

INTEGRATION OF ENVIRONMENTAL FIQH MATERIAL THROUGH THE UTILIZATION OF MUDGROUPS CULTIVATION AS A LEARNING RESOURCE FOR ISLAMIC RELIGIOUS EDUCATION AT SMA MUHAMMADIYAH 04 MEDAN

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Abstract: *This study aims to analyze the integration of environmental fiqh material through the use of mangrove crab cultivation as a learning resource for Islamic Religious Education at SMA Muhammadiyah 04 Medan. The background of this study departs from the need for contextual, applicable, and responsive Islamic Religious Education learning to address ecological crisis issues. Environmental fiqh as a development of contemporary fiqh studies contains the principles of hifz al-bi'ah (environmental preservation), the responsibilities of the caliph, and the ethics of sustainable use of natural resources. However, its implementation in schools is still predominantly theoretical and does not touch the realities of students' lives. This study uses a qualitative approach with a case study design. Data were obtained through observation of learning activities, interviews with teachers and students, and documentation of teaching materials. The results show that the integration of mangrove crab cultivation as a learning resource can strengthen the understanding of environmental fiqh concepts through direct experience. Students not only understand the laws related to coastal ecosystem preservation, but also internalize the values of ecological responsibility, cooperation, and production ethics from an Islamic perspective. Learning becomes more meaningful because it connects normative arguments with environmentally friendly cultivation practices. These findings confirm that utilizing local potential as a socio-religious laboratory can enhance the relevance of Islamic Religious Education (PAI) learning while fostering ecological awareness based on Islamic values. This integration contributes to strengthening character education and fostering sustainable religious-ecological attitudes in students.*

Keywords: *Environmental Jurisprudence, Mangrove Crab Cultivation, Contextual Learning Resources, Islamic Religious Education, Ecological Education.*

Introduction

The environment currently faces serious challenges due to ecosystem degradation, climate change, and unsustainable resource exploitation. This ecological crisis is not only a technical issue but also an ethical and religious issue, including in the educational context. Islamic Religious Education (PAI), as a subject that functions not only to transfer theoretical knowledge about Islam but also to shape the moral and spiritual character of students, has strategic potential to internalize the values of environmental conservation. The integration of environmental fiqh principles (fiqh al-bi'ah) in PAI can facilitate the formation of ecological awareness based on Islamic teachings on *khalifah* (trust) and *mizān* (balance) as a moral foundation for maintaining environmental balance. Environmental fiqh studies show that instilling environmental preservation values through an Islamic value framework can build strong ecological responsibility in both formal and informal educational contexts (Rizqi, DI, Kasmila, A. et.al., 2025).

The global environmental crisis in the last decade has shown an alarming escalation, marked by climate change, coastal ecosystem damage, deforestation, water and soil pollution, and biodiversity loss. Reports from various international organizations emphasize that environmental issues are no longer solely technical-ecological, but are also closely related to human value systems, ethics, and paradigms in viewing nature. In this context, education plays a strategic role as a medium for transforming the ecological awareness of the younger generation. Education that focuses solely on knowledge transfer without developing ethical and spiritual dimensions tends to fail to shape environmentally responsible characters.

From an Islamic perspective, the relationship between humans and the environment is based on the principles of *khalīfah fī al-ardh* (humans as leaders and guardians of the earth), *mīzān* (balance), and the prohibition of committing *fasād* (damage). These principles were then developed in the study of environmental jurisprudence (*fiqh al-bi'ah*), which places environmental preservation as part of the *maqāṣid al-syarī'ah*, particularly within the framework of protecting life and ecosystem sustainability (Puspitasari et al., 2026). Environmental jurisprudence not only contains legal norms regarding cleanliness or conservation but also integrates moral dimensions, social responsibility, and ecological sustainability into the practices of Muslim life. In the realm of Islamic Religious Education (PAI), the integration of ecological values actually has a strong normative foundation. However, various studies show that its implementation in schools is still predominantly at the cognitive level and does not fully provide a contextual and applicable learning experience. The learning models developed are often lecture-based or text-based, resulting in students understanding environmental conservation concepts theoretically without direct involvement in real-world practice. Studies on the development of *Green Islamic Education* emphasize the importance of an ecopedagogical approach based on environmental jurisprudence to bridge the gap between religious norms and everyday ecological practices (Zaimina & Munib, 2025). This approach encourages participatory, reflective, and action-oriented learning.

