

Research Article

Building Active Awareness About Waste Among Santri at Islamic Boarding School X in Malang

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Abstract: The global environmental crisis has had an impact on religious educational environments such as Islamic boarding schools. The phenomenon at Pondok Pesantren X Malang shows a gap between the normative knowledge of students about cleanliness and their actual behavior, such as the habit of littering. This study is based on the hypothesis that students' ecological awareness is formed through the interaction between knowledge, experience, and the social context in the pesantren. The research method uses an exploratory qualitative approach with a grounded research design through in-depth interviews, participatory observation, and documentation of six students aged 10–12 years. The results revealed three main themes: knowledge about trash (45%), irresponsible habits (34%), and active awareness (21%). These findings confirm that although santri have a fairly good initial understanding, behavioral change is still hindered by social habits. In conclusion, strengthening reflective education, the exemplary role of ustadz, and institutional support are crucial for building sustainable ecological awareness in Islamic boarding schools.

Keywords: Active Awareness; Grounded Research; Islamic Boarding School; Santri; Waste.

1. Introduction

The environmental crisis has become a global issue that also affects smaller social spaces such as schools, Islamic boarding schools (*pesantren*), and places of worship (Rofiq, 2022). In religious environments like pesantren, ecological awareness often remains secondary, despite Islamic values being rich with teachings on cleanliness, care for nature, and social responsibility (Syukri et al., 2024). Field realities reveal a gap between the values taught and the behaviors practiced, such as littering, even when students (*santri*) understand that cleanliness is part of faith (Simanungkalit & Manalu, 2025).

Children's ecological knowledge develops gradually through concrete experiences. Piaget & Inhelder (1972) highlighted that children build knowledge schemas through direct exploration, while Lemons (1992) emphasized the importance of early *ecological literacy*. In the pesantren context, understanding waste types, pollution impacts, and the consequences of unclean behavior should be introduced through activities involving observation, practice, and reflection. This foundation is essential for forming ecological awareness that is both cognitive and emotional.

Active awareness goes beyond mere knowledge, encompassing emotional engagement, critical reflection, and the courage to act (Mezirow, 1997). In pesantren, this awareness can emerge when students face the contradiction between cleanliness values and the reality of a

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dirty environment. Participation in cleaning activities or group discussions can serve as transformative experiences, shifting attitudes from passive to active. Mahpur (2022) stresses that in a qualitative perspective, awareness is the lived meaning of life, not just attitude data.

However, the formation of environmentally friendly habits is also influenced by consistent action and social context. Bandura's (1986) *social cognitive theory* explains that behavior is shaped through reinforcement from the environment. In pesantren, the habit of littering may persist due to a permissive atmosphere, lack of supervision, or absence of role models among authority figures. Conversely, positive behavior can take root if supported by repeated practice and social appreciation.

Pesantren hold great potential as centers for environmental learning. The Islamic concept of *khalifah fil ardh* provides a spiritual basis for ecological responsibility. With 39,551 pesantren and 4.9 million *santri* across Indonesia (Kementerian Agama RI, 2024), implementing environmental education could have a broad impact. Success is not measured merely by how often values are articulated, but by how deeply they are embodied in daily life through concrete activities such as waste banks, composting, and reducing single-use plastics practices proven to have both ecological and educational benefits.

The *Madrasah Diniyah Takmiliyah* at Pondok Pesantren X in Malang is one of the educational settings where this contradiction can be observed firsthand. On one hand, students are familiar with the concept of cleanliness as part of faith; on the other hand, the habit of leaving trash scattered around still occurs in their daily lives. This is where it becomes crucial to closely examine how ecological awareness is actually formed, especially among young children within an education system grounded in religious values.

This research stems from the concern over the gap between normative knowledge and actual habits, as well as the hope that through a qualitative approach, we can understand how experiences, social interactions, and daily practices contribute to shaping active environmental awareness. The main focus of this study is to explore these dynamics through three key dimensions: knowledge, active awareness, and irresponsible environmental habits.

