

PAI Learning Media Based on Dayak Local Wisdom and Ecotheology in Health Vocational Schools

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ABSTRACT

This study develops Islamic Religious Education (IRE) learning media based on Dayak local wisdom and eco-theology to strengthen ecological awareness at the Muhammadiyah Health Vocational School in Palangka Raya. The research employs a modified Borg & Gall R&D model through six stages, including preliminary study, planning, product development, testing, revision, and field implementation. Data were collected through observation, interviews, questionnaires, and documentation, and analyzed using qualitative and quantitative methods. Findings show the media is highly feasible, with expert validation scoring 91% for material and 88% for media design. Student responses (85%) confirmed its effectiveness in linking Islamic teachings with Dayak values—Tatadanya, Huma Betang, and Pantang Larang—in fostering environmental responsibility. Moreover, ecological awareness among students increased by 27% after implementation. The integration of Islamic eco-theology and Dayak cultural wisdom not only enhanced students' conceptual understanding but also supported the internalization of ecological values in cognitive, affective, and psychomotor domains. This study contributes to the development of IRE media by demonstrating the value of integrating religion, local culture, and environmental education for character building and sustainability.

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1. INTRODUCTION

The current environmental crisis has become one of the most pressing global issues, with climate change, deforestation, pollution, and forest fires as tangible symptoms that threaten the sustainability of human life and ecosystems. The Intergovernmental Panel on Climate Change (IPCC, 2022) report

confirms that human activities, particularly the excessive exploitation of natural resources, are the primary drivers of ecological damage. This situation has serious consequences, ranging from increased ecological disasters, declining health quality, to the threat of food and clean water crises. In Indonesia, these impacts are acutely felt. Central Kalimantan, particularly Palangka Raya, faces ecological disasters in the form of haze caused by forest and peatland fires almost every year. These disasters not only cause environmental damage but also lead to mass health issues, disrupt social activities, and result in significant economic losses (Sukumaran, 2022). Dayak culture is a rich and diverse tradition that encompasses many aspects of daily life, including language, art, music and spiritual beliefs (Anwar et al., 2025). This situation highlights the critical importance of fostering ecological awareness among the public from a young age. Education must not only serve as a means of knowledge transfer but also as an instrument for cultivating an environmentally conscious character that is internalized in attitudes and concrete actions (Indriharta et al., 2024).

Within this framework, Islamic Religious Education (PAI) holds significant potential. Islam teaches that humans are stewards of the earth with the responsibility to preserve and nurture nature (QS. Al-Baqarah: 30), and prohibits environmental destruction (QS. Al-A'raf: 56). This principle aligns with the concept of eco-theology, which views the relationship between humans and nature not merely as a utilitarian one, but also as a spiritual and moral relationship (Miao & Nduneseokwu, 2025). However, the practice of PAI learning in schools still tends to be normative-doctrinal, emphasizing the memorization of verses and hadiths, and lacks space to connect religious teachings with contemporary ecological issues (Nugroho et al., 2025). As a result, students' understanding of Islamic values often stops at the textual level and has not yet truly manifested in everyday ecological behaviour (Zabidi et al., 2021).

On the other hand, the Dayak community in Central Kalimantan has a rich local wisdom that is steeped in ecological and social values that have been passed down from generation to generation (Murhaini & Achmadi, 2021). The *Tatadanya* philosophy emphasizes rules for living in harmony between humans, nature, and the Creator. This concept positions humans not as absolute rulers but as part of an ecosystem whose balance must be maintained. *Huma Betang*, as the philosophy of the longhouse, represents values of solidarity, consultation, and collective responsibility to care for nature for the common good. *Pantang Larang*, meanwhile, contains customary norms and prohibitions that safeguard the sustainability of forests, rivers, and land from excessive exploitation. Upon closer examination, these values actually have a strong connection with the principles of Islamic eco-theology, which is a theological perspective emphasizing that the relationship between humans and nature is part of worship and the fulfilment of the responsibility of being stewards on Earth (Hidayatulloh et al., 2024).