The integration of *ecopedagogy* into the Islamic Religious Education curriculum has been shown to improve ecological literacy and build students' religious-ecological awareness when learning is linked to the surrounding environmental context (Wati et al., 2025). This means that contextual Islamic Religious Education learning not only strengthens religious understanding but also encourages the transformation of attitudes and behavior. This aligns with the *experiential learning* paradigm, which emphasizes that direct experience is an effective medium for shaping meaning and internalizing values. However, most previous research has focused on curriculum development, conceptual models, or literature analysis related to the integration of environmental jurisprudence (*fiqh*) in Islamic education. These studies have not explored the integration of environmental jurisprudence through the concrete use of local economic-ecological potential as a learning resource. In other words, there is a gap between normative-conceptual studies and implementation based on productive practices in the school environment.

In the context of Indonesia as an archipelagic nation with extensive coastal ecosystems, one relevant local potential is the cultivation of mangrove crabs (*Scylla spp.*). This cultivation is directly related to the preservation of mangrove forests, which have important ecological functions, such as maintaining the balance of coastal ecosystems, preventing abrasion, and serving as a habitat for various marine biota. Sustainable mangrove crab cultivation practices require an understanding of the ethics of natural resource utilization, ecosystem balance, and collective responsibility for the environment. These values have a strong correlation with the principles of environmental jurisprudence in Islam. Integrating mangrove crab cultivation as a learning resource in Islamic Religious Education learning provides an opportunity to connect normative arguments with real-life ecological practices. Students not only learn the concept of

hiḏ al-bi'ah textually, but also engage in the process of observation, maintenance, and reflection on sustainable cultivation practices. This approach enables the integration of cognitive, affective, and psychomotor dimensions in Islamic Religious Education learning. In addition, learning based on local potential also strengthens the relevance of education to the socio-economic needs of the surrounding community.

Based on the literature review, there are three main gaps that form the basis of the urgency of this research: (1) Conceptual-practical gap: Most studies on environmental fiqh in Islamic education are still conceptual and literature-based, not many have tested concrete implementation at the school level through environmentally based productive activities, (2) Curriculum-locality integration gap: Previous research has mostly developed general curriculum integration models without utilizing local ecological-economic potential as a PAI learning laboratory, and (3) Transformative dimension gap: There are still limited studies that measure how the integration of environmental fiqh through real practices is able to shape the religious-ecological character of students holistically. Thus, research is needed that not only offers a theoretical model of environmental fiqh integration, but also implements it contextually through real activities that have ecological and economic value.

The novelty of this research lies in: (1) Applicative integration model : Developing the integration of environmental fiqh material through mangrove crab cultivation practices as a learning resource based on direct experience (*experiential-based Islamic environmental learning*), (2) Local potential-based approach: Making mangrove crab cultivation a socio-religious laboratory that connects fiqh teachings with coastal ecosystem conservation practices, (3) Strengthening religious-ecological character: Offering a learning framework that integrates theological, ecological, and productive dimensions in one contextual and transformative Islamic Education learning model, and (4) Theoretical and practical contributions: Providing enrichment to environmental fiqh studies in Islamic education while presenting an implementative model that can be replicated in other schools with similar environmental characteristics.

Based on this background, gaps, and novelties, this study aims to analyze in-depth the integration of environmental fiqh material through the use of mangrove crab cultivation as a learning resource for Islamic Religious Education at SMA Muhammadiyah 04 Medan. This research is expected to contribute to the development of Islamic Religious Education learning models that are relevant to global ecological challenges while also responsive to local community potential.

