operationalizing ecopedagogy as a PAI learning architecture: local ecological problems become contexts for Qur'anic interpretation, participatory inquiry, spiritual-ecological reflection, concrete action, and authentic assessment. In this architecture, ecological responsibility is treated as an observable expression of khalifah fi al-ardh, amanah, mizan, islah, ihsan, and the prohibition of fasad. The scientific contribution is therefore a theory-to-practice bridge that translates Islamic ecological ethics and contemporary ecopedagogy into teachable,

assessable, and context-sensitive learning processes for formal secondary education.

Accordingly, the study addresses two questions: (1) what are the needs for developing religious-ecopedagogical Islamic Religious Education in senior high schools in Muna Regency; and (2) what structure, components, and syntax of the ER-PAI prototype are appropriate to those needs?

RESEARCH METHODS

This study employed an educational research and development approach to produce an initial prototype of the Religious Ecopedagogy Model for Islamic Religious Education (ER-PAI). The broader development pathway comprises preliminary research, prototype construction, formal expert validation, limited practicality testing, prototype revision, and effectiveness testing. The present article reports the preliminary research and prototype-construction phases together with formative expert consultation. Formal expert validation and field testing are positioned as subsequent phases so that claims in this article remain aligned with the evidence currently available.

The study was conducted in senior high schools in Muna Regency selected purposively on the basis of the presence of Islamic Religious Education, the potential of the school environment as a learning resource, and the school's readiness to develop ecological activities. The site population comprised 24 senior high schools, of which nine were selected based on the available educational-unit data. The study ran for five months, from January to May 2025. Needs-analysis data sources included school leaders, namely the principal and vice principal for curriculum from each sampled school, 20 Islamic Religious Education teachers, and 100 students. Three experts with expertise in Islamic Religious Education content, environmental education, and instructional design were involved in formative discussion of the prototype. Because a completed structured expert-validation dataset is not reported in this manuscript, their involvement is treated as formative design consultation rather than formal validation evidence. Informants were selected purposively by considering their involvement in Islamic Religious Education and school environmental programs.

Table 1. Research Sample Schools in Muna Regency

No	NPSN	School	Address	Village	Status
1	40400750	SMA Negeri 1 Tongkuno	Education Street No. 2, Wakuru	Lahonthe	Public
2	40403875	SMA Negeri 2 Tongkuno	Moko Permandian Street, Oempu Village	Oempu	Public
3	40400746	SMA Negeri 1 Parigi	Wasolangka Main Road, Parigi District, Muna Regency	Wasolangka	Public

No	NPSN	School	Address		Village	Status
4	40403157	SMA Negeri 2 Parigi	Education Street		Walambeno Wite	Public
5	70062863	SMA Negeri 2 Kabawo	Lamanu Village Main Road		Lamanu	Public
6	40400766	SMA Negeri 1 Kabawo	Lombulalo Street No. 16		Kontumere	Public
7	40403974	SMA Negeri 2 Raha	Education Street No. 2, Raha		Mangga Kuning	Public
8	40400758	SMA Negeri 1 Napabalano	Idrus Efendi Street No. 22		Napabalano	Public
9	40400755	SMA Negeri 3 Raha	Langkumapo Village, District, Muna Regency	Napabalano	Langkumapo	Public

Data were collected through direct observation of environmental conditions and Islamic Religious Education practices, semi-structured interviews with school leaders and teachers, student group discussions, and document analysis of curricula, teaching modules, school programs, and assessment instruments. Observations identified ecological issues that could serve as learning contexts, patterns of environmental habituation, the availability of facilities, and school-community participation. Interviews explored learning needs, perceptions of the relationship between Islamic teachings and the environment, implementation constraints, and realistic forms of ecological activity for students.

Prototype development proceeded through four steps. First, the needs-analysis findings were mapped onto the model's objectives: developing an Islamic ecological understanding, spiritual awareness, a sense of responsibility, and environmental-action skills. Second, the Qur'anic foundations were formulated through the concepts of khalifah fi al-ardh, amanah, mizan, islah, the prohibition of fasad, and ecological gratitude. Third, the model components were organized into a system encompassing learning syntax, teacher and student roles, support systems, learning activities, and character assessment. Fourth, the prototype was expressed as a learning sequence, teacher guide, integrated module or lesson-plan design, reflection sheets, observation rubrics, project assessment, and an ecological-action portfolio.

