

## **Cultivating Ecological Stewardship: Integrating the Adiwiyata Program with Islamic Religious Education in an Indonesian Vocational School**

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**Abstract:** Environmental Education programs like Indonesia's Adiwiyata are widely implemented, yet their integration with faith-based curricula to foster ecological stewardship has received little scholarly attention. This study aims to describe the implementation of adiwiyata material in PAI learning and its implications for students at State Vocational High School 2 Pacitan. A qualitative case study was conducted at a nationally recognized Adiwiyata school, utilizing semi-structured interviews with teachers, classroom observations, and document analysis. The results showed: (1) Environmental conservation is carried out by Vocational High School 2 Pacitan through the existence of green open spaces, green houses, family medicinal plants (toga), ablution water waste management, and waste management through waste banks, and others, (2) The implementation of adiwiyata materials in PAI subjects is carried out by integrating through learning, which includes planning, implementation, and evaluation. (3) Some of the implications resulting from the cultivation of environmental awareness in State Vocational High School 2 Pacitan students include: (a) realizing interaction for students with the environment, (b) developing students' ecological awareness, (c) strengthening students' environmental ethics.

**Keywords:** Adiwiyata Green School, Islamic Religious Education, Vocational High School

### **A. Introduction**

Earth damage is a complex and pressing issue resulting from natural and human activities. It poses serious threats to ecosystems, biodiversity, and humanity's well-being (Mamalova, 2023). The combined impact of industrialization, deforestation, pollution, and climate change intensifies environmental degradation, making urgent action essential to protect the planet and ensure a sustainable future for all (Farooqi et al., 2022; Rasit et al., 2019). Maintaining environmental sustainability is the duty of humans as caliphs on earth.

In this era of globalization, the need for environmental preservation is increasingly a

major focus in various parts of the world. As a country rich in biodiversity and natural resources, Indonesia is not immune to this challenge. Environmental education is a crucial part of national character building. Improving the environment is synonymous with controlling lifestyle changes, which aligns with the Sustainable Development Goals (SDGs). Through the Adiwiyata (green school) program, the government has promoted environmental preservation efforts in educational settings as a strategic step to foster ecological awareness from an early age (Azima, 2022).

The Adiwiyata program, established through the Ministry of Environment's regulation in 2013, is grounded in participatory involvement and sustainability principles. The framework necessitates that all stakeholders within a school students, teachers, parents, and the broader community actively participate in environmental conservation activities (Adriyanto et al., 2020). This collaborative approach intends to create a school culture emphasizing environmental awareness and responsible behavior (Darmawan & Dagamac, 2021).

Quoting from the Adiwiyata Guidebook, the word Adiwiyata is derived from the Sanskrit words "Adi" and "Wiyata." Adi means great, good, ideal, or perfect. Wiyata, on the other hand, signifies a place where one acquires knowledge, norms, and ethics in social life. Adiwiyata is a good and ideal place to acquire all the knowledge, norms, and ethics that can serve as a foundation for human well-being and achieve the ideals of sustainable development (Ministry of Environment, 2010). More specifically, Regulation of the Minister of Environment of the Republic of Indonesia Number 05 of 2013 concerning Guidelines for the Implementation of the Adiwiyata Program defines the Adiwiyata Program as a program to realize environmentally conscious schools and a culture of environmental stewardship.

The principles of the Adiwiyata program are: (1) Educational, can provide knowledge and ethics regarding environmental protection and management in life, (2) Participatory, the community at school is involved in planning, implementation, and evaluation according to their respective responsibilities and roles, and (3) Sustainable, the Adiwiyata program that is implemented must be carried out in a planned and continuous manner (Hatika et al., 2019; Syukri, 2019).

