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Integrating Digital Technology into Environmental Education to Promote Conservation Movement at Al-Jauharen Islamic Boarding School

Muhammad Yusuf^{1*}, Dian Arinsandy Eka Putra Sembiring¹, Muhammad Fauzan², Hansein Arif Wijaya², Denny Denmar³

¹Pendidikan Biologi, Fakultas Keguruan Ilmu dan Pendidikan, Universitas Jambi

²Pendidikan Bahasa Inggris, Fakultas Keguruan Ilmu dan Pendidikan, Universitas Jambi

³Administrasi Pendidikan, Fakultas Keguruan Ilmu dan Pendidikan, Universitas Jambi

*Corresponding author: yusufyahya@unja.ac.id

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ABSTRACT

Environmental issues are certainly a crucial issue to be faced, which can be caused by low ecological literacy and limited use of digital technology. Therefore, a conservation movement is needed through the empowerment of community groups, such as residents of the Aljauharen Islamic Boarding School. This community service activity was carried out at the Al-Jauharen Islamic Boarding School using the method of delivering material, discussion, interpretation, and training in the use of digital applications to develop environmental education content based on community-based conservation. The implementation results showed an increase in participants' abilities in digital literacy and environmental understanding, marked by an increase in the average score from 58.3 to 84.7, as well as the emergence of conservation practices such as tree planting, waste management, and utilization of organic waste. The integration of digital technology with Islamic values has proven effective in strengthening ecological awareness and community participation, while supporting the implementation of MBKM and offering an empowerment model that has the potential to be replicated in other religious educational institutions.

Keywords: Community-Based Conservation; Islamic Boarding School; Ecological Literacy; Education; Digital Technology.



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INTRODUCTION

Environmental issues are currently a global concern due to their increasingly complex and widespread impacts, extending to the local level. In densely populated areas, including areas surrounding Islamic boarding schools (pesantren), issues such as deforestation, water pollution, and waste management remain major challenges to achieving sustainable living (Wahyuni & Suranto, 2021; Yuniarti et al., 2020; Rahman et al., 2020). Public awareness of the importance of maintaining ecosystem balance is also relatively low, necessitating a contextual and sustainable educational approach.

As community-based educational institutions, Islamic boarding schools (pesantren) play a crucial role in shaping people's ecological behavior. In addition to serving as places of spiritual development, they also hold significant potential as centers for social and environmental learning based on religious values (Mohsen et al., 2022; Arpanudin, 2016). Through this role, Islamic boarding schools can be pioneers of change in environmental management based on local wisdom and Islamic values. However, most Islamic boarding schools still face limitations in accessing technology and learning resources relevant to contemporary environmental issues.

Al-Jauharen Islamic Boarding School, located in Jambi Province, is one of the oldest Islamic educational institutions, founded in 1927 and currently home to over 600 students. This large number of students presents significant potential for developing digital-based environmental literacy. This effort aligns with the spirit of the Independent Learning, Independent Campus (MBKM) program, particularly in strengthening partnerships between universities and the community to increase community capacity through off-campus learning (Chudzaifah et al., 2021). This community service activity also represents the implementation of the University of Jambi's Key Performance Indicators (KPI), namely providing off-campus learning experiences for students (KPI 2), strengthening collaboration between lecturers and the community (KPI 3), and increasing the institution's contribution to social development (KPI 5).



Figure 1. Aljauharen Islamic Boarding School, Jambi

Al-Jauharen Islamic Boarding School's commitment to environmental preservation is evident through a number of educational activities based on Islamic values. However, limited innovation in learning media and the lack of integration of digital technology into the learning process hinder the development of ecological awareness among students. This situation aligns with the findings of several community service studies that emphasize the importance of strengthening human resources and utilizing technology to enhance institutional capacity (Rachmawati et al., 2023; Yusuf & Hendra, 2023).

In this context, a community-based conservation approach is relevant as a strategy to increase active community participation in environmental protection. This approach positions local communities, including religious educational institutions, as key actors in conservation activities (Young et al., 2021; Fariss et al., 2023). Through this empowerment model, communities become not only beneficiaries but also actors in maintaining the sustainability of their natural resources.

This community service activity focuses on the development of digital educational media used to improve environmental literacy at Al-Jauharen Islamic Boarding School. Collaboration between lecturers, students, and Islamic boarding schools is expected to create a learning model that is adaptive to technological developments and relevant to the religious and social contexts of the community (Said et al., 2023; Hidayat et al., 2023). Thus, this activity not only contributes to improving the knowledge of students but also strengthens Jambi University's position as an institution that plays an active role in addressing environmental challenges through the synergy of academics, technology, and community empowerment.

METHOD

This PPM activity was carried out at the Aljauhare Jambi Islamic Boarding School on October 7, 2025. The implementation method consisted of delivering material, discussions, and demonstrations (Figure 2).