Literature Review

The global ecological crisis over the past decade has spurred the emergence of various approaches to sustainability-based education (*education for sustainable development*). In the context of religious societies, this approach cannot be separated from the living religious value system that shapes our perspective on nature. In Islam, the relationship between humans and the environment is rooted in the principles of *khalīfah* (*vicegerent*), *mīzān* (*vice*), and the prohibition of *fasād* (*disobedience*). This principle is developed within the framework of environmental jurisprudence (*fiqh al-bi'ah*), which places environmental conservation as part of the maqāṣid al-syarī'ah (obligatory objectives of the Islamic law) (Puspitasari et al., 2026). Environmental jurisprudence not only discusses the laws of cleanliness or conservation, but also builds an ethic of ecological responsibility as an integral part of devotion to God. In the context of Islamic education, strengthening the ecological dimension has begun to receive serious attention in the past decade. A study by Zaimina and Munib (2025) confirms that the integration of *Green Islamic Education* into learning can bridge the gap between normative Islamic teachings and the reality of the contemporary environmental crisis. They emphasized the importance of an

ecopedagogy approach based on environmental jurisprudence so that students not only understand religious texts but also engage in socio-ecological transformation in their surrounding environment.

The Islamic Religious Education (PAI) curriculum in various schools still tends to position environmental issues as supplementary material, rather than as an integrative paradigm in learning (Wati et al., 2025). However, the integration of ecopedagogy in PAI has been proven to improve students' ecological literacy and shape a more contextual religious awareness. These findings indicate that experiential learning is more effective than a normative lecture approach. Internationally, the discourse on Islamic education and sustainability is also growing rapidly. Abdullah (2019) in *the Journal of Moral Education* (Scopus Q1) emphasized that Islamic education has great potential in shaping *ethical environmental citizenship* if the values of monotheism and trustworthiness are translated into concrete social practices. Meanwhile, Berglund and Gent (2018) in *Religions* (Scopus) demonstrated that religious education has a significant contribution in shaping pro-environmental attitudes when contextualized with local realities.

The maqāṣid al-syarī'ah-based approach to environmental issues is also reinforced by Kamali's (2016) research, which states that environmental protection is part of the expansion of sharia objectives in a modern context. Within this framework, *hifz al-bi'ah* is positioned as a development of *hifz al-nafs* and *hifz al-māl*, so that environmental preservation is not merely a moral recommendation, but a collective obligation. In Indonesia, the strengthening of environmental-based Islamic education is increasingly gaining legitimacy through various empirical studies. Fahlawi and Pertiwi (2025) found that the integration of environmental education into the madrasah curriculum increases students' awareness of ecological issues, although its implementation is still conceptual and not yet integrated with environmentally-based productive economic practices. This indicates a need for innovation in more applicable learning models.

Research by Serly et al. (2025) in *Halaqa: Islamic Education Journal* (Sinta 2) confirms that internalizing environmental values through Islamic Religious Education (PAI) is effective when students are involved in concrete activities such as managing school cleanliness or simple conservation. However, this research has not explored integration with local ecosystem-based productive sectors. In the context of global sustainable education, UNESCO (2020) emphasizes the importance of *experiential sustainability learning*, namely learning that involves direct practice in natural resource management. This principle aligns with Kolb's (2015) *experiential learning theory*, which states that concrete experiences strengthen the process of reflection and internalization of values. When this approach is combined with environmental jurisprudence, Islamic Religious Education (PAI) learning can move from a normative paradigm to a transformation of ecological behavior.

An international study by Howell and Allen (2019) in the proceedings of *the International Conference on Environmental Education* (Scopus indexed) showed that the integration of environmentally based local economic practices into the secondary school curriculum increases sustainability awareness and green entrepreneurship skills. This finding is relevant to the context of mangrove crab cultivation as a productive practice with both ecological and economic dimensions. Mangrove ecosystems themselves are globally recognized as ecological strongholds of coastal areas. According to research by Primavera et al. (2018) in *Ocean & Coastal Management* (Scopus Q1), the sustainability of mangrove crab cultivation is highly dependent on ethical and participatory mangrove management. Thus, mangrove crab cultivation not only has economic value but also has an educational function in instilling conservation principles.

