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A Model for Integrating Environmental Care Values into Islamic Education Based on the Archipelagic Context of North Halmahera

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Abstract

Environmental degradation in archipelagic regions, including marine plastic pollution, coral reef damage, and coastal abrasion, calls for Islamic education that connects religious values with local ecological realities. This study aims to describe how environmental care values are currently integrated into Islamic Religious Education (Pendidikan Agama Islam, PAI) in North Halmahera Regency and to design a contextual integration model grounded in the region's archipelagic characteristics. The study employed a Research and Development design adapted from the ADDIE model within a mixed-methods approach; this article reports the Analysis and Design stages. Data were collected from five PAI teachers, six school and madrasah principals, and six students through Likert-scale questionnaires, interviews, observation, and documentation. Teachers responded positively to environmental integration (mean = 4.17; 83.5%), school support was very high (4.65; 92.9%), and student responses were very high (4.69; 93.8%). Interviews indicate that values such as khalifah, amanah, mizan, and the prohibition of fasad are already taught, yet integration remains implicit, partial, and dependent on individual teachers' initiative, with limited contextual teaching materials, little teacher training, and unstructured attitude assessment. Based on these findings, an eight-stage model was designed: identifying local environmental problems, exploring environmental conditions, relating them to the Qur'an and Hadith, analyzing them through Islamic values, planning ecological action, taking action, reflecting, and evaluating knowledge, attitudes, and actions. The validity, practicality, and effectiveness of the model remain to be tested in the

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next stage.

Keywords: Islamic Education; Environmental Care; Eco-theology; Archipelago; Research and Development

INTRODUCTION

The global environmental crisis has become a multidimensional problem that directly affects the sustainability of human life. The Sixth Assessment Report of the Intergovernmental Panel on Climate Change states that human activity has raised global temperature by approximately 1.1°C above the 1850–1900 level, and that the 1.5°C threshold is likely to be reached within two decades unless emissions are substantially reduced (Intergovernmental Panel on Climate Change (Arias et al., 2021: Masson-Delmotte et al., 2021). In Indonesia, only 6.39% of coral reefs are in excellent condition, whereas 35.15% are in poor condition (Lembaga Ilmu Pengetahuan Indonesia (Titaheluw et al., 2024), and about 0.62 million of the country's 6.8 million tons of plastic waste enter the sea each year (Kementerian Lingkungan Hidup dan Kehutanan [KLHK], 2020). These figures show that the environmental crisis is not merely a technical problem but also a crisis of values and ethics in the relationship between humans and nature (World Commission on Environment and Development(Wced, 1987), which gives education a strategic role in building ecological awareness.

As an archipelagic country, Indonesia faces distinctive environmental problems, such as coastal abrasion, sea-level rise, coral reef damage, and unsustainable resource exploitation. These conditions call for education that is not only informative but also transformative and contextual. Islamic education has a normative basis for this role. Humans are positioned as *khalifah fi al-ardh* (vicegerents on earth) responsible for maintaining the balance of nature (Yafie, 2006), nature is regarded as a trust (*amanah*) from God for which humanity is accountable(Khalid, 2002), and environmental destruction is prohibited, as stated in the Qur'an: وَلَا تُفْسِدُوا فِي الْأَرْضِ بَعْدَ إِصْلَاحِهَا ("And do not cause corruption on the earth after it has been set in order"; QS. Al-A'raf: 56). This theological perspective can serve as a source of ecological ethics for formal education(Abdillah, 2001).

In practice, however, Islamic Religious Education (*Pendidikan Agama Islam*, PAI) still tends to be normative and doctrinal and to focus on ritual and individual morality (Muhaimin, 2020), so the ecological dimension has not been systematically integrated into learning objectives, content, strategies, and evaluation. Yet the integration of values into a field of study essentially proceeds

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through these curriculum components (Hamalik, 1994), and effective environmental education needs to change how learners think, feel, and act(Tilbury, 2011).

North Halmahera Regency is an archipelagic region of North Maluku with a long coastline, where most settlements lie along the coast and on small islands (Badan Pusat Statistik Kabupaten Halmahera Utara, 2023). The region faces coral reef degradation, coastal pollution from household waste, and pressure on mangrove ecosystems(Dinas Kelautan dan Perikanan Provinsi Maluku Utara, 2022) . At the same time, local communities maintain community-based marine spatial management and customary prohibitions against overexploitation(Hudin et al., 2025) which reflect value-based ecological awareness that has not yet been systematically translated into formal education(Tawari et al., 2020)(Rahmaningtyas et al., 2025). Preliminary observations in several schools and madrasah also showed that coastal issues such as waste management, beach cleanliness, and the use of marine resources were not explicitly integrated into PAI learning.