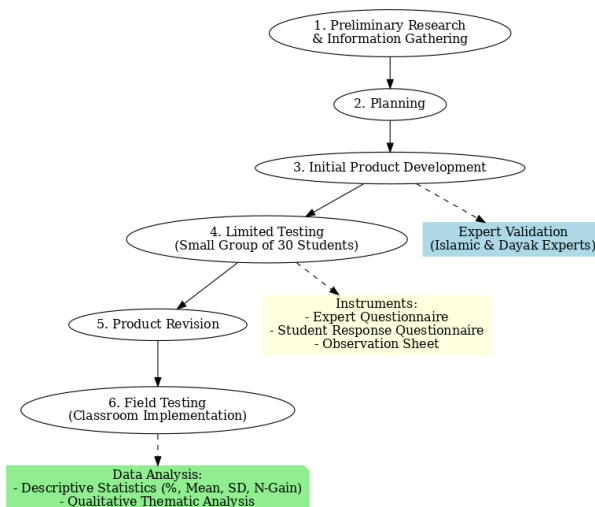
Unfortunately, this rich local wisdom of the Dayak people is still rarely integrated into formal education, including Islamic Education (PAI). This disconnects students from their cultural and environmental context, making religious education feel abstract, normative, and less applicable (Liagkis, 2022). Yet, the synergy between Islamic teachings and local wisdom has the potential to create a more contextual, relevant, and meaningful educational model, especially in fostering ecological awareness among the youth of Central Kalimantan (Wardhani et al., 2024). Previous studies have indeed touched on the importance of approaches based on local wisdom and eco-theology, but they remain partial. Rico et al., (2022) found that the philosophy of *Huma Betang* is effective in fostering a sense of community and tolerance in the social life of the Dayak people. Ibrahim, (2021) proved that the *Pantang Larang* practice functions as a traditional mechanism that preserves forests and rivers. Meanwhile, Rohman et al., (2024) emphasized that Islamic eco-theology is capable of forming a new awareness of the importance of environmental ethics in Islamic education. However, these studies stand alone: most focus only on aspects of local culture, while others emphasize the theological side.

To date, there have been few attempts to integrate these two approaches into concrete learning media that can be used directly in the classroom. This has created an important research gap that needs to be addressed: how can we develop PAI learning media that connects Islamic values with Dayak local wisdom so that it is more contextual, applicable, and effective in fostering ecological awareness among students? This question forms the basis and novelty of this research.

The integration of Islamic Religious Education (PAI), local wisdom, and ecotheology remains a relatively new area of study. Previous research has generally addressed cultural or theological aspects separately, without offering a holistic integration. The novelty of this research lies in the development of PAI learning media that combines Dayak local wisdom—*Tatadanya*, *Huma Betang*, and *Pantang Larang*—with Islamic eco-theology. This integration creates more contextual learning by linking Islamic values to students' cultural backgrounds and lived experiences. The uniqueness of this study also rests on its application at Muhammadiyah Palangka Raya Health Vocational School, where ecological awareness is not only a moral imperative but also directly relevant to professional preparation. As future health workers, students must understand the interconnection between human health and environmental sustainability. Building this awareness from an early stage—including within the family and school environment—is essential for preparing responsible individuals who can interact constructively with society (Hamdanah et al., 2024). Theoretically, this study enriches Islamic education scholarship by introducing an integrative, interdisciplinary framework that connects religion, local culture, and environmental studies. Practically, it provides innovative educational materials that PAI teachers can use to strengthen ecological awareness. Socio-culturally, it promotes the preservation of local wisdom while addressing pressing ecological challenges in disaster-prone areas. Thus, this research contributes not only academically but also as a real solution for nurturing a generation that is religious, ethical, and environmentally conscious.