Qualitative data were analyzed through data condensation, thematic organization, presentation of relationships among themes, and conclusion drawing. The analysis was iterative and connected field needs with ecopedagogical principles and Islamic values. Trustworthiness was maintained through source and technique triangulation and checks for consistency among observations, interviews, student discussions, and documents. Formative expert consultation examined content

relevance, coherence among components, clarity of syntax, feasibility of activities, appropriateness of assessment, and sensitivity to the local context of Muna Regency. The next formal validation stage is specified to use a structured expert-rating instrument and qualitative revision notes covering content and theological relevance, design coherence, syntax clarity, activity feasibility, assessment alignment, and contextual suitability. Because that structured validation round has not been completed in the evidence reported here, no validation coefficient, numerical validity score, or claim of validated effectiveness is presented.

The product developed in this study is therefore classified as a pre-validation initial prototype. Its quality can be discussed in terms of conceptual grounding, internal coherence, design traceability, and operational specification, but not in terms of proven practicality or effectiveness. Formal expert validation must precede limited classroom trials, and the prototype should be revised in response to validation evidence before broader field testing.

Ethically, informants participated voluntarily, respondent identities were anonymized in the report, and data were used solely for academic purposes. Because this article reports a product at the prototype stage, claims are limited to design characteristics, component rationale, syntax, and supporting products. Terms such as effective, influential, or successful in improving character are not used before field-trial findings and analyses of changes in student behavior become available.

RESULTS AND DISCUSSION

Results

Basis for Prototype Development

Prototype development was directed by the need to connect Islamic Religious Education with environmental issues close to students' lives. The thematic synthesis of observation, interviews, student group discussions, and document analysis was organized into five design requirements: (1) local environmental problems should function as authentic entry points for PAI learning; (2) Qur'anic environmental ethics should be translated from normative content into participatory inquiry; (3) learning should include a structured mechanism for spiritual-ecological reflection so that external environmental problems are connected with personal moral responsibility; (4) students should have opportunities for concrete and sustained ecological action; and (5) ecological character should be monitored through evidence that extends beyond written knowledge to reflection, participation, skills, and behavioral consistency. These requirements directly informed the five components of the ER-PAI prototype: Qur'anic foundations, participatory learning,

spiritual-ecological reflection, concrete ecological action, and ecological character assessment.

The qualitative analysis prioritized thematic convergence and design relevance rather than frequency counts or school rankings. Accordingly, the needs-analysis findings are reported as cross-source design requirements and are used to explain why particular components were included in the prototype. This traceability distinguishes needs-based prototype construction from later claims about validity, practicality, or effectiveness, which require separate evidence.

Formulation of the ER-PAI Prototype

The development process produced a prototype of the Religious Ecopedagogy Model for Islamic Religious Education (ER-PAI). The model responds to a learning need that goes beyond ecological knowledge by connecting Islamic teachings, moral-spiritual awareness, authentic experience, and environmental action. Conceptually, ER-PAI positions environmental concern as part of the practice of faith. The relationship among human beings, God, and nature therefore becomes the axis of learning, while the school and community environments serve as laboratories for Islamic Religious Education.

The model consists of five interconnected components: Qur'anic foundations, participatory learning, spiritual-ecological reflection, concrete ecological action, and ecological character assessment. Together, these components are intended to develop environmentally responsible character grounded in Islamic values through the growth of knowledge, attitudes, spiritual awareness, skills, and behavioral consistency.

Table 2. Main Components of the ER-PAI Prototype

Component	Core Substance	Learning Activities	Expected Outcome
Qur'anic foundations	Khalifah fi al-ardh, amanah, mizan, islah, the prohibition of fasad, and ecological gratitude.	Contemplation of ayat kauniyah, study of Qur'anic verses and hadith, and discussion of the ecological meaning of Islamic teachings.	A moral and spiritual foundation for understanding responsibility toward nature.
Participatory learning	Student-centered learning connected with real environmental problems.	Problem-based learning, project-based learning, case studies, critical discussion, field observation, and collaborative learning.	The ability to analyze problems and design ecological solutions grounded in Islamic values.
Spiritual-ecological reflection	Ecological self-examination, contemplation of nature, prayer, thematic dhikr, and reflective journals.	Reflection on the relationship between human behavior and environmental conditions, followed by a commitment to self-improvement.	Inner awareness that caring for the environment is an amanah and an act of worship.