From a contextual Islamic education perspective, utilizing local potential as a learning resource is an implementation of *the contextual teaching and learning approach*. Rahman (2021) emphasized that environmentally-based learning enhances the connection between religious values and students' social realities (Pohan, S., et.al., 2022). When students learn environmental jurisprudence through the practice of mangrove crab cultivation, they not only understand the laws of preserving nature but also witness the ecological consequences firsthand. Although various studies have discussed the integration of environmental jurisprudence and sustainable education, few studies specifically link environmental jurisprudence with the practice of mangrove crab cultivation as a laboratory for Islamic Religious Education (PAI) learning at the high school level. Most studies remain at the conceptual level or simple implementation at the madrasah and Islamic boarding school levels (EF, Tanjung, et.al., 2024).

Thus, this research occupies an important position in the literature because it combines three dimensions at once: (1) strengthening environmental fiqh based on *maqāsid al-syarī'ah*, (2) an *experiential ecopedagogy approach*, and (3) utilizing mangrove crab cultivation practices as a contextual learning resource. The integration of these three dimensions is expected to produce an Islamic Religious Education learning model that is not only religious and ecological, but also productive and sustainable.

Method

This study employed a qualitative approach using a case study design to explore in depth the integration of environmental fiqh material through mangrove crab aquaculture as a learning resource in Islamic Religious Education (IRE). A qualitative case study was selected because the research aims to analyze a contemporary phenomenon within its real-life educational context, particularly when the boundaries between the phenomenon and context are not clearly evident (Yin, 2018). The integration of environmental fiqh into experiential aquaculture practice represents a contextual and complex pedagogical process that requires holistic exploration rather than variable-based measurement. Case study research enables an in-depth, contextualized, and experience-based understanding of participants' perspectives and actions (Merriam & Tisdell, 2016). In the context of Islamic education, where value internalization and meaning-making processes are central, qualitative inquiry is particularly appropriate for capturing the dynamics of religious-ecological transformation (Creswell & Poth, 2018). Therefore, this design facilitates comprehensive analysis of how jurisprudential concepts such as *ḥifẓ al-bi'ah* and *maqāsid al-sharī'ah* are operationalized within authentic ecological learning environments.

The research was conducted at SMA Muhammadiyah 04 Medan, a secondary school that integrates coastal environmental potential into its instructional activities. The selection of this site was based on its proximity to mangrove ecosystems and its institutional openness to contextual Islamic pedagogy. Participants consisted of: (1) One Islamic Religious Education (IRE) teacher as the primary informant., (2) Twenty eleventh-grade students as learning participants, and (3) One mangrove crab aquaculture practitioner serving as a school partner. Participants were selected through purposive sampling, which involves identifying individuals who have direct experience with the phenomenon under investigation (Patton, 2015). This sampling strategy ensures that data are obtained from information-rich cases capable of providing deep insight into the implementation of environmental fiqh integration (Etikan et al., 2016). The teacher and aquaculture practitioner were chosen because of their direct involvement in designing and facilitating the learning process, while students were selected as active participants in the experiential activities.

Data were collected through multiple qualitative techniques to ensure depth and triangulation. Participatory observation was conducted to examine the instructional process in

which environmental fiqh concepts were integrated with mangrove crab aquaculture practices. Observation allows researchers to document naturally occurring behaviors and interactions within educational settings (Creswell & Poth, 2018). The researcher observed classroom discussions, field-based activities, student engagement, and reflective sessions. The observation covered one complete instructional cycle consisting of four meetings: (1) Introduction of environmental fiqh concepts, (2) Field observation of the mangrove crab aquaculture site, (3) Practical engagement in crab maintenance, and (4) Religious-ecological reflection session. This staged observation enabled the researcher to trace the progression from conceptual understanding to experiential internalization.

Semi-structured interviews were conducted with the teacher and selected students to explore their perceptions, experiences, and conceptual transformations related to environmental fiqh. Semi-structured interviews provide flexibility while maintaining thematic focus, allowing participants to articulate their reflections in depth (Kallio et al., 2016). The interviews explored: (a) Understanding of environmental jurisprudence, (b) Perceived relevance of aquaculture practice to Islamic teachings, (c) Changes in ecological awareness, and (d) Reflections on religious responsibility toward coastal ecosystems. Documentation included lesson plans (RPP), instructional modules, photographs of activities, and students' written reflections. Document analysis supports data triangulation and provides contextual evidence of pedagogical planning and implementation (Bowen, 2009). These documents helped verify the alignment between planned curriculum and actual instructional practice.