2. METHODS

This study employed a Research and Development (R&D) approach by adapting the modified Borg & Gall model into six stages: (1) preliminary research and information gathering, (2) planning, (3) initial product development, (4) limited testing, (5) product revision, and (6) field testing. This model was chosen because it aligns with the objective of producing empirically validated educational media in the form of interactive modules and contextual educational videos (Niekrenz & Spreckelsen, 2024).



The research subjects were 65 students from the 11th grade (class A and B) of Muhammadiyah Health Vocational School in Palangka Raya (academic year 2024/2025), selected purposively. This number was considered appropriate for the trial phase because it represented a typical classroom size in the school context, ensuring ecological validity. The focus on health vocational students was deliberate, as ecological awareness is directly relevant to their professional formation in linking environmental sustainability with human health. To strengthen content validity, two Islamic Education experts and a Dayak cultural expert served as validators. The research instruments consisted of: (1) expert validation questionnaires assessing content accuracy, theological-cultural appropriateness, language clarity, and design feasibility; (2) student response questionnaires evaluating practicality, engagement, and perceived learning benefits; and (3) observation sheets documenting student activity during learning. All instruments underwent expert review to ensure construct validity. Data were collected through documentation, observation, and questionnaires (Mazhar, 2021). Quantitative data (expert validation and student responses) were analysed using percentage scores and descriptive statistics (mean, standard deviation, and N-Gain for ecological awareness improvement), while qualitative data (expert feedback and observation notes) were thematically analysed to refine the product. This combination of statistical and qualitative analysis provided a more comprehensive evaluation of the feasibility, effectiveness, and practicality of the developed PAI learning media (Sripathi et al., 2024).

3. FINDINGS AND DISCUSSION

Media Suitability

Efforts to improve teachers' teaching readiness also involve planning classroom learning activities so that teachers can determine the right strategy to achieve educational goals (Sarifah et al., 2024). One of the preparations that teachers make is the learning media that will be used. Based on the results of expert validation, it shows that the learning media developed has met the eligibility criteria in terms of substance and technical. The material expert validation obtained a score of 91% which was categorized as very suitable, while the media expert validation obtained a score of 88% which was also categorized as very suitable. This finding shows that the learning media is not only in accordance with the principles of Islamic ecotheology and Dayak local wisdom, but also relevant to the characteristics of vocational high school students who prefer contextual and applied approaches.

Table 1. Expert Validation Results for Learning Media

Assessment Aspects	Score (%)	Category
Subject Matter Expert Validation	91	Highly Recommended
Media Expert Validation	88	Highly Recommended

The high feasibility demonstrated by the experts indicates that the integration of Dayak local wisdom values into PAI media is pedagogically and culturally acceptable. This finding answers the main research question in the introduction, namely how to build students' ecological awareness through learning media that connects Islamic teachings with local values. Pedagogically, this approach is in line with Vygotsky's constructivist theory, which emphasizes the importance of scaffolding through socio-cultural contexts to help students better understand abstract concepts (Puntambekar, 2022). By incorporating Dayak local wisdom, students receive cultural scaffolding that enables Islamic teachings on ecology to be understood not only textually but also connected to daily practices. This supports Tilbury's argument about education for sustainable development (ESD), that successful environmental education is contextual, participatory, and rooted in local culture (Oe et al., 2022).

From a cultural perspective, this study is consistent with Aisih et al., (2025) findings, which show that contextual media in PAI learning can internalize environmental ethics, not just as cognitive knowledge. In line with this, Silalahi & Purwanto, (2025) emphasizes that the philosophy of *Huma Betang* plays a role in fostering values of togetherness and collective responsibility, which can be translated into ecological awareness. Noviana et al., (2023) also found that the practice of *Pantang Larang* is effective in maintaining the balance of forest and river ecosystems. This study offers a novel contribution because it not only highlights one aspect of local culture but also systematically integrates *Tatadanya*, *Huma Betang*, and *Pantang Larang* into educational media (interactive modules and videos). This integration reinforces the concept of Islamic eco-theology, which positions humans as stewards with ecological responsibilities (QS. Al-Baqarah: 30; QS. Al-A'raf: 56). Thus, this study enriches the literature on the integration of religion and local culture in ecological education.