Component	Core Substance	Learning Activities	Expected Outcome
Concrete ecological action	Sustained, collective ecological activities understood as acts of worship.	Clean-up movements, waste management, planting and plant care, energy conservation, ecological da'wah campaigns, and projects based on Muna local wisdom.	Participation, skills, and consistency in environmentally responsible behavior.
Ecological character assessment	Assessment of cognitive, affective, and psychomotor domains.	Contextual tests, questionnaires or attitude scales, observation, project assessment, reflection journals, and ecological-action portfolios.	A comprehensive and continuous profile of environmentally responsible character development.

Qur'anic Foundations of the Model

Qur'anic values constitute the foundation of all ER-PAI activities. Khalifah fi al-ardh emphasizes human responsibility to manage the earth wisely; amanah positions nature as a trust from God; mizan directs people to maintain balance; islah requires restorative action; the prohibition of fasad prevents exploitation and damage; and ecological gratitude is expressed through care for the blessings of nature. These values are not taught only as theological concepts but are translated into criteria for action and material for reflection in learning.

Values are integrated through the reading of Qur'anic verses and hadith, contemplation of ayat kauniyah, analysis of environmental problems, and dialogue about the moral consequences of human behavior. This position is consistent with Abd Rahman et al. (2020) and Zabidi et al. (2021), who stress the importance of connecting Islamic sources with conservation behavior. In ER-PAI, this relationship is strengthened by requiring each value to be expressed through experience and observable indicators of action.

Participatory and Contextual Learning Process

The second component is participatory learning, which positions students as active subjects. Islamic Religious Education content is connected with real problems such as school cleanliness, waste management, water and electricity use, plant conditions, pollution, and relevant local ecological issues. Students observe, identify problems, discuss, investigate Islamic normative foundations, formulate alternative solutions, and carry out projects. The teacher acts as a facilitator of values, a guide for analysis, a project mentor, and a role model for environmentally responsible behavior.

The model uses problem-based learning, project-based learning, collaborative learning, field observation, case studies, and service learning. These strategies were selected to bridge knowledge and action. Ardoin et al. (2020), Bascopé et al. (2019), and Monroe et al. (2019) show that local relevance, participation, projects, and concrete action are important elements of impactful environmental education. In Islamic Religious Education, activities such as environmental clean-up campaigns, waste management as an amanah, and tree planting as a righteous deed give religious meaning to ecological action.

Spiritual-Ecological Reflection

Spiritual-ecological reflection is a distinctive feature of ER-PAI. After observing or discussing an environmental problem, students engage in ecological self-examination, contemplation of nature, spiritual dialogue, journal writing, prayer, or dhikr focused on the environment. Reflection is directed by three questions: How do human actions affect nature? Which Islamic values relate to the issue? What commitments should students make? This stage aims to transform rational understanding into inner awareness and moral responsibility.

Reflection is necessary because ecological behavior does not arise from knowledge alone. Otto and Pensini (2017) emphasize connectedness to nature, while Jordan and Kristjansson (2017) position harmony with nature as a virtue that must be cultivated. In ER-PAI, this dimension is deepened through awareness that caring for living beings and environmental balance is part of ihsan and an expression of obedience to God.

Concrete Ecological Action as the Actualization of Values

Awareness and reflection are then actualized through concrete ecological action. Designed activities include school or community clean-up movements, waste sorting and management, planting and caring for vegetation, water and energy conservation, ecological da'wah campaigns, and projects based on Muna local wisdom. Actions are carried out collectively, documented, sustained, and linked to worship. Environmental activities are therefore not separate add-on programs but part of the learning and character-development process.