In order to implement the provisions of Article 28H paragraph (1) of the 1945 Constitution of the Republic of Indonesia, which affirms that the community has the right to a good and healthy environment, the implementation of which is followed up in Law Number 32 of 2009 concerning Environmental Protection and Management, including through environmental management measures, supervision and law enforcement, and public education or environmental education for the community, the Minister of Environment and Forestry has stipulated Regulation of the Minister of Environment and Forestry Number P.52/MENLHK/SETJEN/KUM.1/9/2019 concerning the Environmental Care and

## Culture Movement in Schools.

The Environmental Care and Culture Movement in Schools, or PBLHS Movement, is a conscious, voluntary, networked, and sustainable collective action by schools to implement environmentally friendly behavior. The implementation of the PBLHS Movement encompasses several types of activities, namely: (1) Learning in subjects, extracurricular activities, and self-actualization that integrate the Implementation of Environmentally Friendly Behavior (PRLH) in schools; (2) Implementing PRLH in the community around the school and/or in the region; (3) Establishing networks and communication; (4) Campaigning and publicizing the PBLHS Movement; and (5) Forming and empowering Adiwiyata cadres.

Islam is a holistic religion that focuses on the afterlife and the environment (Murtadha, 2018). In this context, Islamic teachings also provide an understanding that encompasses the concept of *khalifah fil ard* (steward of the earth), environmental laws, and moral values such as *zuhud* (moderation in the use of natural resources) (Sultoni, 2023). Implementing these two approaches will enable students to understand the importance of preserving nature and feel a spiritual calling in worshipping the Creator.

The Adiwiyata Program emphasizes linking environmental education with other subjects such as Islamic Religious Education, building student character, and promoting sustainable development in the school and community (Komalasari et al., 2023). Furthermore, curriculum, lesson plans, and learning resources are needed to integrate environmentally-based Islamic Religious Education (Wakifah., 2022). Implementing environmental values within Islamic teachings is closely linked to efforts to protect and preserve nature. Various studies have highlighted the relationship between Islamic teachings and the environment in the context of Islamic Religious Education. For example, there is a link between Islamic teachings in regulating its followers, who consciously foster social engagement in economic activities, including environmental protection (Imelda, 2018; Listyadewi, 2023).

State Vocational High School (SMKN) 2 Pacitan is one of the schools that received the Adiwiyata award from the Indonesian Ministry of Environment. In this regard, all school components—teachers, educational staff, and students—are committed to implementing the Adiwiyata principles: educative, participatory, and sustainable. Furthermore, Islamic Religious Education (PAI) teachers strive to internalize Adiwiyata material in Islamic Religious Education (PAI) lessons. Therefore, this study focuses on implementing Adiwiyata material in Islamic Religious Education (PAI).

Several previous studies related to this research include the Adiwiyata School Program in Supporting Environmentally Aware Islamic Religious Education (Wakifah., 2022), Implementation of the National Adiwiyata Program Based on

Local Wisdom (Maryatmo et al., 2023), Students' Environmental Awareness: A Study at Adiwiyata State High Schools Based on the New Ecological Paradigm (NEP) (Wibowo et al., 2023), and the Prophetic Approach to Environmental Education and Community Empowerment: A Case Study of Sustainable Islamic Boarding School Development (Purnomo et al., 2024).

Although the Adiwiyata program has been widely implemented as Indonesia's national green school initiative, few studies have empirically examined the processes and outcomes of integrating such a secular sustainability program with a specific religious curriculum, particularly within Islamic educational contexts (Nadiroh et al., 2020; Rahmawati & Ridho, 2022; Sukardi, 2021). This study focuses on implementing Adiwiyata material in Islamic Religious Education (PAI) at State Vocational High School 2 Pacitan. This research focuses on (1) the implementation of Adiwiyata material in Islamic Religious Education subjects and (2) the implications of implementing Adiwiyata material in Islamic Religious Education subjects for students.

## **B. Methods**

This research adopted a qualitative single-case study design following the framework of Robert K. Yin (2018). The case study approach allows for an in-depth and contextual exploration of a contemporary phenomenon within its real-life setting (Yin, 2018). This design was deemed appropriate because the study investigates how the Adiwiyata program—Indonesia's national green school initiative—is integrated with Islamic Education in a specific State Vocational High School 2 Pacitan. A case study is suitable when the boundaries between the phenomenon and its context are blurred and when multiple sources of evidence are required to capture its complexity.

A single-case design was selected because the chosen vocational school represents a unique and exemplary case it embeds ecological values within both the Adiwiyata framework and its Islamic curriculum. This makes the case revelatory and critical, offering an opportunity to uncover insights into how religious and environmental education can synergize in fostering ecological stewardship.