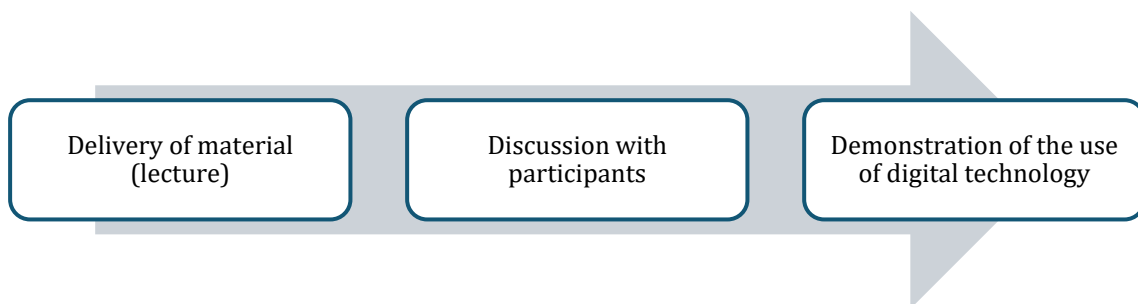


Figure 2. Flow of the PPM Implementation Method at the Aljauharen Islamic Boarding School, Jambi

RESULT

This community service activity demonstrated positive results in building awareness and participation of the Islamic boarding school community on environmental issues. The program focused on strengthening the capacity of students and teachers through digital literacy training combined with environmental education

materials. The training aimed to empower participants to utilize digital technology as a means of da'wah (Islamic outreach) and conservation-based learning. Evaluation results showed an increase in participants' ability to use digital technologies such as Canva to produce educational content on environmental conservation. Based on simple pre-test and post-test results, the average score of participants increased from 58.3 to 84.7. This improvement demonstrates the success of the technology-based approach in fostering creativity and ecological awareness among students. These findings align with the findings of Chudzaifah, Hikmah, and Pramudiani (2021) that collaborative activities involving the community and students can develop critical thinking skills and encourage meaningful technology-based learning.

In addition to improving digital skills, this activity also successfully strengthened spiritual and religious values in environmental education. These values were then realized in concrete activity plans such as the Clean Friday movement, management of the Islamic boarding school waste bank, and the utilization of kitchen waste as organic fertilizer. This approach has proven effective in increasing the spiritual-ecological awareness of Islamic boarding school residents. These results support the findings of Said et al. (2023), who stated that strengthening religious values can foster internal motivation for environmentally friendly behavior. Thus, Islamic boarding schools function not only as religious educational institutions but also as centers for ecological character formation based on Islamic spirituality.

Furthermore, the program's implementation has demonstrated success in encouraging the participation of Islamic boarding school communities in community-based conservation efforts. This reflects the principle of community-based conservation, where communities play a key role in preserving natural resources (Young et al., 2021). This approach aligns with the views of Mohsen, Murtadlo, and Basri (2022), who assert that Islamic boarding schools have strategic potential in driving social and economic empowerment based on shared values and moral responsibility towards the surrounding environment.



Figure 3. Documentation of Activity Implementation

From a higher education policy implementation perspective, this community service activity also serves as a concrete manifestation of the Independent Learning and Independent Campus (MBKM) program. Students are involved as facilitators in the training and mentoring process, providing them with contextual

learning experiences outside the campus. This collaboration strengthens the relationship between the academic world and the community and provides students with the opportunity to develop communication, leadership, and social empathy skills. These findings support the research of Rachmawati et al. (2023), which demonstrated that community participation-based community service activities can increase student learning engagement and foster greater social awareness. Furthermore, this activity contributes to the achievement of the university's Key Performance Indicators (KPI), particularly in aspects of student activities outside the campus and the institution's contribution to solving community problems.

The impact of this community service program is not only measurable in the participants' increased knowledge but also in changes in the behavior and habits of the Islamic boarding school community. Students and teachers have begun to practice waste sorting, maintain environmental cleanliness, and utilize social media to promote ecological messages. Islamic boarding school teachers acknowledged that this activity provided new inspiration for integrating Islamic values with digital technology in the learning process. These findings align with research by Yusuf and Hendra (2023), which emphasized the importance of community-based empowerment training for developing adaptive and sustainable human resources in religious educational environments.

Overall, the results of the activity indicate that a community-based conservation approach combined with digital literacy and Islamic values has proven effective in increasing ecological awareness among Islamic boarding school residents. The collaboration between the university and the Islamic boarding school has created a synergy between academic knowledge, technology, and spirituality within the context of community empowerment. The success of this activity demonstrates that Islamic boarding schools can transform into sustainable, ecological learning spaces and serve as a model for replication for other religious educational institutions in Jambi Province and other regions in Indonesia.

CONCLUSION

Community service activities at the Al-Jauharen Islamic Boarding School have successfully increased awareness and participation of residents in environmental conservation through the use of digital technology as an educational medium. The training provided encouraged students and teachers to use simple applications to create engaging learning materials and environmental campaigns. The community-based approach actively involved all elements of the Islamic boarding school, fostering independence and collective responsibility for the environment. This collaboration between universities and Islamic boarding schools is expected to become a model of sustainable empowerment that integrates spiritual values, knowledge, and concrete actions in environmental conservation efforts.

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