Concrete action also functions as a space for social learning. Students learn to plan activities, divide tasks, collaborate, solve problems, account for outcomes, and evaluate impact. This is consistent with Fua et al. (2018), Rohmatulloh et al. (2023), and Alanazi et al. (2025), who show that Islamic ecological values become more meaningful when embodied through habituation, environmental management, and community movements.

Ecological Character Assessment

Assessment in ER-PAI covers three domains. The cognitive domain includes understanding Islamic environmental concepts, knowledge of ecological Qur'anic verses and hadith, and the ability to analyze problems. The affective domain includes concern, responsibility, spiritual-ecological awareness, and commitment to caring for nature. The psychomotor domain includes participation in action, environmental-management skills, and consistency of environmentally responsible behavior. Instruments include written tests and contextual essays, questionnaires or attitude scales, observation sheets, project assessment, reflective journals, and ecological-action portfolios.

Assessment is authentic and continuous. It is conducted not only at the end of learning but throughout problem identification, project design, action implementation, reflection, and follow-up. This approach is necessary because ecological character is a pattern of values and behavior developed through habituation. Assessment data are then used as feedback for students, teachers, and schools to improve activities, strengthen commitment, and sustain an ecological culture.

ER-PAI Learning Syntax

The ER-PAI prototype has six continuous learning stages. The sequence begins with spiritual orientation, followed by exploration of environmental problems, reflection on Islamic values, spiritual-ecological internalization, ecological action, and evaluation and reinforcement of commitment. The syntax is presented in Table 3.

Table 3. Learning Syntax of the ER-PAI Model

Stage	Objective	Main Activities	Teacher Role	Student Role
1. Spiritual orientation	Develop initial awareness that caring for the environment is part of worship.	Contemplation of verses about nature, apperception, dialogic explanation, and reflective discussion.	Inspirer and motivator.	Read Qur'anic verses or hadith and connect them with environmental conditions.
2. Environmental exploration	Develop sensitivity and critical awareness of local environmental problems.	Environmental observation, problem identification, case studies, and cause-and-effect mapping.	Observation facilitator and issue presenter.	Observe, record, classify, and analyze problems.

Stage	Objective	Main Activities	Teacher Role	Student Role
3. Reflection on Islamic values	Connect environmental phenomena with Islamic principles and ethics.	Discussion of Qur'anic verses or hadith, group presentations, and formulation of solutions grounded in Islamic values.	Guide for interpretation and value integration.	Discuss, argue, and formulate solutions.
4. Spiritual-ecological reflection	Internalize values and develop inner commitment.	Self-examination, reflective journals, contemplation of nature, prayer, and thematic dhikr.	Murabbi and reflection guide.	Evaluate themselves, express attitudes, and formulate commitments.
5. Concrete ecological action	Actualize Islamic values through concrete action.	Waste-management projects, Green Friday, planting, energy conservation, or ecological campaigns.	Director, mentor, and role model.	Plan, implement, document, and account for projects.
6. Evaluation and continued internalization	Assess the development of knowledge, attitudes, skills, and consistency of commitment.	Tests, observation, project assessment, portfolios, presentations, and follow-up reflection.	Assessor and feedback facilitator.	Conduct self-evaluation, receive feedback, and formulate follow-up actions.

Supporting Products and Implementation Indicators

The ER-PAI model is designed to be supported by four operational products: an environmentally oriented teacher guide for Islamic Religious Education, a module or lesson plan integrating ecological values, character-reflection and assessment sheets, and a student activity program entitled the Islamic Green School Movement. These products help translate the model's components and syntax into learning preparation, implementation, and assessment.

Implementation indicators include students' ability to explain khalifah fi al-ardh and Islamic ecological values; concern for cleanliness and environmental sustainability; participation in ecological projects; the presence of sustained environmental activities; and the visibility of amanah, mizan, ihsan, and the prohibition of fasad in daily decisions and behavior. These indicators are not positioned as evidence of effectiveness, but as criteria to be tested during assessment and field trials.

Formative Expert Consultation and Prototype Status

The three experts in Islamic Religious Education content, environmental education, and instructional design participated in formative discussion of the prototype against the quality criteria specified in the method. Their role at this stage was to examine conceptual fit, internal coherence, clarity of the learning sequence, feasibility of the proposed activities, appropriateness of assessment, and sensitivity to the Muna context. This consultation served as a design-development check rather than a completed formal validation round.