Data were collected through semi-structured interviews, participant observations, and document analysis, ensuring triangulation and data richness. Interview participants included Islamic Education teacher, Adiwiyata coordinators, and students actively engaged in green school activities. Observations focused on religious instruction, environmental projects, and daily school practices that integrate ecological and spiritual dimensions. Documents such as lesson plans, program reports, and school regulations were also analyzed.

The data analysis process followed Miles and Huberman's interactive model which

comprises three interrelated stages: data reduction, data display, and conclusion drawing/verification (Miles & Huberman, 1994). The process was iterative, with each stage informing and refining the others throughout the analysis.

Data reduction involved a systematic process of organizing, condensing, and coding the raw qualitative data obtained from interviews, observations, and document analysis. Initially, all transcripts and field notes were read multiple times to gain familiarity and identify meaningful segments. These segments were then coded inductively to capture patterns of meaning related to the integration of the Adiwiyata program and Islamic Education. Emerging codes were grouped into categories such as curricular integration, religious-environmental values, student engagement, and institutional support. Through axial coding, relationships between these categories were established, leading to the development of broader themes representing ecological awareness and spiritual stewardship in the school context.

Data display was conducted through the use of narrative summaries, thematic charts, and matrix displays that visually organized the relationships between categories and themes. These displays facilitated the identification of recurring patterns, contrasts between participants, and contextual dynamics influencing the integration process.

Finally, conclusion drawing and verification involved interpreting the emerging themes to construct a coherent understanding of how ecological stewardship was cultivated through the intersection of environmental and religious education. To enhance credibility, the researcher employed member checking with selected participants to validate interpretations, and triangulated the findings across interview, observation, and document data. Analytical memos and reflective journaling were also maintained throughout the process to document analytic decisions and ensure transparency and trustworthiness.

Data triangulation was achieved by comparing information obtained from multiple sources—interviews, observations, and documents—to confirm the consistency of emerging themes. Member checking was conducted by sharing preliminary interpretations and thematic summaries with selected participants to verify the accuracy and resonance of the researcher's analysis with their lived experiences. Additionally, the researcher maintained reflective memos throughout the data collection and analysis process to record insights, analytic decisions, and potential biases (Creswell, 2013).

## **C. Results and Discussion**

### **Environmental Conservation at State Vocational School 2 Pacitan**

The Adiwiyata award is an award given to schools that have successfully fulfilled

the four components of the Adiwiyata program: environmentally aware school policies, environmentally based school curriculum, participatory-based school activities, and environmentally friendly management of supporting facilities and infrastructure (Nurwidodo et al., 2020; Susilawati et al., 2020). The principles of the Adiwiyata program are based on the Ministry of Environment Regulation Number 5 of 2013, namely participatory education and sustainability (Pedoman Pelaksanaan Program Adiwiyata, 2013). The Adiwiyata components to achieve an Adiwiyata school include: (1) Planning the Environmental Care and Culture Movement in Schools (PBLHS), (2) Implementation of the PBLHS Movement, (3) Monitoring and Evaluation of the PBLHS Movement. The objectives of the Adiwiyata award include: (1) As a token of appreciation for the school's efforts to protect and manage the environment in the learning process, (2) As a sign that the school has implemented the three components, and (3) As a basis for implementing the Adiwiyata program, which must be implemented by the district/city, provincial, and central government (Ministry of Environment, 2010).

SMK Negeri 2 Pacitan has earned the Adiwiyata award since 2016 and has maintained it. In 2016, SMK Negeri 2 Pacitan received the Adiwiyata School Award for Pacitan Regency (Environmentally Caring School) from the Regent of Pacitan. It received the Adiwiyata School Award from East Java Province two years later based on East Java Governor's Decree No. 188/424/KPTS/013/2018. Four years later, SMK Negeri 2 Pacitan received the 2021 National Adiwiyata School award from the Indonesian Ministry of Environment and Forestry and the Indonesian Ministry of Education, Culture, Research, and Technology with Award Certificate number SK.1079.MENLHK/P2SDM/SDM.2/11/2021. The annual Adiwiyata award demonstrates the school's commitment to environmental protection.