Previous studies have addressed environmental education in Islam, but they are generally conceptual or literature-based (Mahendra & Murtaho, 2025), focus on a single school (Fahlawi & Pertiwi, 2025) or a particular program (Bahtiar et al., 2025), and do not place the sea and coast at the center of learning. To the authors' knowledge, no integration model designed specifically for the archipelagic context of North Halmahera is yet available. This study therefore aims (1) to describe the current condition and practice of integrating environmental care values into PAI in North Halmahera Regency, and (2) to design an integration model that is contextual to the region's archipelagic characteristics. As a development study, the quality of the model must be assessed through its validity, practicality, and effectiveness (Nieveen, 1999); this article reports the needs analysis and model design stages, while testing of these three criteria is planned for the next stage.

LITERATURE REVIEW

Islamic Eco-theology and Value Integration in Learning

Islamic eco-theology rests on the concepts of *tawhid*, *khalifah*, *amanah*, *mizan* (balance), and the prohibition of *fasad fi al-ardh* (corruption on earth), which link faith with ecological responsibility (Zabidi et al., 2021) To prevent these values from remaining mere discourse, they need to be translated into learning through an integration interconnection paradigm between religious sciences and the natural and social sciences (Hidayat, 2014). Lickona's, (1992) character education framework helps to interpret this process through three dimensions, namely moral knowing, moral feeling, and moral action, which correspond to the cognitive, affective, and practical dimensions of education for sustainable development (Tilbury, 2011)

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Previous Studies

Tohawi et al. (2024) reviewed the integration of environmental education (Eco-Islam) into the PAI curriculum, while Mahendra & Murtaho, (2025) identified the principles of *khalifah*, *amanah*, and *mizan* as foundations of ecological ethics, although at a conceptual level. Fahlawi & Pertiwi, (2025) found that in an Islamic junior high school in Central Lombok, environmental issues were still limited to ritual and personal health. Wati et al., (2025) formulated a PAI curriculum model based on ecopedagogy, Bahtiar et al., (2025) examined the integration of Eco-Sufi values through the Adiwiyata Madrasah program, and Noor & Anwar, (2025) studied Qur'an- and Hadith-based environmental education in primary schools. These studies strengthen the theoretical and practical foundations, but none has developed a learning model that starts from the marine and coastal problems of archipelagic regions. This is where the present study positions its contribution.

METHOD

This study used a Research and Development approach adapted from the ADDIE model (Analysis, Design, Development, Implementation, Evaluation)(Aldoobie, 2015) within a mixed-methods design that combines quantitative and qualitative data (Creswell, 2007). This article reports the needs analysis and model design stages. The study was conducted in schools and madrasah in North Halmahera Regency, namely MIS At-Taqwa Malifut, MIS Al-Ansar Popilo, SDN Popilo, SD Alhaerat Kao, MIN 1, and MIN 2 Halmahera Utara.

Participants were selected purposively (Sugiyono, 2019) and comprised five PAI/religious education teachers, six school and madrasah principals (five of whom completed all quantitative sections of the questionnaire), and six students. Data were collected through five-point Likert-scale questionnaires (the teacher questionnaire contained 21 statements), semi-structured interviews, observation of classroom learning and the school environment, and documentation of PAI lesson plans and teaching materials.

Questionnaire data were analyzed descriptively by calculating mean scores and percentages of the maximum score (mean/5 × 100%), which were categorized as very high (>85%), high (76–85%), and fairly high (≤75%). Interview, observation, and documentation data were analyzed through data condensation, data display, and conclusion drawing (Miles et al., 2014), with source and method triangulation to ensure credibility (Moleong, 2017) Quantitative and qualitative results were integrated so that questionnaire figures were explained by interview findings. The model design was developed from these findings with reference to the framework of Islamic eco-theology and the curriculum components (objectives, content, strategies, and

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evaluation).

RESULTS

Condition and Practice of Environmental Care Value Integration

Overall, teachers held a positive perception of integrating environmental care values into PAI, with an overall mean of 4.17 (83.5%). The highest scores were for school support and the need for model development (4.33; 86.6%), whereas the lowest was for teacher knowledge and competence (3.78; 75.6%), particularly experience of training in environmental education based on Islamic values, which scored only 3.00 (Table 1).