Because structured validation sheets, analyzable expert ratings, and a completed revision cycle based on those ratings are not part of the evidence reported in this article, no content-validity coefficient or quantitative validation category is presented. The product is therefore retained as a pre-validation prototype. Formal expert validation is the next development stage and will determine which components require revision before limited practicality testing.

Discussion

ER-PAI as an Integrative Islamic Education Model

The findings position ER-PAI as more than an environmental supplement to Islamic Religious Education. Its five components connect Qur'anic foundations, participatory pedagogy, spiritual-ecological reflection, concrete action, and character assessment within one instructional architecture. This integration responds to the limitation identified in Islamic religious curricula, where environmental themes may be present but are not always translated into coherent learning experiences or observable ecological practices (Wakhidah & Erman, 2022). It also extends textbook-based integration of Islamic environmental values by moving beyond content representation toward field observation, reflection, action, and authentic assessment (Zabidi et al., 2021). The scientific contribution of ER-PAI therefore lies in operationalizing Islamic ecological ethics as a teachable and assessable learning process.

The theological structure of the model strengthens this integrative character. Concepts such as tawhid, khalifah fi al-ardh, amanah, mizan, islah, ihsan, and the prohibition of fasad are treated as criteria for interpreting environmental problems and guiding student action. This approach is consistent with evidence that the Qur'an and Sunnah provide a moral framework for balance, responsible use, restoration, and the prevention of environmental damage (Muhamad et al., 2020). It also supports teachers' efforts to integrate tauhidic elements through role modeling, advice, Qur'anic verses, and hadith, while addressing the persistent gap between religious knowledge and conservation practice (Abd Rahman et al., 2020). ER-PAI

addresses this gap by requiring each Islamic value to be expressed in reflection, decision making, and concrete ecological action.

From Ecopedagogy Theory to PAI Practice

The relationship between ecopedagogy and Islamic Religious Education in ER-PAI is operational rather than additive. Ecopedagogy provides the pedagogical mechanisms—contextual problem inquiry, participation, reflection, action, and authentic assessment—while Islamic teachings provide the theological and moral criteria through which environmental problems are interpreted and acted upon. In practice, each ecopedagogical principle is translated into a specific PAI learning task so that students move from understanding religious texts to making value-based ecological judgments and performing observable action. Table 4 summarizes this theory-to-practice translation.

Table 4. Translation of Ecopedagogical Principles into PAI Practice in ER-PAI

Ecopedagogical principle	PAI/Islamic grounding	Operational translation in ER-PAI
Contextual and locally relevant inquiry	Khalifah fi al-ardh and amanah	Students explore school or community environmental problems and connect them with Qur'anic and hadith-based responsibilities.
Participatory and action-oriented learning	Amanah, islah, and responsible agency	Problem-, project-, collaborative-, and service-learning activities lead students to plan and carry out ecological projects.
Reflective and transformative learning	Ihsan, ecological gratitude, and accountability before God	Self-examination, contemplation of ayat kauniyah, prayer or thematic dhikr, reflective journals, and personal commitments connect knowledge with inner responsibility.
Ecological balance and prevention of harm	Mizan and the prohibition of fasad	Students analyze cause-and-effect relationships in pollution, waste, and resource use and formulate solutions oriented toward balance, prevention, and restoration.
Authentic and continuous assessment	Amanah and consistency between belief, judgment, and action	Observation, project assessment, reflection journals, contextual tasks, and ecological-action portfolios document knowledge, attitudes, participation, skills, and behavioral consistency.

This mapping clarifies the model's central contribution. ER-PAI does not simply attach Islamic terminology to environmental education; it uses Islamic concepts as criteria for interpreting ecological reality, directing reflection, choosing action, and evaluating consistency between knowledge and behavior. Conversely, ecopedagogical strategies provide concrete learning mechanisms through which PAI values can be experienced and assessed. The model's theoretical claim is therefore that ecological responsibility can be developed as a form of lived Islamic character when theological meaning, contextual inquiry, reflective internalization,

collective action, and assessment are deliberately connected within one learning sequence.