Figure 1. SMK Negeri 2 Pacitan Adiwiyata Award Certificate

The Adiwiyata School Award is awarded to schools that successfully implemented the Environmental Care and Culture Movement in Schools (GPBLHS) through six Environmentally Friendly Behavior (PRLH) aspects. This is in accordance with Ministerial Regulation (PERMEN LHK) No. P.52/MENLHK/SETJEN/KUM.1/9/2019 concerning GPBLHS and Ministerial Regulation (PERMEN LHK) No. P.53/MENLHK/SETJEN/KUM.1/9/2019 concerning the Adiwiyata Award. The six aspects of PRLH include: (1) Cleanliness, sanitation, drainage, (2) waste management, (3) planting and maintenance of trees/plants (biodiversity), (4) water conservation, (5) energy conservation, and (6) innovation (Pedoman Pelaksanaan Program Adiwiyata, 2013).

As one of the state vocational schools (SMKN 2 Pacitan) that received the Adiwiyata award in Pacitan Regency, SMKN 2 Pacitan consistently internalizes environmental stewardship by including it in its vision and mission. The vision of SMKN 2 Pacitan is to create graduates with character, achievement, professionalism, an entrepreneurial spirit, and environmental stewardship. Several missions of SMKN 2 Pacitan that reflect this environmental stewardship include: 1) Instilling a concern for environmental preservation, 2) Instilling a concern for preventing environmental damage, and 3) Instilling a concern for preventing environmental pollution (Public Relations of SMKN 2 Pacitan, 2020).

Based on Pacitan 2 State Vocational High School's stated mission, the school strives to instill environmental awareness through environmental preservation, prevention of environmental damage, and prevention of environmental pollution. In this regard, several concrete efforts and actions undertaken by the school include green open spaces, greenhouses, family medicinal plants (TOGA), ablution waste management, and waste management through waste banks, among others.

The presence of green open spaces in an area is the beginning of forming a biodiverse ecosystem. Green open spaces are part of open spaces that are more open and filled with plants, vegetation, and other vegetation to support direct and indirect benefits, including safety, comfort, well-being, and beauty (Dewiyanti, 2009; Genta et al., 2019; Hendriani, 2016). In addition to providing positive environmental benefits, green open spaces also benefit students by increasing learning motivation and stimulating creativity (Goldstein et al., 2019). The school's green open spaces provide cleaning equipment, fostering environmental awareness among students and other school staff when leaf litter is found (Ma et al., 2024).

As a manifestation of its commitment to plant care, SMK Negeri 2 Pacitan has a greenhouse named the Morinda Greenhouse. Greenhouses offer significant benefits in plant care, protecting plants from direct sunlight and heavy rainfall. In addition to providing plant protection, greenhouses also serve as a place for maintaining and cultivating plants, protecting them from pests and extreme weather (Herdiana & Sanjaya, 2018; Kmetz & Norrbom, 2025). Therefore, greenhouses allow for controlled

plant maintenance and maximized plant growth (Putri et al., 2023). Teachers involve students in the care process.

In addition to the greenhouse, the school utilizes existing land for a Family Medicinal Plant (TOGA) garden. The family medicinal plant garden is planted with various medicinal plants with health benefits, including turmeric, ginger, moringa, lemongrass, and others. Family medicinal plants aim to produce high-quality, safe traditional medicines with scientifically proven efficacy and widespread use, both for personal use and in formal healthcare settings (Sari & Andjasmara, 2023; Trisnaningsih et al., 2019). Besides medicine, traditional medicinal plants (TOGA) can have other benefits, such as enhancing family nutrition, cooking spices (known as empon-empon), and enhancing beauty (Hadiwiardjo et al., 2017). Every school member has the right to pick and use medicinal plants available in the family medicinal plant (TOGA) plot.

Waste is a complex problem for communities lacking environmental awareness, but it can generate added value for those who manage it properly. Waste at SMK Negeri 2 Pacitan is managed through a waste bank. The school waste bank is one effort to recycle waste within the school and surrounding areas (Masirun et al., 2023). Waste management begins with waste sorting, separating organic, inorganic, and hazardous and toxic waste (B3) (Melati et al., 2024; Tangwanichagapong et al., 2017). After sorting, waste is managed using the 3R concept, which includes reducing/limiting waste generation (reduce), reusing waste (reuse), and recycling waste (recycle) at the school's waste bank (Purnami, 2021). Waste reduction at the waste bank at SMK Negeri 2 Pacitan is achieved by utilizing existing waste into something useful. These include utilizing plastic and bottle waste for eco-bricks, utilizing food waste for maggot food, processing leaf waste into compost, and more.

