



## From Spiritual Awareness to Zero Waste: Empowering Eco-Mosque Communities Through Tawhid-Based Environmental Education

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### Abstract:

This study aims to examine the integration of spiritual values and environmental practices via Spiritual Waste Management in Islamic education. It aims to contribute to the development of a Tawhidic moral and psychological model of understanding how mosque activities contribute to the development of environmental awareness among santri communities. This study uses a mixed-method research design with surveys on environmental awareness and moral responsibility. It also used an observation and interview method during a community program held in an eco-mosque setting. The study revealed that waste management activities, such as waste separation and recycling, not only contribute to environmental protection but also to spiritual development (*tazkiyatun nafs*). This study identified three main aspects of how waste management activities contribute to spiritual development: tawhidic awareness as a moral foundation for waste management activities, embodied ecological practice via waste management activities, and collective reinforcement of waste management activities via religious communities. This study revealed a paradigm shift in environmental attitudes and behaviors of the participants. This study concluded that an eco-mosque program can be reconceptualized as a moral-ecological laboratory for a transformative model of integrating spirituality, psychology, and sustainability in Islamic education.

## INTRODUCTION

Environmental degradation and improper waste management have become major social and ecological concerns that affect the quality of human life, public health, and community sustainability. Waste is not merely a technical problem related to collection and disposal, but also reflects how individuals understand responsibility toward their surroundings. In many communities, environmental practices remain separated from moral and spiritual education, even though daily behaviors are strongly influenced by values and beliefs (Pratisti, 2024; Zhu et al., 2026). Religious institutions have an important position in addressing this situation because they are closely connected with community life, education, and the formation of social values. Mosques, in particular, have the potential to become spaces where religious teachings are translated into concrete environmental practices (Farabi & Fatharini, 2025; Rahman et al., 2024). Integrating environmental responsibility into mosque activities can encourage communities to view waste management as part of their ethical and spiritual responsibilities (Binawan, 2023; Soekiswati et al., 2024). Therefore, strengthening the

environmental role of mosques is important not only for reducing waste but also for developing environmentally responsible individuals and communities. This makes the integration of spirituality and environmental education socially significant.

The general problem is that waste management in many communities continues to emphasize physical handling rather than behavioral and moral transformation. Waste sorting, recycling, reuse, and responsible disposal often depend on individual awareness and community participation, yet these behaviors are not always supported by consistent values, habits, or educational processes (Yandri et al., 2023; Muhammad et al., 2026). As a result, environmental programs may be implemented temporarily without producing lasting behavioral changes. Communities may understand that waste causes environmental problems but still lack a deeper sense of responsibility for changing their daily practices. This situation indicates that environmental education needs to move beyond the transmission of information toward the formation of values, attitudes, and responsible behavior (Khoirurrijal et al., 2025; Syukri et al., 2024). In Muslim communities, this challenge is particularly relevant because environmental responsibility can be connected with religious concepts concerning human accountability, stewardship, cleanliness, responsibility, and care for creation (Bsoul et al., 2022; Mohidem & Hashim, 2023). However, these values are often communicated as religious teachings without being systematically connected to practical environmental behavior. Consequently, a model that links spiritual values with moral development and concrete waste-management practices is needed to support more sustainable community behavior.

This issue can be observed in the growing interest in mosque-based environmental initiatives, including waste sorting, recycling activities, environmental campaigns, and community education. Such activities demonstrate that mosques can function beyond their conventional roles as places of worship and religious instruction. They can also become community spaces where environmental knowledge, collective responsibility, and sustainable habits are developed through direct participation (Farabi & Fatharini, 2025; Rahman et al., 2024). Nevertheless, environmental activities within mosque communities are not always accompanied by a structured process of moral and spiritual internalization. People may participate in cleaning or sorting waste because of social expectations, institutional programs, or practical benefits without necessarily understanding these activities as expressions of religious responsibility. This creates an important opportunity to reposition the mosque as a transformative environment in which spiritual education and ecological practice are connected (Binawan, 2023; Yu et al., 2025). When community members repeatedly engage in environmentally responsible actions while reflecting on their religious values, environmental practices may become part of their moral identity. Such a transformation could strengthen community participation, improve ecological awareness, and encourage sustainable habits that extend beyond the mosque into households and wider social environments (Soekiswati et al., 2024; Zhu et al., 2026).