Participatory Learning, Local Relevance, and Ecological Action

The participatory structure of ER-PAI is supported by environmental education research showing that local relevance, learner participation, partnerships, and opportunities for action are central to meaningful environmental outcomes. Ardoin et al. (2020) found that conservation-oriented environmental education is more likely to produce impact when it begins with locally meaningful issues and engages participants in real action. Monroe et al. (2019) similarly identified issue relevance, discussion, deliberation, and action as recurring features of effective climate-change education. These findings justify the ER-PAI sequence of environmental exploration, Islamic value analysis, project planning, and ecological action in the school or community environment.

The use of problem-based learning, project-based learning, collaborative inquiry, and service learning also reflects the pedagogical foundations of education for sustainable development. Bascopé et al. (2019) argue that sustainability learning should combine scientific inquiry, community engagement, values, and authentic projects. Cantell et al. (2019) further show that knowledge, worldview, identity, emotion, motivation, hope, participation, and action should be treated as interconnected dimensions. ER-PAI translates these dimensions into an Islamic educational setting by linking environmental investigation with Qur'anic interpretation, spiritual reflection, and collective action. In this way, students are not only asked to know what Islam says about nature, but also to formulate and implement responses to environmental problems.

Spiritual-Ecological Reflection and Character Formation

Spiritual-ecological reflection is one of the most distinctive elements of ER-PAI because it bridges cognitive understanding and moral commitment. Environmental knowledge alone does not necessarily produce ecological behavior; connectedness to nature is also associated with environmentally responsible action (Otto & Pensini, 2017). From a virtue-ethics perspective, harmony with nature must be cultivated as a stable disposition rather than treated as an isolated attitude (Jordan & Kristjansson, 2017). ER-PAI deepens these perspectives through Islamic self-examination, contemplation of ayat kauniyah, prayer, reflection journals, and personal commitments. The intended outcome is not merely awareness of environmental problems, but the formation of ecological responsibility as an expression of faith and ihsan.

This interpretation is also supported by research on the relationship between religious morality and pro-environmental behavior. Begum et al. (2021) found that environmental moral education is associated with pro-environmental behavior and that Islamic religiosity can strengthen this relationship through psychological empowerment. Rohmatulloh et al. (2023) likewise demonstrate that Islamic ethical values can be internalized through the integration of subject learning, religious instruction, and daily school activities. ER-PAI therefore contributes to character education by combining doctrinal learning, reflective internalization, habituation, and action. This combination is important because ecological character develops through repeated practice and institutional reinforcement, not through one-time exposure to religious messages.

School Culture, Institutional Support, and Sustainability

The model's reliance on teacher example, school programs, and collective ecological projects shows that implementation cannot be confined to classroom instruction. A whole-institution perspective is needed so that sustainability values appear in governance, routines, facilities, and social relationships (Wals & Benavot, 2017). The importance of institutional coherence is also reflected in research on sustainability consciousness, which includes knowledge, attitudes, and behavior as interdependent outcomes (Olsson et al., 2016). Leal Filho et al. (2018) further emphasize that sustainability education requires transformative learning capable of changing frames of reference, engagement, and orientations toward action. Accordingly, ER-PAI will be stronger when lesson design, school culture, teacher modeling, environmental management, and assessment operate consistently.

This institutional dimension is particularly relevant to Islamic schools, madrasahs, and pesantren. Studies in pesantren contexts show that environmental awareness can be cultivated through cleanliness management, habituation, and Qur'anic and hadith values embedded in institutional life (Fua et al., 2018). More recent research also demonstrates that Islamic environmental ethics can be incorporated into school curricula (Ceesay & Sonko, 2024) and strengthened through community-based waste-reduction movements grounded in khalifah and amanah (Alanazi et al., 2025). ER-PAI adds to these studies by offering a structured learning syntax and assessment system that can connect institutional culture with classroom pedagogy.

Assessment, Contribution, and Evidentiary Boundaries

The present study, however, supports claims about conceptual coherence and prototype design rather than effectiveness. Formal expert-validation results,

practicality data, and field-test outcomes are not available within the present development stage. The model should therefore be described as a theoretically grounded prototype that is expected to support ecological character, not as a proven intervention. Future studies should test content validity, implementation fidelity, teacher usability, student engagement, and short- and long-term changes in knowledge, attitudes, reflection, and behavior. Such testing will clarify whether the integration of Qur'anic values, participatory learning, spiritual reflection, and ecological action produces outcomes beyond those of conventional Islamic Religious Education.