Data were analyzed using thematic analysis, a flexible yet rigorous method for identifying, analyzing, and reporting patterns within qualitative data (Braun & Clarke, 2006; Nowell et al., 2017). The analysis followed four systematic stages: (1) Data Reduction; Interview transcripts, observation notes, and documents were organized and condensed to focus on relevant information concerning environmental fiqh integration, (2) Coding; Initial codes were generated to capture meaningful units of data, such as "maqāsid application," "field-based reflection," and "ecological responsibility." (3) Categorization; Codes were grouped into broader categories representing conceptual and experiential dimensions, (4) Theme Construction; Overarching themes were developed to interpret the patterns of integration and transformation within the learning process. To enhance credibility and trustworthiness, source triangulation and methodological triangulation were employed. Data from observation, interviews, and documentation were cross-validated to ensure consistency and reliability (Lincoln & Guba, 1985).

The analysis focused on three primary dimensions: Conceptual integration of environmental fiqh, particularly the operationalization of maqāsid al-sharī'ah within ecological contexts. Experiential learning processes, including student engagement in field-based aquaculture practice. Transformation of religious-ecological character, reflected in students' attitudes, reflections, and expressed commitments toward environmental stewardship. Through this analytical framework, the study sought to reveal how environmental fiqh moved from normative discourse into lived ethical practice within Islamic Religious Education.

Result and Discussion

Result

1. Patterns of Integration of Environmental Jurisprudence Material in Islamic Religious Education Learning

The results of the study indicate that the integration of environmental fiqh material in Islamic Religious Education learning at SMA Muhammadiyah 04 Medan is carried out by linking the concepts of Islamic teachings with environmental management practices found

around students, especially through mangrove crab cultivation activities. This integration is carried out at the planning, implementation, and reflection stages of learning. At the planning stage, teachers include environmental conservation themes into the fiqh material related to human responsibility towards nature. The material is connected to the concept of *khalifah fil ardh*, *amanah*, and the prohibition of causing damage to the earth (*fasfa fil ardh*). In the learning process, teachers not only explain the concept theoretically, but also relate it to real activities that can be observed by students.

During the implementation phase, learning is conducted using a contextual approach, utilizing the potential of the surrounding environment as a learning resource. Teachers invite students to observe mangrove crab cultivation activities and use this as a medium for reflection to understand Islamic values related to environmental conservation. This approach enables students to understand that maintaining ecosystem balance is part of implementing religious values in everyday life. This finding aligns with research showing that integrating environmental education into religious learning can enhance students' understanding of the relationship between spiritual values and ecological responsibility (Rahman & Hidayat, 2023). Furthermore, religious education linked to real-world environmental contexts has been shown to build students' ecological awareness more effectively (Fawaid & Hasanah, 2022).

In addition to the planning and implementation stages, the integration of environmental fiqh material is also evident in the reflection stage of learning. At this stage, the teacher invites students to discuss and evaluate the learning experiences they have gained during the observation of mangrove crab cultivation. Students are asked to relate these activities to the Islamic values they have learned, such as human responsibility as caliphs on earth and the obligation to maintain the balance of nature. This reflection process helps students understand that environmental conservation activities are not merely social activities but also part of the implementation of religious teachings with moral and spiritual dimensions. Furthermore, the integration of environmental fiqh material into Islamic Religious Education learning also encourages an interactive and participatory learning process. Students act not only as recipients of information but also as active subjects involved in the process of observing, discussing, and analyzing environmental phenomena they encounter. Through this involvement, students can develop critical thinking skills in understanding the relationship between Islamic teachings and ecological issues facing society. This approach demonstrates that Islamic Religious Education learning can be developed in a more contextual manner by utilizing the potential of the environment as a living and dynamic learning space.