Previous research on environmental education has demonstrated that pro-environmental behavior is influenced by cognitive, emotional, social, and normative factors. Existing behavioral models have helped explain how attitudes, beliefs, values, perceived responsibility, and social expectations influence environmental action. However, these approaches do not always sufficiently explain the role of spirituality and religious identity in shaping environmental responsibility, particularly within Muslim communities. Meanwhile, studies of Islamic environmental ethics have emphasized

concepts such as tawhid, amanah, khalifah, balance, accountability, and spiritual purification as foundations for environmental responsibility (Bsoul et al., 2022; Widiawaty et al., 2026). Despite their conceptual relevance, many discussions remain theological or philosophical and have not been sufficiently translated into observable behavioral processes. Similarly, studies of Eco-Mosque initiatives have generally focused on program implementation, participation, environmental campaigns, or community activities (Farabi & Fatharini, 2025; Rahman et al., 2024). The main weakness is the limited explanation of how religious values are internalized through environmental practices and subsequently influence moral and psychological development. This gap is important because understanding this process can clarify why environmentally oriented religious programs may produce sustainable behavioral change in some communities but remain temporary in others.

Building on these limitations, this research positions Spiritual Waste Management as a conceptual bridge between religious education, moral psychology, and environmental practice. The concept views waste management not only as a physical activity but also as a process through which individuals practice responsibility, discipline, awareness, and moral commitment. In this framework, physical actions such as sorting waste, recycling materials, and creatively reusing discarded objects become opportunities for individuals to embody values in everyday behavior (Yandri et al., 2023; Muhammad et al., 2026). The research therefore proposes a Tawhidic Moral-Psychological Model of Eco-Consciousness that connects Islamic spiritual values with moral and psychological mechanisms and embodied ecological practices. The model places tawhid, amanah, and tazkiyah as normative foundations, while moral cognition, ecological awareness, and moral identity represent the psychological mechanisms through which values may influence behavior. Waste sorting, recycling, and creative reuse represent the behavioral dimension. This conceptualization contributes to existing research by explaining the potential mechanism linking spirituality to ecological action rather than merely describing environmental programs. It also strengthens the theoretical basis for developing mosque-based environmental education, consistent with research showing the potential of Islamic education to integrate religious values with ecological responsibility (Masturin et al., 2022; Hamdan, 2026).

The specific problem addressed in this research concerns the limited integration of spiritual education, moral development, and practical waste management within mosque-based environmental activities. Although communities may have access to environmental campaigns and waste-management programs, there remains a need to understand how religious values can be transformed into consistent ecological behavior. The central problem is therefore not simply how communities manage waste, but how environmental practices can contribute to the formation of environmentally responsible moral identities. This problem raises several questions: How can spiritual values be developed through waste-management activities? Through what moral and psychological mechanisms can religious values influence ecological awareness and behavior? How can mosque environments facilitate the integration of spiritual learning with practical environmental action? Addressing these questions is important because sustainable environmental behavior requires more than infrastructure or technical knowledge. It requires individuals who understand environmental responsibility as part of their personal and collective values. By focusing on this problem, the research responds to a broader community need for environmental initiatives that are

participatory, educational, morally meaningful, and capable of producing sustainable behavioral transformation.

Accordingly, this research aims to develop a Tawhidic Moral-Psychological Model of Eco-Consciousness based on the implementation of Spiritual Waste Management within the Eco-Mosque context. The research specifically aims to examine the process through which spiritual values are connected with environmental responsibility, identify the moral and psychological mechanisms underlying ecological awareness, and conceptualize the mosque as a transformative environment that unites spiritual education with environmental practice. The scope of the model covers three interconnected dimensions: Tawhidic values as the normative foundation, moral-psychological mechanisms as the cognitive and affective process, and embodied ecological practices as the behavioral dimension. The proposed framework is intended to support communities in transforming environmental activities from temporary programs into meaningful educational experiences. In the broader context, the model may contribute to the development of community-based environmental education that is culturally relevant and spiritually grounded. By integrating religious values, moral psychology, and practical waste management, the research seeks to strengthen the capacity of mosques to contribute to ecological awareness, responsible behavior, and sustainable community development.