Table 1. Teachers' Responses to the Integration of Environmental Care Values into PAI

No.	Aspect	Mean	Percentage	Category
1	Objectives of environment-based PAI learning	4.22	84.4%	High
2	Teaching materials	4.06	81.2%	High
3	Learning strategies and methods	4.22	84.4%	High
4	Teacher knowledge and competence	3.78	75.6%	Fairly high
5	School support and learning environment	4.33	86.6%	Very high
6	Student response and interest	4.28	85.6%	Very high
7	Need for model development	4.33	86.6%	Very high
	Overall mean	**4.17**	**83.5%**	**High**

The interviews showed that environmental care values were in fact already present in learning but remained implicit and had not been designed as a systematic part of lesson materials. Teachers linked them to cleanliness as part of faith, the concept of *khalifah*, *amanah*, and the prohibition of causing corruption on earth. Content in Creed (*Akidah*), Morals (*Akhlak*), Qur'an–Hadith, and Jurisprudence (*Fikih*) had been connected to environmental issues, but teaching materials remained normative and did not include local ecological problems such as plastic waste on the coast and in the sea, marine ecosystem damage, abrasion, and the felling of coastal vegetation. The strategies used included contextual teaching and learning, problem-based learning, habituation, role modeling, environmental observation, community clean-ups, tree planting, and waste sorting, although their application was not uniform. Attitudes toward environmental care were still assessed through informal observation without structured

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instruments.

Support from School and Madrasah Principals

Institutional support was in the very high category, with an overall mean of 4.65 (92.9%). The need for model development received the highest score (4.87; 97.4%), followed by support for PAI teachers and school environmental culture and programs (4.73; 94.6% each) (Table 2). Activities such as Clean Friday, greening, and waste sorting were already under way, but most schools did not yet have a written program integrating environmental education with PAI. Plastic waste was cited as the most pressing problem by four of the five teachers and by all principals, alongside abrasion, marine ecosystem damage, felling of coastal trees, and destructive fishing.

Table 2. School and Madrasah Support for the Integration of Environmental Care Values

No.	Aspect	Mean	Percentage	Category
1	School policy and environment-based vision	4.33	86.6%	Very high
2	Support for PAI teachers	4.73	94.6%	Very high
3	Facilities, infrastructure, and funding	4.60	92.0%	Very high
4	School environmental culture and programs	4.73	94.6%	Very high
5	Partnerships with external parties	4.30	86.0%	Very high
6	Need for model development	4.87	97.4%	Very high
	Overall mean	**4.65**	**92.9%**	**Very high**

Student Responses

The six students responded very positively to PAI learning related to the environment (mean = 4.69; 93.8%) (Table 3). They could identify plastic waste in the sea and on beaches, tree felling, coral reef damage, and destructive fishing, and they linked environmental care to faith, *amanah*, worship, and the responsibility of being a *khalifah*. They expressed a preference for direct, contextual learning, such as cleaning beaches, planting trees, learning outside the classroom, and social activities.

Table 3. Students' Responses to Environment-Based PAI Learning

No.	School	Mean	Percentage	Category
1	MIS At-Taqwa Malifut	5.00	100%	Very high
2	SD Alhaerat Kao	4.29	85.8%	Very high

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3	MIN 1 Halmahera Utara	5.00	100%	Very high
4	SDN Popilo	5.00	100%	Very high
5	MIS Al-Ansar Popilo	5.00	100%	Very high
6	MIN 2 Halmahera Utara	3.86	77.2%	High
	Overall mean	**4.69**	**93.8%**	**Very high**

Design of the Integration Model

Based on these findings, an integration model was designed that connects local environmental problems with the values of *tawhid*, *khalifah*, *amanah*, *mizan*, and the prohibition of *fasad*. Learning proceeds through the eight stages shown in Table 4, from identifying local environmental problems to evaluating students' knowledge, attitudes, and actions.