2. Literature Review

The theoretical framework of this study is based on the concept of ecological awareness as a constructive process that is formed through interactions between knowledge, direct experience, and social context. The social constructive perspective explains that meaning about the environment does not arise instantly, but is constructed through daily practices and recurring social relations (Berger & Luckmann, 1967). In the context of Islamic boarding schools, students' knowledge about waste does not stand as neutral information, but is bound to institutional culture, unwritten rules, and collective practices that shape how students understand cleanliness. Recent research shows that children's environmental awareness develops more strongly when cognitive knowledge is accompanied by concrete experiences and consistent social reflection (Linder et al., 2022). This theory is relevant to explain why normative understanding of cleanliness has not always been manifested in the actual behavior of santri.

Furthermore, social learning theory and behavioral habituation form the basis for understanding the persistence of irresponsible waste habits. Bandura asserts that behavior is formed through a process of observation, imitation, and social reinforcement in a meaningful environment (Bandura, 1986). Recent studies confirm that group norms and role models have a significant influence on the pro-environmental behavior of children and adolescents (Koessler et al., 2022).. In the hierarchical culture of Islamic boarding schools, the behavior of teachers and the institutional structure serve as the main reference for students. When the social environment is permissive of minor violations such as littering, these habits tend to become stable patterns even though students have adequate knowledge.

This theoretical framework is also reinforced by the concept of active consciousness as a reflective and transformation process. Active consciousness does not stop at knowing and obeying rules, but involves critical reflection and the willingness to act voluntarily (Mezirow, 1997). Contemporary research in environmental psychology shows that sustainable ecological awareness arises when individuals experience tension between their beliefs and the reality they face, and then reflect on it in concrete actions (Alam et al., 2024). In this study, the relationship between knowledge construction, social learning, and critical reflection forms an integrated framework for interpreting qualitative data. This framework helps explain the dynamics of how santri's knowledge about waste can develop into active awareness, or be hindered by social habits that do not support behavioral change.

3. Method

This study employed an exploratory qualitative approach with a grounded research design to deeply explore the experiences and meanings formed by santri in the process of developing environmental awareness. This approach was chosen because the primary aim of the study was not to measure the level of awareness statistically, but rather to understand how such awareness is lived, developed, and interacts within the daily life of the santri. Within this framework, theory was not used as an initial lens for interpreting the data; instead, it emerged from within the data itself, allowing participants' experiences to appear in their entirety without being constrained by external assumptions.

The research was conducted at Madrasah Diniyah Takmiliyah under the auspices of Pondok Pesantren X, an Islamic educational institution with hundreds of santri and afternoon diniyah classes. This setting was purposefully chosen because the pesantren environment still faces serious challenges in waste management, despite cleanliness being taught as part of faith in its religious values. The study focused on children aged 10–12 years, an age range in which habits and awareness are beginning to form and can be more visibly observed. Six santri were purposively selected as core participants based on their involvement in cleanliness activities and active social interactions.

Data collection was conducted using three main techniques: in-depth interviews, participant observation, and documentation. The interviews were semi-structured, enabling santri to express their thoughts freely while remaining within the scope of the study. Everyday language was used to maintain intimacy and authenticity of meaning. Observations were carried out by the researcher while accompanying santri in the dormitory, classroom, and during communal work (*kerja bakti*), to observe how environmental behaviors were formed, practiced, or even violated. Documentation included field notes, photographs of activities, and symbolic objects (such as cleanliness posters created by santri) to enrich contextual understanding.

The collected data were analyzed using reflective thematic analysis. Each interview transcript and field note was read repeatedly to capture emerging nuances of meaning. Open coding was then applied to identify significant phrases, attitudinal contradictions, and meaningful statements from participants. From this coding process, themes emerged that reflected the dynamics of santri's knowledge, awareness, and habits regarding the environment. The analysis did not stop at theme categorization but continued with reflective interpretation, linking these themes to the santri's social reality and the value structures embedded within the pesantren system.

To ensure the validity and trustworthiness of the data, several strategies were employed. Technique triangulation was carried out by combining data from interviews, observations, and documentation. Member checking was conducted by validating the interpretations with the santri and the supervising ustadz. In addition, the researcher engaged in open discussions with fellow qualitative researchers through peer debriefing to minimize interpretive bias. Through this approach, the study not only recorded behavior but also captured the depth of meaning experienced and lived by the santri in their relationship with the environment.