The integration of environmental fiqh material also provides opportunities for teachers to develop more innovative and relevant learning approaches to current global issues, particularly those related to the environmental crisis. By utilizing mangrove crab cultivation as a learning medium, teachers can explain the importance of preserving coastal ecosystems, including mangrove forests, which serve as habitats for various marine life. This also strengthens students' understanding that environmental preservation is part of human responsibility in maintaining the sustainability of life on earth. Furthermore, the integration of environmental fiqh material and mangrove crab cultivation practices demonstrates that Islamic religious education has significant potential in supporting sustainable education. Through learning that links religious values with environmental conservation practices, students not only acquire religious knowledge but also develop ecological awareness and a sense of responsibility towards nature. Thus, Islamic Religious Education (PAI) learning serves not only as a means of transferring religious knowledge but also as a medium for character building in students who care about environmental sustainability and the sustainability of life.

2. Utilization of Mangrove Crab Cultivation as a Contextual Learning Resource

Observations show that mangrove crab cultivation activities serve as contextual learning resources that help students understand environmental jurisprudence concepts more concretely. In this activity, students observe the mangrove crab cultivation process, including pond management, habitat maintenance, and efforts to maintain the quality of the aquatic environment. Through these activities, students understand the relationship between human activities and ecosystem sustainability. The teacher then relates students' findings to Islamic environmental jurisprudence concepts, such as the obligation to preserve nature and the prohibition on environmental damage.

Utilizing the environment as a learning resource provides experiential learning experiences. Thus, students not only understand concepts theoretically but also relate them to the realities of life. The findings of this study align with studies that state that environment-based learning can increase student engagement in the learning process while fostering awareness of ecosystem sustainability (Nugroho et al., 2024). This approach also aligns with the concept of eco-pedagogy, which positions the environment as an effective learning space for building students' ecological awareness (Huda et al., 2023).

Utilizing mangrove crab cultivation as a learning resource, in addition to providing a hands-on learning experience, also encourages students to understand the relationship between coastal ecosystems and the sustainability of human life. During field observations, students are introduced to the importance of maintaining the balance of the mangrove habitat, which is home to mangrove crabs. The teacher explains that damage to the mangrove ecosystem not only reduces the population of marine life but can also disrupt the overall environmental balance. Through this understanding, students begin to realize that natural resource management must be carried out wisely and responsibly. Furthermore, this learning activity also provides space for students to develop observation and analysis skills regarding environmental phenomena. During the process of observing mangrove crab cultivation, students not only observe pond maintenance activities but also note various factors that influence the success of cultivation, such as water conditions, environmental cleanliness, and the presence of surrounding mangrove vegetation. This activity helps students understand that the sustainability of cultivation is highly dependent on a healthy and well-maintained ecosystem.

The use of mangrove crab cultivation as a learning resource also strengthens the contextual learning approach in Islamic Religious Education. Through this approach, subject matter is not presented abstractly but rather connected to real-life experiences that students can observe. Teachers link pond management activities to Islamic teachings on the importance of maintaining the balance of nature as a form of human responsibility towards Allah SWT's creation. In this way, students can understand that religious teachings are not only related to aspects of ritual worship but also encompass social and ecological responsibility. Furthermore, this environment-based learning activity also encourages a collaborative attitude among students. During the observation and discussion process, students exchange opinions on the findings they obtain during the observation activities. These discussions help students understand various perspectives on environmental management and the importance of maintaining the sustainability of natural resources. This interaction also strengthens the learning process because students learn not only from the teacher but also from the experiences and thoughts of their peers.

Furthermore, utilizing mangrove crab cultivation as a learning resource provides students with the opportunity to directly observe the relationship between science, the environment, and religious values. In this context, Islamic Religious Education (PAI) learning serves not only as a means of instilling spiritual values but also as a medium for building sustainable ecological awareness. Teachers act as facilitators, helping students connect field experiences with the

principles of Islamic environmental jurisprudence, thus making learning more meaningful and applicable. Ultimately, utilizing mangrove crab cultivation as a contextual learning resource demonstrates that the school environment can be an effective learning laboratory for students. This activity not only helps students understand environmental jurisprudence concepts more deeply but also encourages them to develop a caring attitude toward environmental sustainability. Thus, learning that utilizes the potential of the local environment can be a relevant strategy in developing contextual, integrative Islamic religious education that is oriented toward building students' ecological character.