Table 4. Stages of the Model for Integrating Environmental Care Values into PAI

No.	Stage	Function in learning	Character dimension
1	Identifying local environmental problems	Bringing students into contact with the ecological realities around them (beach waste, abrasion, etc.)	Moral knowing
2	Exploring environmental conditions	Direct experience through observation or documentation of the environment	Moral knowing
3	Relating to the Qur'an and Hadith	Normative and theological grounding of the observed problem	Moral knowing
4	Analysis through Islamic values	Examining the problem through khalifah, amanah, mizan, and the prohibition of fasad	Moral feeling
5	Planning ecological action	Designing concrete actions suited to the school and community context	Moral action
6	Taking action	Carrying out activities (e.g., cleaning beaches, sorting waste, planting trees)	Moral action
7	Islamic and ecological reflection	Reflecting on the meaning of the action and fostering responsibility	Moral feeling
8	Evaluating knowledge, attitudes, and actions	Assessing all three dimensions of achievement, not only cognitive	All three

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		outcomes	

DISCUSSION

Existing Integration: Implicit, Partial, and Dependent on Teacher Initiative

The findings show that the integration of environmental values into PAI in North Halmahera is already taking place in objectives, content, strategies, and teachers' role modeling, but has not yet become a coherent learning system. Through Lickona's,(1992) framework, teachers' practices already display elements of moral knowing, for example when teachers explain that keeping the environment clean and not littering are behaviors consistent with Islamic teaching, while habits such as Clean Friday and tree planting are early forms of moral action. However, these attitudes and actions are not designed and evaluated in a structured way, which leaves a gap between the values students know and the values they enact. This pattern is consistent with Fahlawi & Pertiwi, (2025), who found that environmental issues were limited to ritual and personal health, and with Muhaimin's, (2020) critique of the dominance of normative approaches in PAI.

This gap is not caused by institutional resistance. The very high level of principal support and the strong need for a model suggest that what is missing is instruments and a learning sequence, not willingness. The main obstacles are teaching materials that do not yet include local ecological problems, teachers' limited competence in Islamic eco-theology (training score of 3.00), and the absence of attitude assessment instruments. Model development therefore cannot target students alone; it must also include guidance and support for teachers.

A Contextual Model and Its Novelty

The designed model brings together theological, pedagogical, ecological, and contextual dimensions. The theological dimension draws on *tawhid*, *khalifah*, *amanah*, *mizan*, and the prohibition of *fasad* (Mujiburrahman, 2016; Yafie, 2006); the pedagogical dimension is a problem- and project-based learning sequence that moves from knowledge to awareness and action; and the ecological and contextual dimensions place the sea, beaches, and coast of North Halmahera as learning resources. In this sequence, an issue such as plastic waste on the beach is not merely explained as a matter of cleanliness but is analyzed as part of humanity's responsibility as *khalifah*. The eight-stage structure also maps onto Lickona's (1991) three dimensions and is consistent with the demand that environmental education combine cognitive, affective, and practical dimensions (Tilbury, 2011).

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Compared with earlier studies, the main contribution of this model lies in operationalization. Wati et al., (2025) and Bahtiar et al., (2025) offer general curriculum models and green madrasah programs, whereas Mahendra & Murtaho, (2025) and Tohawi et al., (2024) remain at the conceptual level. The present model translates eco-theological values into concrete learning stages rooted in the archipelagic context, in line with the view that meaningful education is rooted in the socio-cultural context and uses the environment as a learning resource (Tohawi et al., 2024). Local wisdom such as customary prohibitions on marine exploitation (Herdiana et al., n.d.) can also bridge Islamic values and community realities, although its use needs to be tested during implementation.

Limitations

This study has several limitations. The number of participants was small (five teachers, six principals, and six students), so the findings are not intended for statistical generalization. In addition, the validity, practicality, and effectiveness of the model (Nieveen, 1999) have not yet been tested; any claim about the model's quality is therefore still a conceptual design based on needs-analysis data.

CONCLUSION

The integration of environmental care values into PAI in North Halmahera Regency is already taking place through character-building objectives, content, contextual strategies, role modeling, and habituation, but it remains implicit, partial, and dependent on teacher initiative because of limited contextual teaching materials, teacher competence, and attitude assessment, even though school support and student responses are very high. Based on these findings, an eight-stage model was designed that links marine and coastal environmental problems with Islamic eco-theological values through experience, analysis, action, and reflection.

In practical terms, teachers are advised to connect PAI content systematically with coastal ecological problems, and schools need to provide teaching materials, media, and space for ecological activities. Future research should test validity through expert judgment, practicality through teacher trials, and effectiveness by measuring students' knowledge, attitudes, and actions across various archipelagic schools.

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