4. Results and Discussion

This study reveals the dynamics of ecological awareness among santri at Madrasah Diniyah Takmiliyah within the context of their daily life in the pesantren environment. The analyzed data refer to three main themes: Knowledge about Waste, Active Awareness, and Irresponsible Environmental Habits. Each theme reflects the stages and complexities of the santri's ecological awareness and illustrates the interaction between cognitive understanding, social reflection, and everyday actions. The details are shown in Table 1.

Table 1. Data Tabulation Building Active Awareness about Waste among Santri at Pesantren X.

Subcategory	F	%	Category	F	%	Subtheme	F	X'	Theme
Inorganic Waste	2	5%	Identifying Types of Waste	6	16%	Knowledge	17	45%	Building Active Awareness About Waste Among Santri at
Organic Waste	4	11%							
Knowledge About Waste	5	13%	Creative Knowledge	11	29%				
Creative Ideas from Students	6	16%	Waste						

Table 1. Data Tabulation Building Active Awareness about Waste among Santri at Pesantren X.

Personal Concern	3	8%								Pesantren X
Social Concern	1	3%	Concern	4	11%					
Reflection on Personal Attitudes	1	2,5%								
Reflection on Personal Attitudes	1	2,5%	Reflection	2	5%	Active Awareness	8	21%		
Participation in environmental programs	1	2,5%	Participatory Campaign	2	5%					
Positive campaigning	1	2,5%								
Indifference to the environment	5	13%								
Irresponsible behavior	1	3%	Irresponsible Habits	13	34%	irresponsible behavior towards the environment	13	34%		
Habit of littering	7	18%								

The thematic analysis shows that the dominant theme in this study is Knowledge about Waste (45%), followed by Irresponsible Environmental Habits (34%), and Active Environmental Awareness (21%). The Knowledge theme reflects how santri understand the definition and types of waste through visual experiences and direct interaction with their surroundings. Emerging subthemes include the ability to identify waste such as paper and plastic bottles, as well as an initial understanding that waste consists of unused items that disrupt cleanliness. This knowledge is not yet fully systematic but serves as a strong foundation for building ecological awareness. The santri often relate their understanding to the conditions around them, such as the school yard, classrooms, and waste disposal areas.

The Irresponsible Habits theme highlights the gap between knowledge and daily practices. Thirty-four percent of the data reflects passive attitudes, such as leaving litter scattered when circumstances are inconvenient, and a tendency to care about cleanliness only when discomfort arises, such as foul odors. Some santri even candidly admitted that they ignore litter if the trash bin is far away. This suggests that their behavior is not yet fully guided by ecological values, but rather by practical and situational considerations. This category indicates that positive habits have not yet taken root and still require reinforcement through reflective and engaging approaches.

Meanwhile, the Active Awareness theme emerges from santri's actions that demonstrate personal initiative and direct involvement in maintaining environmental cleanliness. Although it accounts for only 21% of the total data, this finding is significant as it shows that awareness is not merely knowledge, but has evolved into reflection and action. The santri begin to show behaviors such as throwing away trash without being told, questioning the usefulness of used plastics, or feeling proud when praised by community members for actively cleaning the environment. This indicates the development of values that go beyond commands or prohibitions, beginning to live within their own consciousness.

These findings indicate that the ecological awareness of the students is still in the process of developing. Knowledge serves as a strong foundation (45%), yet it has not fully transformed into responsible habits. Conversely, passive behavior toward the surrounding environment is still widely observed (34%), suggesting that understanding does not always lead to behavioral change. Nevertheless, the emergence of active awareness (21%) offers hope that, with consistent habituation and positive social environmental support, ecological values can be more deeply embedded.

This study reveals that the ecological awareness of students at Madrasah Diniyah Takmiliah develops gradually through the interaction between knowledge, active awareness, and daily habits. Findings show that the majority of students possess a relatively strong initial understanding of different types of waste (45%), gained through direct experience and

observation within the school environment. This knowledge serves as an important foundation for fostering environmentally conscious attitudes and behaviors.