In addition to the above, other conservation efforts are carried out through the management of ablution wastewater. For Muslims, ablution is a requirement for valid prayer and is performed before each prayer. Ablution is performed at least five times daily. Each worshipper requires approximately 3 liters of clean water per ablution, so a daily ablution congregation requires approximately 15 liters. Meanwhile, ablution wastewater is considered wastewater because it is not mixed with human waste. Grey water waste can be recycled, and the recycled water can be used for reclaimed water, such as watering plants, fish ponds, mopping floors, or cleaning vehicles (Bahagia & Nizar, 2018; Pramoto et al., 2022). In this case, SMK Negeri 2 Pacitan uses it for fish farming and watering plants.

### **Implementation of Adiwiyata Material in Islamic Education Subjects for Class X**

Adiwiyata is a program initiated by the Ministry of Environment and Forestry of the Republic of Indonesia that aims to promote environmental awareness and sustainable practices in schools. The program was first introduced in 2006 and has

since been implemented in schools throughout Indonesia. The Adiwiyata program focuses on integrating environmental education into the school curriculum, promoting waste management and recycling practices, conserving energy and water resources, and fostering a green school environment. Schools participating in the Adiwiyata program are required to form a “green committee” consisting of students, teachers, and staff members to oversee the implementation of environmental initiatives. One key component of the Adiwiyata program is the implementation of the 3Rs (Reduce, Reuse, Recycle) to minimize waste generation and promote a sustainable lifestyle.

The Adiwiyata program has significantly impacted the development of school curricula by integrating environmental stewardship and sustainability principles into various aspects of education. Schools that receive the Adiwiyata award implement environmental-focused curriculum changes, extracurricular activities, and participatory programs aligned with the school’s vision and mission (Syauqi et al., 2023). This program ensures that the curriculum includes activities such as building maintenance, land use, and environmentally focused extracurricular activities, fostering a culture of environmental responsibility among students (Suprpto et al., 2023).

As one of the state vocational schools (SMKN 2 Pacitan) that received the Adiwiyata award in Pacitan Regency, SMKN 2 Pacitan consistently internalizes environmental awareness by including it in its vision and mission. The vision of SMKN 2 Pacitan is to produce graduates with character, achievement, professionalism, entrepreneurial spirit, and environmental awareness. Some of SMKN 2 Pacitan’s missions reflect this environmental awareness: 1) Instilling a concern for environmental preservation, 2) Instilling a concern for preventing environmental damage, and 3) Instilling a concern for preventing environmental pollution (Public Relations of SMKN 2 Pacitan, 2020).

In line with the institution’s vision and mission, in the learning process, teachers strive to internalize Adiwiyata or environmental material in all subjects, including Islamic Religious Education. Based on interviews with Islamic Religious Education teachers for class X at SMK Negeri 2 Pacitan, the PAI learning material also touches on environmental material to support the Adiwiyata program. The PAI subject in the independent curriculum is also called Islamic Religious Education and Character Education, which includes several scientific elements, including aspects of (1) Al-Qur’an and Hadith, (2) Aqidah, (3) Akhlaq, (4) Fiqh, and (5) History of Islamic Civilization. This paper focuses on class X of SMK. The PAI Learning Achievements for class X based on these elements are as follows:

**Table 1. Learning Outcomes of Islamic Religious Education Phase E (Decisions on Learning Outcomes in Early Childhood Education, Elementary Education, and Secondary Education in the Independent Curriculum, 2022)**