The multidimensional assessment system is another important contribution of the model. By assessing knowledge, concern, reflection, project participation, environmental skills, and behavioral consistency, ER-PAI avoids reducing character education to a written test. This approach is compatible with research showing that environmental education can influence knowledge, attitudes, intentions, and behavior, although effect sizes depend on program design and implementation context (van de Wetering et al., 2022). Authentic and continuous assessment is therefore necessary to determine whether students can transfer Islamic ecological values from classroom understanding to repeated practice.

Practical Implications

For Islamic Religious Education teachers, the ER-PAI prototype provides a framework for connecting Qur'anic verses, hadith, morality, and environmental jurisprudence with real ecological problems. Teachers should begin with locally relevant issues, facilitate critical discussion, guide spiritual-ecological reflection, and organize projects that allow students to act on Islamic values, because local relevance and action are central features of effective environmental education (Ardoin et al., 2020; Monroe et al., 2019). For schools, implementation should connect classroom learning with school culture, environmental management, and collective routines, consistent with a whole-institution approach to sustainability (Wals & Benavot, 2017). For curriculum developers, ER-PAI offers an interdisciplinary basis for integrating Qur'anic ethics, participatory pedagogy, reflection, action, and authentic assessment into Islamic Religious Education. The model may also be adapted for madrasahs, pesantren, and other Islamic educational institutions by considering their institutional characteristics and local social contexts (Fua et al., 2018; Ceesay & Sonko, 2024).

CONCLUSION

This study produced a pre-validation initial prototype of the Religious Ecopedagogy Model for Islamic Religious Education (ER-PAI) for senior high schools in Muna Regency. The model integrates five components: Qur'anic foundations, participatory learning, spiritual-ecological reflection, concrete ecological action, and ecological character assessment. Its six-stage syntax consists of spiritual orientation, exploration of environmental problems, reflection on Islamic values, spiritual-ecological reflection, ecological action, and evaluation and reinforcement of commitment. ER-PAI's principal contribution is a theory-to-practice bridge: contextual, participatory, reflective, action-oriented, and authentic-assessment principles of ecopedagogy are translated into PAI practices grounded in Islamic ecological ethics, allowing spiritual piety and ecological responsibility to be addressed within one learning architecture.

The prototype cannot yet be declared validated, practical, or effective. The next development sequence should therefore be explicit: conduct structured expert validation and revise the design; undertake a limited practicality trial focused on teacher usability, syntax fidelity, time feasibility, and student engagement; perform field effectiveness testing on knowledge, spiritual-ecological reflection, attitudes, participation, skills, and observed environmental behavior; and complete follow-up observation to assess maintenance and transfer of ecological commitments across school, home, and community contexts. This staged program is necessary before ER-PAI is recommended for broader implementation.

This study is limited to the development of a pre-validation initial prototype. Although three experts contributed formative design discussion, structured expert-validation ratings and a completed revision cycle based on those ratings are not reported. Practicality and effectiveness tests have also not been conducted, and environmentally responsible character requires sustained observation; therefore, behavioral change cannot be inferred from the model design alone. The needs-analysis results are reported thematically as design requirements rather than as school-level prevalence estimates.

Future research should proceed through four explicit stages. First, formal expert validation should assess content and theological relevance, component coherence, syntax clarity, activity feasibility, assessment alignment, and contextual suitability, with both structured ratings and qualitative revision notes. Second, a limited practicality trial should examine teacher usability, fidelity to the six-stage syntax, time feasibility, availability of supporting resources, and student engagement. Third, field effectiveness testing should measure changes in Islamic ecological knowledge, spiritual-ecological reflection, environmental attitudes,

project participation, ecological skills, and observed behavior using an appropriate mixed-method or comparative design. Fourth, follow-up observation should examine whether ecological commitments are maintained and transferred from classroom projects to school, home, and community practices over time. Each stage should inform prototype revision before wider implementation.

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