However, irresponsible habits toward waste still dominate a portion of students' behavior (34%). They tend to remain passive or postpone taking action when conditions are perceived as unfavorable, for example, when trash bins are far away or when waste is not yet considered bothersome. This indicates that cognitive understanding has not yet been fully internalized into positive habits.

On the other hand, although in a smaller proportion (21%), signs of active awareness are beginning to emerge through concrete actions such as participation in clean-up activities, reflection on the potential value of waste, and positive responses to social recognition from the community. Students who demonstrate such initiative serve as examples that, with participatory and reflective approaches, ecological values can grow and thrive from within themselves.

Overall, students' ecological awareness is in a developmental stage beginning with descriptive knowledge, partially evolving into reflective awareness, yet still facing challenges in achieving consistent daily behaviors. These findings highlight the importance of experiential, example-based, and socially reinforced environmental education to ensure that ecological awareness can be fully and sustainably internalized in the lives of the students.

The findings of this study confirm that the process of building active awareness of waste among santri cannot be understood merely as a linear cognitive process from knowledge to behavior, but rather as a multidimensional process involving knowledge, internalization of values, and social practices in the daily life of the pesantren. Details are presented in the interpretation scheme of the discussion findings in Figure 1.

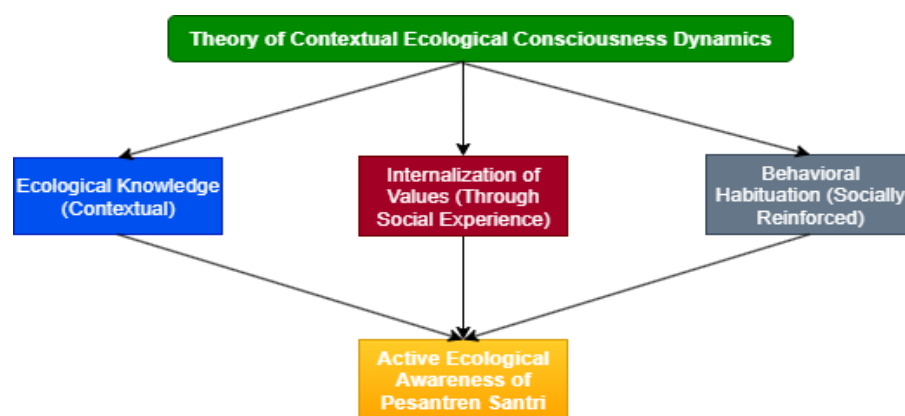


Figure 1. Theory of Contextual Ecological Consciousness Dynamics.

The Dimension of Knowledge in Building Active Awareness about Waste

Knowledge is an important foundation in building ecological awareness among santri, but the findings of this study show that in the context of Pesantren X Malang, knowledge about waste tends to stop at the cognitive level (Rohmah, 2024). Students understand that cleanliness is part of faith, and some even quote verses and hadiths about the prohibition of causing destruction (*fasād*) on earth. However, this understanding often remains as declarative knowledge that is not immediately translated into daily behavior (Karman et al., 2023). This condition indicates an imbalance between cognitive and affective aspects, as pointed out by Lestiani et al. (2021) that knowledge acquired without direct interaction with the environment tends to be passive and does not form a lasting thinking pattern.

When compared to other Islamic boarding schools, there are significant differences. For example, a study by Tabtila et al. (2023) at the Al-Qur'an Tazkiyah Insani Islamic Boarding School in Depok shows that students' knowledge is not only gained through lectures but is also embedded in daily practices through the provision of hygiene facilities and a system for monitoring student behavior. There, pro-environmental behavior management is supported by institutional structures, so that the knowledge gained does not remain as abstract concepts but instead fosters collective behavior. This comparison shows that students' knowledge cannot be separated from the institutional context; the same knowledge can have different implications depending on the extent to which the institution supports its application (Ivan Chofyan et al., 2025).

The phenomenon at Pesantren X also reinforces the ecological behavior gap theory (Suharini et al., 2024), which explains that knowledge often does not correlate directly with action. Santri know that littering is a reprehensible behavior, but the habit persists due to the lack of a social reinforcement system and weak institutional oversight. This aligns with the findings of Setyaningsih et al. (2024), who reported that elementary school students in Indonesia have high levels of environmental knowledge but remain low in ecological practices. In other words, knowledge is an important factor but not the sole determinant of ecological behavior.