## RESEARCH METHODS

The community service program was implemented through a participatory community empowerment approach in an Eco-Mosque environment in Malang, Indonesia. The program involved santri (female Islamic boarding school students), mosque community members, and KKN students who served as facilitators and activity assistants (Cornish et al., 2023; De Oliveira, 2023). The target participants were selected based on their involvement in mosque-based environmental activities and their willingness to participate throughout the program. Rather than applying an experimental research design, the program emphasized active community participation, practical learning, and the internalization of environmental and Islamic values through direct activities. The implementation was designed to encourage participants to recognize waste management as both an environmental responsibility and a moral-spiritual practice. The KKN students facilitated the activities in collaboration with mosque representatives and community members to ensure that the program was adapted to local conditions and community needs.

The implementation consisted of several interconnected stages, beginning with an initial observation and community needs assessment. At this stage, the implementation team observed existing waste-management practices, identified problems related to waste sorting and disposal, and discussed environmental concerns with mosque administrators and community members. The second stage involved environmental and spiritual education through interactive discussions and practical demonstrations. Participants were introduced to the relationship between environmental responsibility and Islamic values, particularly tawhid, amanah, and tazkiyah. The third stage consisted of practical implementation through Spiritual Waste Management activities, including the separation of organic and inorganic waste, recycling, creative reuse of recyclable materials, and maintaining cleanliness in the mosque environment. Participants were directly involved in each activity so that

environmental knowledge could be transformed into practical habits and collective responsibility.

The fourth stage focused on reflection and strengthening the sustainability of the program. After completing the practical activities, participants were invited to discuss their experiences and reflect on the connection between waste management, personal responsibility, environmental awareness, and Islamic values. Facilitators used interactive discussions, question-and-answer sessions, observation, and informal interviews to identify changes in participants' understanding and responses to the program. Program evaluation was conducted through observation of participant involvement, comparison of waste-management practices before and after the intervention, participant responses during reflection sessions, and documentation of the activities. The indicators of program achievement included participants' ability to distinguish types of waste, their participation in sorting and recycling activities, their understanding of the relationship between environmental responsibility and Islamic values, and their willingness to continue environmentally responsible practices within the mosque community.

The final stage emphasized follow-up and program sustainability. Participants were encouraged to continue waste sorting, recycling, and creative reuse as routine activities within the mosque environment rather than treating them as temporary activities during the community service program. The facilitators provided simple guidance on waste-management procedures and encouraged mosque representatives and community members to take responsibility for maintaining the practices after the completion of the program. Documentation, activity records, participant reflections, and observations were used as supporting evidence of program implementation and outcomes. The success of the program was therefore assessed not only from the completion of the planned activities but also from the emergence of environmentally responsible practices and the community's commitment to maintaining them. Through this approach, the program sought to establish the mosque as a community-based learning environment where environmental practices, spiritual values, and collective responsibility can be developed simultaneously.

## RESULTS AND DISCUSSION

### Results

The implementation of the Spiritual Waste Management program produced several positive outcomes among the participants and the mosque community. The program involved practical waste-sorting activities, recycling, creative reuse, and discussions connecting environmental practices with Islamic values. Rather than focusing only on the technical aspects of waste management, the activities encouraged participants to understand environmental responsibility as part of everyday religious and social responsibility. During the implementation, participants demonstrated active involvement in identifying different types of waste, separating organic and inorganic materials, and utilizing recyclable materials for creative purposes. The activities also encouraged interaction between santri, mosque community members, and KKN students as facilitators. This collaborative process created a learning environment in which participants could directly practice environmental responsibility rather than receiving environmental information only through lectures. Observations during the activities showed that participants became more familiar with waste separation procedures and increasingly recognized the relationship between cleanliness, environmental

responsibility, and Islamic values. These results indicate that community-based environmental activities can provide practical learning experiences while strengthening collective responsibility within the mosque environment.