The broader implication of these findings is the need for the design of PAI educational media in various regions of Indonesia that integrate local wisdom as an environmental education strategy. This aligns with the ideas of Wijayanti et al., (2025), who emphasize that combining local knowledge with formal education enhances the relevance of learning and strengthens cultural identity. Therefore, the active involvement of various parties, including religious leaders and the government, is needed to manage more inclusive social interactions and build a civilized and environmentally conscious society (Muttaqo & Anwar, 2025). Additionally, the results of this study can serve as a foundation for developing a more applicable local wisdom-based curriculum in shaping environmentally conscious young generations. Future research directions could develop digital technology-based media such as mobile learning applications or augmented reality that are more interactive, enabling local wisdom values to be accessed more widely and appealing to digital native generations.

Student Responses

Student responses to the use of learning media were very positive. The questionnaire results showed that 85% of students stated that this media helped them understand the connection between Islam and Dayak cultural values in protecting the environment. Meanwhile, 15% of students felt that the media was not very helpful, especially due to limited digital access for some students.

Table 2. Student Responses to Learning Media

Response Category	Percentage (%)
Helps Understand Islam–Dayak	85
Does Not Help	15

The positive response of these students shows that the integrative approach has successfully increased the relevance of learning to real life. The integration of Dayak cultural stories into PAI material makes learning more contextual, in line with the principles of contextual teaching and learning (CTL), which emphasizes the connection between lesson material and everyday experiences (Fatgehipon, 2023). Thus, students not only understand Islamic teachings cognitively but are also able to see their relevance in preserving the environment through local wisdom. These results also support Karliani & Triyani, (2021) findings that the *Huma Betang* philosophy fosters values of togetherness and can be used as a means of character education. By combining these values of togetherness with the teachings of *ukhuwah Islamiyah*, students are encouraged to internalize collective responsibility for environmental sustainability.

In line with this, Altassan, (2023) emphasizes that effective environmental education must connect global knowledge with local contexts in order to change behaviour. As for the 15% of students who felt

that the media was not helpful, they were generally constrained by digital access, indicating that the digital divide remains a challenge in the implementation of technology-based learning media. This finding is similar to Basar et al., (2021) research, which shows that limited digital facilities often hinder the effectiveness of interactive learning media in secondary schools. The implication of this finding is that learning media based on local wisdom and Islamic eco-theology can be a strategic means of fostering ecological awareness among students. However, school infrastructure and educational policies are needed to ensure that technology-based media is accessible to all. Future research could explore the development of flexible learning media, such as combining digital versions with printed modules, so that students with limited access to technology can also benefit (Santiago Jr et al., 2021).

Integration of Dayak Local Wisdom and Islamic Eco-Theology

The integration of Dayak local wisdom into PAI learning media is carried out by combining three main elements, namely *Tatadanya*, *Huma Betang*, and *Pantang Larang*, with the principles of Islamic eco-theology. This integration aims to ensure that students not only understand religious teachings normatively, but are also able to see their relevance to the local traditions they have known since childhood. This successful implementation reflects the commitment of PAI teachers in encouraging the creation of a learning atmosphere that is full of empathy, respect for diversity, and supports the holistic development of learners (Rahmawati et al., 2025)