From a pedagogical perspective, students' knowledge is also influenced by the method of delivery. A study by Jamilah et al. (2023) emphasizes that environmental knowledge is more easily internalized when accompanied by teacher role modeling, habituation through daily cleaning tasks, and teaching that links religious values with concrete ecological practices. Pesantren X still seems to place environmental knowledge in the realm of normative teaching, not yet fully establishing cleanliness as a social tradition that is collectively maintained. However, Alam et al. (2024) emphasize that environmental literacy can only be achieved if knowledge is linked to emotional experiences, practical skills, and real activities that bind individuals to their environment.

Thus, this discussion emphasizes that knowledge among santri should not be viewed merely as an accumulation of information, but must be analyzed within the socio-cultural context of the pesantren (Sabtina & Mahariah, 2025). Knowledge that is not connected to practice only produces superficial awareness, while knowledge that is reinforced through direct experience, institutional systems, and authoritative examples can become the driving force behind the emergence of active ecological awareness (Quddus, 2020). These findings contribute new insights to environmental psychology and Islamic education: that transforming knowledge into ecological behavior requires the integration of cognitive, affective, and cultural aspects within the pesantren ecosystem.

Active Awareness as a Transformative Process for Santri towards the Environment

The active awareness of santri towards waste management at Pesantren X Malang shows a paradox. On the one hand, some santri have begun to show real involvement through weekly ro'an activities or by keeping their rooms clean. However, this awareness is still partial and not evenly distributed. This paradox is significant because it indicates that ecological awareness does not automatically arise from religious knowledge but is heavily influenced by social and institutional cultural factors.

If one relies solely on a cognitive approach, active awareness tends to be fragile (Simanungkalit & Manalu, 2025). This is criticized by Alam et al. (2024), who argue that environmental literacy requires real-life experiences that engage emotions and behavior. In the context of Pesantren X, ro'an activities are often treated as routine obligations rather than spaces for ecological reflection. It is therefore not surprising that some students perform them merely to fulfill obligations, not as an expression of awareness (Fitriani et al., 2025). This finding confirms that active awareness cannot be separated from intrinsic motivation and social reinforcement.

Interestingly, this pattern was also observed in the study by Fanani et al. (2025) at the Subulussalam Islamic boarding school in Banyuwangi and Nurul Qornain in Jember. They found that students who were emotionally involved in the hygiene campaign showed a significant increase in environmental awareness. Meanwhile, students who only received normative instructions remained at the level of formal compliance without reflective awareness. A similar situation applies at Pesantren X: without reflective experience, the active awareness of students only functions in specific contexts and easily fades when institutional control weakens (Lutfauziah et al., 2023).

From a theoretical perspective, this phenomenon underscores the relevance of social learning theory (Bandura, 1986). The exemplary behavior of ustadz and kiai is key to shaping santri behavior. However, unlike in general education contexts, religious authority in pesantren holds far greater symbolic power. When authority figures demonstrate consistent ecological practices, santri are more likely to emulate them strongly. Conversely, weak role models make it difficult for active awareness to persist (Alam et al., 2024). Thus, social learning theory finds a new context: pesantren as a space where moral-religious authority plays a central role in the transformation of ecological awareness (Aulia et al., 2024).

In short, the active awareness of students at Pesantren X cannot yet be considered a well-established collective consciousness, but rather a partial consciousness that is still searching for form. This finding enriches environmental psychology by showing that active aware-

ness cannot be understood simply as the result of knowledge or rules, but rather as a transformative process involving reflection, social experience, and religious exemplarity (Hasanah et al., 2022). This is the important contribution of this research: presenting a contextual framework that ecological awareness in Islamic boarding schools is the result of a dialectic between normative teachings, social practices, and unique religious habits.

Irresponsible Habits as Obstacles to Ecological Awareness

Although some santri have developed knowledge and active awareness, this study also found irresponsible habits in waste management. These habits are evident in littering, lack of participation in cleaning activities, and indifference when seeing a dirty pesantren environment. This pattern indicates that the ecological behavior of students is still influenced by habitual factors (habits) formed by the social environment, rather than solely by individual knowledge or awareness (Khoirurrijal et al., 2023).