Table 1 presents the main changes observed in participants' environmental awareness, moral responsibility, spiritual internalization, and pro-environmental behavior before and after the implementation of the program. The table should be interpreted as an evaluation of program outcomes rather than as an experimental statistical test. The results show an overall positive tendency across the measured aspects, with spiritual internalization demonstrating the most noticeable development among the program indicators. This finding suggests that participants did not only acquire practical knowledge about waste management but also developed a stronger understanding of the connection between environmental practices and Islamic values. Eco-consciousness and moral responsibility also showed improvement, indicating that practical activities were accompanied by changes in participants' understanding of their responsibilities toward the environment. Pro-environmental behavior was reflected in participants' increased involvement in sorting, reusing, and managing waste during the activities. Therefore, the table provides supporting evidence that the program generated outcomes across knowledge, value, and behavioral dimensions rather than focusing exclusively on technical waste-management skills.

**Table 1. Changes in Participants' Environmental and Spiritual Outcomes Before and After the Program**

| Outcome Indicator          | Before Program | After Program | Mean Increase |
|----------------------------|----------------|---------------|---------------|
| Eco-Consciousness          | 3.18           | 4.12          | 0.94          |
| Moral Responsibility       | 3.24           | 4.20          | 0.96          |
| Spiritual Internalization  | 3.05           | 4.31          | 1.26          |
| Pro-Environmental Behavior | 2.96           | 4.08          | 1.12          |

The development of spiritual internalization represents an important outcome of the program because it demonstrates that environmental activities can become a medium for strengthening participants' reflection on Islamic values. Through discussions and practical activities, participants were encouraged to connect waste management with concepts such as tawhid, amanah, and tazkiyah. The activities therefore provided opportunities for participants to move from understanding religious values at a conceptual level toward expressing those values through concrete actions. Participants' reflections indicated that maintaining cleanliness, reducing waste, and reusing materials could be understood as forms of responsibility toward God's creation and the surrounding community. This process also encouraged participants to reflect on personal habits and the consequences of careless waste disposal. In the PKM context, this outcome is important because community empowerment is not limited to providing technical skills but also involves strengthening awareness and motivation for continued action. Spiritual Waste Management consequently functions as an educational approach that combines practical environmental learning with value formation, allowing participants to experience environmental responsibility as a meaningful part of their daily lives.

Another important finding concerns the role of direct practice in strengthening participants' environmental behavior. During the program, participants did not merely receive explanations about waste management but were directly involved in sorting, recycling, and creatively reusing waste materials. This hands-on approach made environmental practices easier to understand and apply within the mosque environment.

Participants also worked collectively, allowing them to observe and encourage one another during the activities. The group setting was particularly important because waste management requires consistent participation rather than individual action alone. The involvement of KKN students as facilitators also helped participants understand the procedures and maintain their motivation throughout the activities. From the perspective of community empowerment, these activities demonstrate that practical learning can strengthen ownership of environmental programs. The participants were positioned not merely as recipients of a program but as actors who contributed to its implementation. This participatory process is expected to support the continuation of waste sorting, recycling, and creative reuse after the formal implementation period has ended, particularly when mosque members continue to provide social support and routine supervision.

The program also revealed the importance of the mosque as a community learning environment for integrating environmental and religious education. The mosque provided a shared social space where participants could learn, practice, discuss, and reflect on environmental responsibility collectively. This environment strengthened the social dimension of the program because environmental practices were carried out as shared activities rather than individual obligations. Participants' involvement in waste management also created opportunities for communication between santri, mosque community members, and facilitators. Such interaction supported the development of collective awareness and encouraged participants to view environmental cleanliness as a shared responsibility. The findings further suggest that the effectiveness of the program does not depend solely on the activities themselves but also on the social environment in which they are implemented. A mosque that consistently supports environmental practices can provide reinforcement through routine activities, community interaction, and religious education. Therefore, the Eco-Mosque approach has potential as a community empowerment strategy because it connects existing religious and social structures with practical environmental action. The mosque can consequently function as a sustainable learning space for developing ecological awareness and responsible community behavior.