Table 3. Integration of Dayak Local Wisdom with Islamic Eco-theology

Elements of Local Wisdom	Core Values	Integration with Islam	Implementation in PAI Media
<i>Tatadanya</i>	Harmony between humans and nature	In line with the principle of <i>adl</i> (justice) in preserving ecology (QS. Al-A'raf: 56)	Narrative module on rules for balanced living
<i>Huma Betang</i>	Togetherness, deliberation, responsibility	Parallel to <i>ukhuwah Islamiyah</i> and the concept of khalifah on earth (QS. Al-Baqarah: 30)	Story-based community learning videos
<i>Pantang Larang</i>	Prohibition of exploitation of forests, rivers, and land	Reinforced by the Prophet's hadith about the prohibition of destroying nature (<i>la dharar wa la dhirar</i>)	Interactive discussions on ethical prohibitions

This integration demonstrates the epistemological synchronization between Islamic teachings and Dayak local wisdom. Islam places humans as caliphs on earth with the responsibility of preserving nature (Hasan, 2022), while Dayak local wisdom emphasizes the importance of a harmonious relationship between humans, nature, and ancestral spirits (Usop & Rajiani, 2021). This synchronization shows that Islamic values and Dayak customs are both oriented towards sustainability, even though they originate from different epistemological bases religion and local tradition. Thus, the integration of the two not only enriches students' understanding of ecological values but also strengthens their ecological awareness within a spiritual and cultural framework. These results align Hidayat et al., (2025) research, which shows that *Pantang Larang* effectively preserves the sustainability of forests and rivers, and Loi et al., (2023) emphasis that *Huma Betang* fosters a sense of community and social solidarity. However, this study offers a new contribution because it does not merely examine local

values in isolation but systematically integrates them with Islamic eco-theology in the form of ready-to-use educational media for schools.

Pedagogically, this integration aligns with Vygotsky's socio-cultural learning theory, which asserts that learning is more meaningful when connected to the social and cultural context of learners (Shah, 2025). By presenting real-life stories like *Tatadanya* and the *Huma Betang* way of life, students find it easier to understand the abstract teachings of Islam because they are directly connected to their own cultural experiences. This aligns with Suri & Chandra, (2021) perspective on multicultural education, which states that a curriculum based on local culture can enhance the relevance of learning while fostering a strong sense of identity in students.

Implementation in the Classroom

1. *Tatadanya* and QS. Al-Baqarah: 30. In the module, students read the story of *Tatadanya*, which contains rules for living in harmony with nature, then discuss it with the Qur'anic verse about the role of humans as khalifah. The teacher facilitates reflection: how can these customary rules be practiced in modern life, for example in managing waste or maintaining school cleanliness?
2. *Huma Betang* and the Concept of Islamic Brotherhood. A video shows the life of the Dayak community in a longhouse (*Huma Betang*) that emphasizes togetherness. The teacher then links this to the Prophet's hadith on the importance of mutual cooperation. Students are invited to undertake a small project in the form of a green class community service by planting medicinal plants around the school as a symbol of collective responsibility.
3. Taboos and the Prophet's Hadith. The module includes customary prohibitions such as not cutting down trees around springs or poisoning rivers. The teacher then links this to the Prophet's hadith about the prohibition of damaging nature. Students are invited to observe the environment around the school, record potential violations of "modern prohibitions" (e.g., littering), and then discuss solutions.

This integration demonstrates that education based on local culture not only preserves the Dayak ethnic identity but also serves as a strategic tool in building ecological awareness among the younger generation. As emphasized by Zakharova et al., (2021), effective environmental education must connect global knowledge with local wisdom to bring about real ecological behavioural change. Therefore, Islamic educational institutions need to develop curricula, guidance services and mentoring programs that explicitly accommodate spiritual approaches to dealing with academic pressures, in order to create a more supportive and holistic learning environment for students (A'ini et al., 2025). Thus, this research not only contributes to the academic field of PAI but also to efforts to build a paradigm of education for sustainable development relevant to the Indonesian context.

The Effectiveness of Media in Raising Ecological Awareness

The integration of Islamic values with Dayak local wisdom has proven effective in creating social harmony and facilitating multicultural education (Muttaqo & Saihu, 2025). The results of the study show a 27% increase in students' ecological awareness after using Dayak local wisdom and Islamic eco-theology-based learning media compared to before its use. This increase was not only evident from the questionnaire results, but also from observations of student activities, such as the emergence of critical discussions on environmental issues and initiatives to create small projects related to classroom cleanliness and greening the school environment.