3. The Impact of Environmental Jurisprudence Integration on Students' Ecological Awareness

Interviews with teachers and students indicate that integrating environmental fiqh material through mangrove crab cultivation activities has a positive impact on students' ecological awareness. This is evident in students' increased understanding of the importance of maintaining ecosystem balance and the emergence of a caring attitude toward the surrounding environment. Some of the attitudinal changes identified include increased concern for the mangrove ecosystem, awareness of not littering, and the emergence of initiatives to maintain a clean school environment.

These findings support research showing that religious education that integrates ecological values can shape students' character and foster greater environmental awareness (Ismail et al., 2022). This integration also supports the development of sustainable education (*education for sustainable development*) within the context of Islamic education (Sulaiman & Abdullah, 2024).

In addition to the attitudinal changes seen in daily behavior, interview results also indicated that students were beginning to develop a deeper awareness of the relationship between religious teachings and environmental responsibility. Several students stated that after participating in lessons linking environmental jurisprudence (fiqh) with mangrove crab cultivation, they gained a deeper understanding that preserving nature is part of God's mandate to humanity. This understanding not only improved students' cognitive aspects but also strengthened the affective dimension of Islamic Religious Education (IS) learning. Furthermore, students' increased ecological awareness was also evident in their view of the surrounding environment as an essential part of life that must be cared for together. Students began to demonstrate a more reflective attitude toward various activities that have the potential to damage the environment, such as littering or damaging vegetation around the school. On several occasions, students even put forward simple ideas for maintaining the cleanliness of the school environment, such as holding community service activities or reminding their friends to keep their classrooms and surrounding areas clean.

The integration of environmental fiqh material through mangrove crab cultivation activities also provides a learning experience that fosters a sense of collective responsibility among students. Through direct observation of the mangrove ecosystem and the crab cultivation process, students realize that the sustainability of the ecosystem is highly dependent on human behavior in managing the environment. This awareness encourages students to appreciate nature more and understand the importance of maintaining ecosystem balance as part of their moral and spiritual responsibilities. Ultimately, the positive impact of this integration of environmental fiqh material demonstrates that Islamic Religious Education learning has great potential in shaping students' ecological character. When religious values are connected to real-life experiences related to the environment, the internalization of values becomes stronger and more meaningful. Thus, a learning approach that integrates environmental conservation practices with environmental fiqh material can be an effective strategy for fostering ecological awareness while building students' character who care about environmental sustainability.

The research findings can be summarized in the following table:

Table 1. Research Findings

Findings Theme	Data Code	Finding Indicators	Data source
Integration of environmental jurisprudence concepts	FL1	The material on the Caliphate on Earth is linked to the responsibility of protecting nature.	Teacher interview
Contextual learning	FL2	The teacher links Islamic Religious Education material with mangrove crab cultivation activities.	Observation
Using the environment as a learning resource	FL3	Students conduct direct observations of pond management	Observation
Internalization of ecological values	FL4	Students understand the prohibition of damaging the environment from an Islamic perspective.	Student interviews
Ecological attitude change	FL5	Students show concern for environmental cleanliness	Observation and interviews

Based on the results of qualitative data analysis, there are five important themes that show the relationship between religious concepts, learning practices, and changes in students' attitudes towards the environment, namely:

First, the integration of environmental fiqh (FL1) concepts is evident in how teachers relate the material on khalifah fil ardh (vicegerent) to human responsibility in protecting and preserving nature. Interviews with teachers revealed that the concept is not merely presented as theoretical material but is also explained as a mandate that must be realized in concrete actions. Thus, students understand that protecting the environment is part of implementing Islamic values in everyday life.

Second, contextual learning (FL2) is evident in the teacher's efforts to link Islamic Religious Education material to the mangrove crab farming activity found in the surrounding area. Based on observations, the teacher uses this activity as a concrete example to explain the importance of maintaining ecosystem balance. This approach makes learning more relevant to students' lives because they can directly see the connection between religious teachings and environmental management practices.

Third, the use of the environment as a learning resource (FL3) is evident in students' involvement in direct observations of mangrove crab pond management. These observations provide a concrete and contextual learning experience, enabling students to understand the relationship between human activities and ecosystem sustainability. In this case, the environment serves not only as an object of observation but also as a learning medium that helps students understand ecological values from an Islamic perspective.