This phenomenon aligns with the research by Tata et al. (2024), which found that in Indonesian schools, environmentally irresponsible behavior is often perpetuated by weak supervision systems and a lack of role models among teachers. In the context of Islamic boarding schools, although religious values emphasize the importance of cleanliness, students tend to normalize littering because they see their peers doing the same (Fatmilarini et al., 2023). This indicates the presence of a social conformity mechanism, where individual behavior follows group patterns even if they contradict normative values (Koessler et al., 2022).

From a theoretical perspective, irresponsible habits can be explained through the framework of habitual behavior. According to Linder et al. (2022), repeated behavior in the same situation will form relatively stable habits, even when they conflict with an individual's knowledge. At Pesantren X, the practice of littering has become a daily habit for some students, so even though there is religious understanding about cleanliness, the behavior persists because it is habitual and there are minimal social consequences. This phenomenon is further supported by Herdiansyah et al.'s (2021) theory of planned behavior, which states that an individual's behavior is influenced by subjective norms. In this case, if group norms permit irresponsible behavior, individuals find it difficult to change their habits.

Other findings further support this analysis. A study by Sulastri et al. (2022) in Ngawi found that littering behavior among adolescents is not only influenced by ecological awareness but also by weak social supervision and insufficient sanitation facilities. A similar finding was observed in the study by Serly et al. (2025), which emphasized that negative ecological behavior is difficult to change without systematic institutional intervention. Thus, irresponsible habits at Pesantren X are not merely a personal issue but a reflection of weaknesses in the social and cultural institutional system.

In other words, the irresponsible habits of santri show that ecological behavior is the result of complex interactions between individuals, groups, and institutional structures. This negative behavior can only be overcome if pesantren are able to build new collective norms that support a culture of cleanliness, strengthen the exemplary role of ustadz, and provide a sustainable social control system (Fitriani et al., 2025). The theoretical contribution of this research is to enrich the understanding of environmental psychology regarding how negative ecological behavior persists in a religious context, while also proposing that interventions based on religious values can serve as an effective strategy to break the cycle of irresponsible behavior.

5. Conclusion and Recommendations

This study confirms that the ecological awareness of santri in pesantren is not a simple process, but rather the result of a dialectic between knowledge, active awareness, and habits formed within a social and institutional context. Although santri have a religious understanding of cleanliness, their active awareness is still partial and often hindered by social conformity and irresponsible habitual behavior.

Pesantren need to strengthen more reflective and participatory environmental education so that students' knowledge can develop into consistent active awareness, supported by the real example of teachers and administrators as behavioral models, as well as the implementation of internal regulations to break irresponsible habits such as littering. Additionally, further research using quantitative and comparative approaches is important to test the effectiveness of strategies for fostering ecological awareness in boarding schools, so that the results of this research can contribute to the development of environmental psychology and education practices based on religious values in Indonesia.