Table 4. Increase in Students' Ecological Awareness

Indicators of Ecological Awareness	Before (%)	After (%)	Increase (%)
Knowledge of Islam and the environment	62	85	+23
Understanding of Dayak traditional values regarding ecology	58	84	+26
Attitudes of environmental concern	55	80	+25
Concrete actions (ecological practices)	50	77	+27
Average increase	56,25	81,5	+27

The study recorded a 27% increase in students' ecological awareness after the use of integrative learning media. This improvement reflects the effectiveness of combining Islamic eco-theology with Dayak local wisdom in internalizing ecological values across the cognitive, affective, and psychomotor domains. Cognitively, students developed a deeper understanding of the link between Islamic principles and Dayak traditions in preserving nature. Affectively, they demonstrated ecological concern and responsibility, while psychomotor learning encouraged environmentally friendly behaviors in daily life. These findings can be explained through Ausubel's Meaningful Learning theory, in which Dayak traditions—*Tatadanya*, *Huma Betang*, and *Pantang Larang*—served as anchoring ideas for Islamic eco-theological concepts (Bryce & Blown, 2024).

They also resonate with Kolb's Experiential Learning theory (Wijnen-Meijer et al., 2022), as students learned through experiences rooted in their cultural environment. Compared with Karman et al., (2023), who demonstrated the role of eco-theological media in shaping environmental ethics, this study advances the field by systematically integrating local culture into formal educational media. It also extends Masturin's (2025) normative focus on Islamic education toward practical ecological transformation, while reinforcing Shutaleva's (2023) view that local culture is essential for turning ecological knowledge into behaviour. Thus, Islamic Religious Education is not only a means of mastering texts, but also as a means of empowerment to form learners who are critical, active, and contributed to environmental conditions (Muttaqo & Erawati, 2025).

The implications of these findings are multifaceted. Theoretically, this study contributes an interdisciplinary model of Islamic education that unites religion, local culture, and ecology—an area rarely explored in depth. This reinforces the understanding that contextual learning based on real-life experiences is more effective in shaping attitudes and behaviours (Parhan et al., 2024). Practically, it provides PAI teachers with validated media tools to strengthen ecological awareness, offering a contextualized learning approach aligned with 21st-century education competencies (Mazrur et al., 2024). Socio-culturally, it promotes the preservation of Dayak wisdom while addressing environmental challenges in disaster-prone regions. Globally, the study enriches the discourse on religion and environmental education by demonstrating how faith-based ecological values can be localized through cultural frameworks, making this model adaptable in other regions where ecological crises demand faith-sensitive and culturally grounded responses. Thus, the integration of Islamic eco-theology and Dayak local wisdom not only enhances ecological literacy in vocational health education but also provides a replicable framework for strengthening the synergy between religion, culture, and environmental sustainability worldwide.

4. CONCLUSION

This study proves that integrative learning media based on Islamic eco-theology and Dayak local wisdom is effective in increasing the ecological awareness of vocational high school students. Expert validation shows high feasibility (91% of material, 88% of media), while 85% of student responses

confirm that the media helps them understand the connection between Islamic teachings and Dayak traditional values in protecting the environment. Furthermore, there was a 27% increase in students' ecological awareness after using the media. The integration of the values of *Tatadanya*, *Huma Betang*, and *Pantang Larang* with Islamic principles regarding human responsibility as stewards of the earth demonstrates epistemological synchronization between religion and local culture. This not only strengthens conceptual understanding but also promotes the internalization of ecological values in cognitive, affective, and psychomotor domains. These findings contribute new insights to the development of PAI educational media, particularly through an approach emphasizing synergy between religion, local culture, and environmental education.

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