Elements	Short Description
Al-Qur'an and Hadith	Students can understand, recite fluently, memorize, verses of the Qur'an and hadith about the command to compete in goodness and work ethic as well as the prohibition of promiscuity and adultery; can mention the content and presentation of the command to compete in goodness and work ethic as well as the prohibition of promiscuity and adultery; believe that a competitive attitude in goodness and work ethic and avoiding promiscuity and adultery is a religious command; and get used to a competitive attitude in goodness and work ethic and avoiding promiscuity and adultery by being more careful and maintaining self-respect.
Aqidah	Students can understand the meaning of syu'abul imān (branches of faith), their meaning, evidence, types, and benefits; show the meaning of syu'abul imān (branches of faith), believe that faith has many branches; and apply several attitudes and characters as a reflection of the branches of faith in life.
Akhlaq	Students apply the benefits of avoiding maẓmūmah morals; demonstrate behavior that contains content, namely the benefits of avoiding maẓmūmah attitudes; believe that maẓmūmah morals are prohibitions and mahmūdah morals are religious commands; and get used to avoiding maẓmūmah morals and displaying mahmūdah morals in everyday life.
Fiqh	Students are able to apply muamalah fiqh and al-kulliyât al-khamsah (five basic principles of Islamic law); using exposure to muamalah fiqh and al-kulliyât al-khamsah; believes that the provisions of muamalah fiqh and al-kulliyât al-khamsah are religious teachings; as well as fostering an entrepreneurial spirit, caring and social sensitivity.
History of Islamic Civilization	Students are able to recognize and relate the history of the development and struggle of Islamic preaching during the Mecca and Medina periods; believe that the history of the development and struggle of Islamic preaching during the Mecca and Medina periods is a sunnatullah; and emulate the great morals of the Prophet Muhammad (peace be upon him) and his companions in preaching Islam as rahmatan lil alamin (blessing for all the worlds) so that Islam spread throughout the world.

During the learning process, teachers link learning topics to environmental awareness (Adiwiyata) material. The learning design is outlined in a learning module that encompasses planning, implementation, and evaluation. For example, they link the material on *al-kulliyât al-khamsah* (five basic principles of Islamic law) to the five pillars of Islamic law (*hifdz ad-din, hifdz an-nafs, hifdz al-aql, hifdz an-nasl, and hifdz al-mal*) (maintaining religion, preserving the soul, preserving the mind, preserving offspring, and preserving wealth). In this case, teachers link the material on environmental awareness to water conservation. At the beginning of the lesson, the teacher states the learning objectives and explains how to conserve water in everyday life. Furthermore, the teacher addresses issues related to the *al-kulliyât al-khamsah* material and issues related to water conservation. The teacher explains the importance of water conservation by linking verses from the Quran and the Hadith.

Furthermore, the teacher explains one form of water conservation in schools, namely the management of ablution wastewater used for watering plants and raising fish.

In addition, through the material on tolerance and maintaining human life, the teacher added environmental insight material, namely cultivating an attitude of caring for waste by managing waste in the surrounding area, and presenting forms of waste management as an attitude of maintaining human life. In this regard, the teacher motivates students to learn by explaining the benefits of managing waste that will support human life in everyday life. In this case, the teacher divides students into four groups that will discuss the theme of waste management, which includes: (1) types of waste produced by humans, (2) how to classify waste, (3) the culture of sorting waste, and (4) waste management practices. After being grouped, students work in teams by making concept maps related to the material presented, then presenting the results of each group's discussion. In addition, the teacher also provides students with insight into the benefits of the school's waste bank. Apart from being a form of environmental awareness, it also benefits humans.

### **Implications of Adiwiyata-Based Islamic Religious Education Materials on Students' Ecological Awareness**

Internalizing ecological awareness in schools is crucial for encouraging environmental stewardship among students. SMK Negeri 2 Pacitan has implemented efforts to internalize environmental awareness by: (1) integrating Adiwiyata material into the school curriculum, particularly in Islamic Religious Education; (2) involving students in various environmentally conscious activities; (3) teachers and school staff directly modeling good behavior for students, such as disposing of trash properly, reducing the use of single-use waste, and other practices; (4) imposing sanctions or punishments on students who violate school policies, for example, failing to carry out scheduled duties, disposing of trash properly, and so on; (5) awarding awards or rewards to classes or student activity units (Scouts, Red Cross, and others) committed to preserving the school environment.

Instilling a strong ecological awareness positively impacts students' environmental management. Some of the implications resulting from instilling environmental awareness in students at SMK Negeri 2 Pacitan include: (1) fostering interaction between students and the environment, (2) developing students' ecological awareness, and (3) strengthening students' environmental ethics.