References

- Agama, K. (2024). Melihat ekosistem kemandirian pesantren. *Kementerian Agama Republik Indonesia*. <https://ke-menag.go.id/kolom/melihat-ekosistem-kemandirian-pesantren-mPgBg>
- Alam, L., Alam, M., Samaalee, A., & Suyatno, S. (2024). Environmental sustainability in Indonesian pesantren: Integrating pious principles and da'wah efforts. *Jurnal Ilmu Dakwah*, 44(2), 311–328. <https://doi.org/10.21580/jid.v44.2.23607>
- Aulia, R. N., Abbas, H., Nurhattati, Jasin, F. M., & Mushlihin. (2024). Eco-pesantren modeling for environmentally friendly behavior: New lessons from Indonesia. *International Journal of Evaluation and Research in Education*, 13(1), 223–229. <https://doi.org/10.11591/ijere.v13i1.25930>
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice-Hall.
- Berger, P. L., & Luckmann, T. (1967). The social construction of reality: A treatise in the sociology of knowledge. *American Sociological Review*, 32, 137. <https://doi.org/10.2307/2091739>
- Fanani, A. A., Susilo, A., & Wahyono, I. (2025). The consciousness elements of eco-theological education in pesantren's culture. *MUMTAZ: Jurnal Pendidikan Agama Islam*, 5(1), 204–218. <https://doi.org/10.69552/mumtaz.v5i1.3124>
- Fatmilarini, Y. P., Wahyusari, S., & Salam, A. Y. (2023). Analisis faktor yang mempengaruhi perilaku santri dalam menjaga kebersihan lingkungan. *Jurnal Riset Rumpun Ilmu Kesehatan*, 2(2), 192–204. <https://doi.org/10.55606/jurrikes.v2i2.1753>
- Fitriani, N., Zaki, M., Kabalmay, T., Huda, M., & Hidayatullah, M. B. (2025). Integration of SDGs in pesantren: Building ecological awareness among santri. *International Journal of Research and Community Empowerment*, 3(2), 83–90. <https://doi.org/10.58706/ijorce.v3n2.p83-90>
- Hasanah, F., Syartinilia, S., & Amin, A. A. (2022). Hubungan pengetahuan lingkungan dan sikap konservasi terhadap perilaku lingkungan santri di Pondok Pesantren Darut Tafsir. *Jurnal Pengelolaan Lingkungan Berkelanjutan (Journal of Environmental Sustainability Management)*, 6(3), 194–204. <https://doi.org/10.36813/jplb.6.3.194-204>
- Herdiansyah, H., Brotosusilo, A., Negoro, H. A., Sari, R., & Zakianis, Z. (2021). Parental education and good child habits to encourage sustainable littering behavior. *Sustainability*, 13(15), 1–18. <https://doi.org/10.3390/su13158645>
- Ivan Chofyan, Agustina, I. H., Mukhsin, D., Rosenda, D., Yanto, M., & Kartaatmaja, M. A. (2025). Implementation of waste sorting habits in the Buntet Islamic boarding school area. *ETHOS: Jurnal Penelitian dan Pengabdian kepada Masyarakat*, 13(1), 57–64. <https://doi.org/10.29313/ethos.v13i1.5292>
- Jamilah, N. A., Widodo, M., & Suhendi, E. (2023). Addressing environmental concerns: Strategies of Islamic boarding school teachers in promoting environmental ethics. *International Journal of Nusantara Islam*, 11(2), 246–259. <https://doi.org/10.15575/ijni.v11i2.30892>
- Karman, Anwar, R., & Hakim, L. (2023). The Qur'anic learning based on Islamic eco-theology at pesantren. *Jurnal Pendidikan Islam*, 9(2), 169–186. <https://doi.org/10.15575/jpi.v9i2.24933>
- Khoirurrijal, M. F., Mahfudloh, R. I., & Rusydiyah, E. F. (2023). Societal development through eco-pesantren programs: Actualizing the functions of pesantren in empowering society. *Cendekia: Jurnal Kependidikan dan Kemasyarakatan*, 21(2), 209–223. <https://doi.org/10.21154/cendekia.v21i2.7008>
- Koessler, A. K., Vorlauffer, T., & Fiebelkorn, F. (2022). Social norms and climate-friendly behavior of adolescents. *PLoS ONE*, 17(4), 1–16. <https://doi.org/10.1371/journal.pone.0266847>
- Lemons, J. (1992). Ecological literacy: Education and the transition to a postmodern world. *BioScience*, 42(9), 708–709. <https://doi.org/10.2307/1312179>