The final outcome of the program was reflected in the emergence of a more integrated understanding of environmental responsibility, combining practical behavior, moral awareness, spiritual reflection, and collective participation. The implementation demonstrated that waste management can be introduced not simply as a cleanliness campaign but as a continuous educational process. The program encouraged participants to understand that separating waste, recycling materials, and maintaining mosque cleanliness are actions that can express broader values of responsibility and care. Based on the observations and participant reflections, the sustainability of the program requires continued involvement from mosque administrators, community members, and participants who have already received practical experience. For this reason, the program should be followed by routine waste sorting, simple recycling activities, periodic environmental education, and monitoring of the mosque's waste-management practices. The main contribution of the PKM activity is therefore not only the completion of waste-management activities during the intervention period but the establishment of a practical model that can be continued independently by the community. Spiritual Waste Management provides a feasible approach for integrating environmental action with Islamic values while strengthening community participation and ecological responsibility.

## Discussion

The findings demonstrate that the Spiritual Waste Management program contributed to improvements across four interconnected dimensions: eco-consciousness, moral responsibility, spiritual internalization, and pro-environmental behavior. The increase in spiritual internalization was particularly notable, suggesting that environmental activities conducted within a religious setting can provide opportunities for participants to connect practical behavior with Islamic values. This finding is consistent with the broader view that pro-environmental behavior is influenced not only by environmental knowledge but also by personal values, moral norms, and beliefs (Ajibade & Boateng, 2021; Tian & Liu, 2022). It also supports the argument that environmental education becomes more meaningful when learning is connected with the cultural and value systems of the community (Marouli, 2021; Sarid & Goldman, 2021). However, the present findings extend this perspective by showing that environmental activities can be used as a medium for spiritual reflection rather than being treated only as technical environmental education. In this sense, waste sorting, recycling, and creative reuse became practical experiences through which participants could understand responsibility, discipline, and care for the environment as part of their broader moral development.

The findings also support several previous perspectives on the relationship between values and environmental behavior while offering a contextual extension. Value-based approaches generally explain that environmental behavior develops when individuals recognize environmental consequences and develop personal norms that encourage responsible action (Savari et al., 2023; Whitmarsh et al., 2021). Similarly, moral psychology emphasizes the importance of moral identity, emotions, and internalized values in shaping responsible behavior (Alhaidan, 2025; Najafov, 2025). The present program is consistent with these perspectives because participants were encouraged to connect environmental practices with *tawhid*, *amanah*, and *tazkiyah*. Nevertheless, the program differs from approaches that primarily explain environmental behavior through rational attitudes, social norms, or perceived behavioral control. In the Spiritual Waste Management context, environmental responsibility was framed as a moral and spiritual obligation, allowing participants to interpret environmental practices through an Islamic worldview. This finding suggests that environmental education in religious communities may benefit from incorporating locally meaningful moral frameworks rather than relying exclusively on general behavioral models. Such an approach can strengthen the relevance of environmental education while providing a deeper explanation of why individuals may continue environmentally responsible practices.

The role of direct participation also provides an important theoretical implication. Participants did not merely receive information about environmental problems but practiced waste sorting, recycling, and creative reuse while reflecting on their meaning. This finding is consistent with experiential learning perspectives, which emphasize that learning develops through the interaction between concrete experience, reflection, conceptual understanding, and subsequent action. It also corresponds with perspectives on embodied learning, which suggest that physical experiences can contribute to the development of cognitive and affective understanding. The distinctive contribution of the present program is the integration of these experiential processes with spiritual reflection. The physical act of separating waste was connected with moral responsibility, while recycling and reuse became opportunities to reflect on personal habits and

responsibility toward creation. Theoretically, this suggests that environmental behavior in religious communities can be understood as an interaction between normative values, moral reflection, embodied practice, and social reinforcement. Thus, the findings provide a conceptual basis for understanding Spiritual Waste Management as more than a waste-management technique; it represents an educational process through which environmental practices can become connected with personal values and moral identity.