Fourth, the internalization of ecological values (FL4) is reflected in students' understanding of the prohibition against environmental damage in Islamic teachings. Interviews with students revealed that they recognize that environmental protection is part of religious teachings that must be practiced in daily life. This understanding demonstrates that learning that integrates religious values with environmental contexts can strengthen students' ecological awareness.

Fifth, changes in ecological attitudes (FL5) are evident in students' growing concern for environmental cleanliness and sustainability. Observations and interviews indicate that students are beginning to demonstrate more environmentally responsible behavior, such as maintaining

cleanliness and refraining from actions that could damage the ecosystem. This change in attitude demonstrates that the integration of environmental fiqh material through the utilization of mangrove crab cultivation not only impacts cognitive aspects but also shapes students' attitudes and character.

Thus, these findings demonstrate that integrating environmental fiqh material through the use of mangrove crab cultivation as a learning resource can create a contextual, meaningful learning process that is oriented toward fostering students' ecological awareness. This approach also confirms that Islamic Religious Education can play a strategic role in instilling environmental conservation values as part of humanity's responsibility as caliphs on earth.

Discussion

The discussion of the research results shows that the integration of environmental fiqh material in Islamic Religious Education learning at SMA Muhammadiyah 04 Medan provides an important contribution in connecting religious values with the ecological realities faced by students. Basic concepts in environmental fiqh, such as *khalifah fil ardh*, *amanah*, and the prohibition of causing damage to the earth (*fasfas fil ardh*), are not only presented in theory, but also connected to real practices through mangrove crab cultivation activities. This approach shows that Islamic Religious Education learning can be developed contextually by utilizing the potential of the surrounding environment as a relevant learning resource. Thus, students not only understand Islamic teachings conceptually, but are also able to relate them to ecological responsibility in everyday life.

The use of mangrove crab cultivation as a learning resource demonstrates that the environment can serve as an effective learning medium in enhancing students' understanding of Islamic ecological values. Through direct observation and observation of the cultivation process, students gain experiential learning experiences, making the concepts of environmental jurisprudence easier to grasp. This environmentally based learning process also encourages students' active involvement in learning activities, as they can directly observe the link between human activities and ecosystem sustainability. This demonstrates that the integration of religious and environmental education can create more meaningful learning and strengthen the relationship between spiritual aspects and social responsibility towards nature.

The research results also show that the integration of environmental fiqh material through mangrove crab cultivation activities has a positive impact on developing students' ecological awareness. Students not only understand the importance of preserving the environment from a religious perspective but also demonstrate a change in attitude, leading to greater concern for the cleanliness and sustainability of the surrounding environment. This demonstrates that Islamic Religious Education (PAI) learning that integrates ecological values has great potential in shaping students' character and responsibility towards nature. Therefore, a learning approach that utilizes the environment as a learning resource can be an effective strategy in developing Islamic religious education that is oriented not only towards cognitive aspects but also towards the formation of sustainable ecological attitudes and behaviors.

Conclusion

This study shows that the integration of environmental fiqh material through the use of mangrove crab cultivation as a learning resource for Islamic Religious Education at SMA Muhammadiyah 04 Medan is able to provide more contextual, applicable, and meaningful learning. Learning is no longer limited to the normative-theoretical level, but moves towards direct experience that connects the Islamic jurisprudence arguments on environmental conservation with the actual practice of coastal ecosystem management. Through mangrove crab

cultivation activities, students can understand the principles of *hifz al-bi'ah*, amanah as a khalifah, and the ethics of sustainable use of natural resources in the form of concrete actions. This integration strengthens the cognitive, affective, and psychomotor dimensions simultaneously in Islamic Religious Education learning.

Furthermore, this study confirms that utilizing local potential as a laboratory for religious learning significantly contributes to the development of students' religious-ecological character. This learning model not only improves environmental literacy but also fosters a sense of responsibility, social awareness, and spiritual awareness of environmental sustainability. Therefore, the integration of environmental jurisprudence (fiqh) based on mangrove crab cultivation can be an innovative alternative in developing Islamic Religious Education learning that is responsive to global ecological challenges while also relevant to the local context of schools and communities.

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