- Lestiani, A., Putrawan, I. M., & DJ, R. (2021). Pengaruh school climate dan persistence terhadap counterproductive behavior (Perilaku menyimpang terhadap pelestarian lingkungan) siswa SMA. *IJEEM – Indonesian Journal of Environmental Education and Management*, 6(1), 16–31. <https://doi.org/10.21009/ijeem.061.02>
- Linder, N., Giusti, M., Samuelsson, K., & Barthel, S. (2022). Pro-environmental habits: An underexplored research agenda in sustainability science. *Ambio*, 51(3), 546–556. <https://doi.org/10.1007/s13280-021-01619-6>
- Lutfauziah, A., Al Muhdhar, M. H. I., Suhadi, & Rohman, F. (2023). Curriculum development for environmental education at an Islamic boarding school. *Journal of Turkish Science Education*, 20(3), 490–503. <https://doi.org/10.36681/tused.2023.028>
- Mahpur, M. (2022). *Panduan teknik qualitative voices* (1st ed.). Batari Press.
- Mezirow, J. (1997). Transformative learning: Theory to practice. *New Directions for Adult and Continuing Education*, 74, 5–12. <https://doi.org/10.1002/ace.7401>
- Piaget, J., & Inhelder, B. (1972). *The psychology of childhood*. Basic Books.
- Quddus, A. (2020). Eco-pesantren as the panacea for global climate change: Lessons from Nurul Haramain NW Lombok Islamic boarding school Indonesia. *Jurnal Tatsqif*, 18(2), 111–121. <https://doi.org/10.20414/jtq.v18i2.2741>
- Rofiq, M. A. (2022). Internalizing Islamic education values in raising environmental awareness character: A case study at Madrasah Tsanawiyah Negeri 2 Malang. *Journal of Islamic Education Research*, 3(1), 32–44. <https://doi.org/10.35719/jier.v3i1.218>
- Rohmah, F. N. (2024). Integration of ecological principles in the pesantren system: An analysis of sustainability and environmental conservation practices in Islamic educational institutions. *Molang: Journal Islamic Education*, 2(2), 1–12. <https://doi.org/10.32806/jm.v2i02.813>
- Sabtina, D., & Mahariah. (2025). Internalizing Islamic ecotheology through school culture to foster eco-character. *Halaqa: Islamic Education Journal*, 9(2), 21–41. <https://doi.org/10.21070/halaqa.v9i2.1754>
- Serly, A., Khozin, K., & Hakim, R. (2025). Internalising environmental values through Islamic religious education in junior high school. *Halaqa: Islamic Education Journal*, 9(1), 149–164. <https://doi.org/10.21070/halaqa.v9i1.1724>
- Setyaningsih, D., Handasah, R. R., Mamma, A. T., Krobo, A., Olua, E., & Iryouw, V. (2024). Fostering eco-literacy and naturalistic intelligence through environmentally based education in coastal preschool. *JPUD – Jurnal Pendidikan Usia Dini*, 18(1), 251–269. <https://doi.org/10.21009/jpud.181.18>
- Simanungkalit, J. C., & Manalu, M. M. (2025). The values of religiosity in environmental awareness: A holistic approach to sustainability. *Rivayat: Educational Journal of History and Humanities*, 8(1), 1–10. <https://doi.org/10.24815/jr.v8i1.42845>
- Suharini, E., Syifauddin, M., Niawan, E. K., & Al-Hanif, E. T. (2024). The influence of environmental knowledge and value on environmental behavior in santri at pesantren. In *Proceedings of the 4th International Conference on Social Sciences and Law* (pp. 492–509). Atlantis Press. https://doi.org/10.2991/978-2-38476-303-0_47
- Sulastri, E., Lathifatul Khasanah, M. T. A. G., Santoso, Y. B., & Samsudin. (2022). Program pembiasaan perilaku menjaga lingkungan pada santri Madrasah Diniyah Ula Al Hadi di Ngasinan Pitu Ngawi. *Jurnal Abdikarya Pembangunan*, 1(1), 1–10. <https://doi.org/10.53627/jap.v1i1.4826>
- Syukri, S., Amir, S. M., Fitriani, F., & Pane, S. (2024). Integration of Islamic values with environmental ethics in pesantren education: A case study at Darularafah Raya Pesantren. *Jurnal Pendidikan Islam*, 13(1), 1–12. <https://doi.org/10.14421/jpi.2024.131.1-12>

- Tabtila, M. W., Shunhaji, A., & Susanto. (2023). Manajemen perilaku pro lingkungan pada santri Pondok Pesantren Al-Qur'an Tazkiyah Insani Depok Jawa Barat. *Jurnal Pendidikan dan Keguruan*, 1(7), 580–596.
- Tata, N., Fatmawati, F., & Aflaha, U. (2024). Respon agama terhadap krisis lingkungan. *Al-I'jaz: Jurnal Studi Al-Qur'an, Falsafah dan Keislaman*, 6(2), 111–134. <https://doi.org/10.53563/ai.v6i2.211>