The findings further highlight the importance of the mosque as a social and educational environment. Participants reported that carrying out environmental activities collectively made the practices easier to maintain, indicating that social interaction and shared religious environments can reinforce individual behavior. This finding is consistent with social learning perspectives, which emphasize that behavior can be strengthened through observation, interaction, reinforcement, and participation within a social environment. It also supports the broader understanding of mosques as institutions that can facilitate education, social interaction, and community development beyond their primary religious functions (Cahyaningrum et al., 2024; Žak & Hamerska, 2025). The practical implication is that environmental programs should not be designed solely around individual behavioral change but should create collective routines that encourage participation and mutual reinforcement. Mosque administrators, santri, community members, and facilitators can therefore share responsibility for maintaining waste-management practices. Regular waste sorting, environmental discussions, recycling activities, and simple monitoring mechanisms can help transform temporary program activities into community routines. This approach also increases the possibility that environmental practices will extend beyond the mosque into households and other community settings.

From a practical perspective, the findings indicate that Spiritual Waste Management can serve as a community empowerment strategy that combines environmental education, religious values, and direct participation. Rather than introducing environmental issues through formal lectures alone, the program provides participants with opportunities to learn through action, reflection, and collective practice. This model can be adapted by other mosque communities according to their available resources, waste-management conditions, and local environmental priorities. The practical contribution therefore lies in providing a relatively simple framework consisting of value introduction, environmental education, waste-management practice, reflection, and follow-up activities. The model can also support KKN programs and other community-service initiatives because it allows students to function as facilitators while community members remain active actors in the program. Theoretically, the findings strengthen the position of religious institutions as potential spaces for environmental learning and moral development. Practically, they demonstrate that sustainability programs can be made more culturally relevant by connecting environmental responsibility with values already understood and practiced within the community. This integration may increase participants' sense of ownership and strengthen the sustainability of community-based environmental initiatives.

The main contribution of this program is the development and practical application of the Spiritual Waste Management approach as a bridge between environmental action, moral development, and Islamic spiritual values. Previous environmental programs in religious settings have often emphasized activities such as cleanliness campaigns, waste sorting, recycling, and community participation, while less

attention has been given to the process through which these activities can contribute to moral and spiritual internalization. The present findings address this gap by demonstrating how practical waste-management activities can be accompanied by value reflection and collective participation. The proposed Tawhidic Moral-Psychological perspective consequently places spiritual values as a foundation, moral reflection and ecological awareness as an internal process, and environmental practices as concrete behavioral expressions. Although the findings should not be interpreted as evidence of causal effects because the program was implemented as a community empowerment activity rather than a controlled experiment, they provide a meaningful basis for further development and evaluation. Future programs can strengthen the model through longer implementation periods, broader community involvement, and systematic follow-up. In this way, the contribution of the program extends beyond waste reduction toward the development of environmentally responsible, morally aware, and spiritually grounded communities.

## CONCLUSION

This study concludes that Spiritual Waste Management in the Eco-Mosque context offers a meaningful way to integrate Islamic spiritual values, moral responsibility, and environmental practices into community-based Islamic education. The program encouraged participants to see waste sorting, recycling, and creative reuse not only as environmental activities but also as expressions of tawhid, amanah, and tazkiyah, strengthening ecological awareness, ethical responsibility, spiritual internalization, and pro-environmental behavior. For wider application, mosques, educational institutions, community organizations, and policymakers are encouraged to establish structured initiatives that integrate environmental education, experiential learning, spiritual reflection, and collective participation. Regular waste management activities, reflection sessions, and community-based supervision should be maintained to ensure continuity and local engagement. However, the findings are limited by the specific social context and short implementation period. Future research should investigate the long-term sustainability of Spiritual Waste Management, involve more diverse communities, and examine its application across various educational and religious environments. Further studies may also explore the role of digital technologies, participatory monitoring systems, and innovative learning media in better integrating spiritual values and environmental education. The implication of this study is that the Eco-Mosque model can serve as a contextual framework for developing faith-based environmental programs that promote sustainable behavior and strengthen community participation in ecological conservation.

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## CONFLICTS OF INTEREST

The authors declare no conflict of interest.

## USE OF ARTIFICIAL INTELLIGENCE (AI)-ASSISTED TECHNOLOGY

Artificial intelligence tools were employed strictly for language translation and stylistic editing to ensure clarity. The integrity, analysis, and conclusions of the study remain the sole responsibility of the authors.

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