Maintaining interaction with the environment is a concept that refers to a positive relationship between humans and their natural surroundings. This involves attitudes and actions aimed at caring for, protecting, and maintaining the balance of ecosystems and natural resources. Instilling good environmental awareness through habituation fosters positive interactions between students and the environment.

Some key aspects of maintaining interaction with the environment include: (1) natural resource conservation, which involves using and utilizing water, soil, energy, plants, and other resources wisely to prevent damage; (2) waste management, which aims to reduce, recycle, and utilize waste efficiently to prevent environmental pollution; and (3) pollution prevention, which involves efforts to eliminate air, water, and soil pollution that can harm the environment and human health.

Integrated ecological education fosters the development of students' ecological awareness. Ecological awareness is a process by which individuals or communities gradually recognize and understand the importance of the environment's existence, balance, and sustainability. This encompasses a deep understanding of the complex interactions between humans and nature and the impact of human actions on the global ecosystem. Some aspects of ecological awareness include (1) knowledge and understanding of the environment, including ecosystems, flora and fauna, natural resources, and others; (2) an attitude of respect and reverence for nature, namely appreciating biodiversity and natural beauty, and recognizing the importance of preserving the environment for the survival of humans and other living things; and (3) awareness of the impact of individual actions, namely recognizing that everyday actions, whether in energy consumption, water use, waste management, or lifestyle choices, have an impact on the environment and climate change.

Strengthening environmental ethics refers to the process or effort to strengthen moral values and attitudes that support environmental protection and sustainability. This includes developing attitudes, behaviors, and policies to preserve natural ecosystems and promote human well-being within the context of long-term sustainability.

#### **D. Conclusions**

The Adiwiyata program, initiated by Indonesia's Ministry of Environment and Forestry in 2006, aims to promote environmental awareness and sustainable practices through education. It integrates environmental values into school curricula by encouraging waste management, energy and water conservation, and the application of the 3Rs (Reduce, Reuse, Recycle). As an Adiwiyata-award-winning institution, SMKN 2 Pacitan has embedded environmental awareness in its vision, mission, and teaching practices, including the subject of Islamic Religious and Character Education (PAI). Teachers integrate environmental themes such as water conservation and waste management into religious learning materials like al-kulliyât al-khamsah (the five principles of Islamic law) and lessons on moral conduct (akhlaq). Through contextual teaching, group projects, and Qur'anic reflections, students are encouraged to link Islamic values with ecological responsibility, fostering a culture of environmental stewardship in line with both the Adiwiyata program and Islamic principles.

The integration of Adiwiyata-based materials into Islamic Religious Education at SMKN 2 Pacitan has significant implications for fostering students' ecological awareness. The school promotes environmental values by embedding Adiwiyata principles into the curriculum, engaging students in eco-friendly activities, modeling sustainable behavior, enforcing environmental discipline, and rewarding positive initiatives. These efforts have enhanced students' interaction with nature, deepened their ecological awareness, and strengthened their environmental ethics. Students learn to conserve natural resources, manage waste responsibly, and prevent pollution through both classroom learning and daily practices. Ecological awareness is developed through understanding environmental systems, cultivating respect for nature, and realizing the impact of individual actions on sustainability. Ultimately, this integration nurtures moral responsibility and environmental stewardship grounded in Islamic ethical values and long-term ecological sustainability.

This study has several limitations. It adopted a single-case design, which allows for deep contextual understanding but limits the generalizability of findings. The research also involved a small number of participants, focusing on those directly engaged in the Adiwiyata and Islamic Religious Education programs. Furthermore, the potential for researcher bias cannot be fully eliminated, despite efforts to ensure credibility through triangulation, member checking, and reflective memos. These limitations suggest that the findings should be viewed as context-specific and exploratory, offering insights for future broader studies.

Future research should examine how Adiwiyata-based Islamic Religious Education can be applied in different school settings, such as Islamic boarding schools and public schools, to compare its impact on students' ecological awareness. Studies using longitudinal or mixed-method approaches are recommended to understand how students' environmental attitudes and behaviors develop over time. In addition, future studies could focus on developing a comprehensive model of Green Islamic Education that integrates environmental ethics with Islamic values to promote long-term ecological responsibility.

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