

Eco-School Activities as Ecopedagogical Practices in Developing Environmental Responsibility among Primary School Students

Yulia Agustin, Ganes Gunansyah, Putri Rachmadyanti

25010855046@mhs.unesa.ac.id, ganesgunansyah@unesa.ac.id, putrirachmadyanti@unesa.ac.id

Faculty of Education, Universitas Negeri Surabaya, Surabaya, Indonesia

*Correspondence to: Ganes Gunansyah
Universitas Negeri Surabaya
email: ganesgunansyah@unesa.ac.id

Abstract: This study aims to investigate the eco-school activities function as ecopedagogical practices in developing environmental responsibility among primary school students. Employing a qualitative case study design, data were collected through observations, in-depth interviews, and document analysis involving the principal, fourth-grade teacher, eco-school coordinator, students, and parents. The findings reveal that students' environmental responsibility is primarily developed through consistent, action-based activities embedded in daily school practices, including waste management, water conservation, and habitual ecological behaviors. These practices enable students to construct environmental awareness through direct experience rather than theoretical instruction. The effectiveness of the program is supported by strong leadership, active parental involvement, and collaboration with external environmental organizations, while challenges are reflected in limited facilities and occasional inconsistency in students' behavior. It can be concluded that this study contributes to the field of ecopedagogy and environmental education by demonstrating that sustained, experience-based eco-school practices. It plays a significant role in shaping students' environmental responsibility. It also offers empirical insights into how school culture and community involvement strengthen the internalization of environmental values in primary education contexts.

Keywords: ecopedagogy; eco-school program; environmental education; environmental responsibility; primary education

Article info: Submitted Jan 6, 2026 | Revised Mar 22, 2026 | Accepted Mar 30, 2026

Recommended citation: Agustin, Y., Gunansyah, G., & Rachmadyanti, P. (2026). Eco-School Activities as Ecopedagogical Practices in Developing Environmental Responsibility among Primary School Students. *Jurnal Pendidikan Dan Pengajaran Guru Sekolah Dasar (JPPGuseda)*, 9(1), 65-73. <https://doi.org/10.55215/jppguseda.v9i1.30>

Introduction

The growing complexity of environmental challenges underscores the urgency of cultivating environmental responsibility from the early stages of education. Problems such as waste accumulation, pollution, and water scarcity demand educational approaches that go beyond the mere transfer of knowledge toward the development of environmentally responsible behavior (Aisyah et al., 2024). At the primary school level, environmental education holds a strategic role in shaping students' attitudes, habits, and values through meaningful, experience-based learning processes (Aisyah et al., 2024; Saputri et al., 2026). In Surabaya, environmental education has been strengthened through collaborative efforts between schools and community organizations. One notable initiative is the Surabaya Eco School program initiated by *Tunas Hijau*, which emphasizes real-world environmental actions integrated into daily school activities (Salazar et al., 2024). This program encourages schools to establish environmentally oriented policies, develop ecological routines, and engage the entire school community. One of state elementary school represents a prominent example, having consistently received the Surabaya Eco School Award, which reflects its sustained commitment to environmental management and active student participation. This context offers a valuable opportunity to explore how action-based Eco School activities function as ecopedagogical practices in elementary education (Gunansyah et al., 2024).

Previous studies on school-based environmental initiatives in Indonesia have largely focused on the green school program. These studies indicate that green school contributes to improved environmental conditions and generates positive responses from school communities, particularly in sanitation, waste management, and environmental awareness (Purwanti, 2017; Aeni et al., 2020). However, research specifically examining action-based Eco School practices especially in elementary schools that consistently receive

external recognition remains limited. In addition, there is still a lack of in-depth analysis regarding how such programs contribute to the development of students' environmental responsibility as a character outcome, rather than merely describing program implementation. The Eco School program is designed not only as an environmental education initiative but also as a means of fostering an environmental culture within the school environment (Ismail et al., 2024; Annas et al., 2025). Environmental responsibility is more effectively developed through continuous engagement in concrete, real-life activities rather than through theoretical instruction alone. Practices such as waste sorting, composting, water conservation, and reducing plastic use enable students to interact directly with environmental issues in their daily lives at school. This experiential learning approach aligns with the principles of ecopedagogy, which emphasize learning through action, critical awareness, and behavioral transformation grounded in real-world experiences (Sudarto et al., 2025).

Furthermore, the Eco School program functions not only as an educational initiative but also as a structured mechanism for building a sustainable environmental culture (Bocanegra Díaz et al., 2025). This perspective is supported (Nizaar, 2022; Agustin et al., 2026), who explain that in Indonesia, environmental conservation learning is integrated within eco-school frameworks and is even recommended for non-eco schools. Understanding how Eco School programs are implemented and sustained is therefore crucial, as schools serve as key social environments for character formation. Factors such as school leadership, teacher involvement, parental participation, and partnerships with environmental organizations play a significant role in determining program success (Ramadhan & Anwar, 2025). At the same time, challenges such as limited facilities and inconsistencies in students' pro-environmental behavior may hinder program effectiveness. Hence, examining both supporting and inhibiting factors is essential to obtain a comprehensive understanding of Eco School implementation.

The impact of Eco School implementation on students' environmental responsibility becomes a central focus of this study. Environmental responsibility represents an essential character dimension within the Indonesian education curriculum. Through various environmental activities, students can develop a deeper understanding of their relationship with nature (Fubani et al., 2024; Prayogo et al., 2024). Moreover, the habituation of environmentally friendly behaviors can foster long-term ecological awareness (Triyandana et al., 2024). These impacts can be observed through changes in students' attitudes, their participation in environmental activities, and their compliance with school environmental regulations. Therefore, an in-depth analysis is necessary to understand how these behavioral changes take place. This study, consequently, examines not only program implementation but also its tangible outcomes on student behavior.

Based on these considerations, this study aims to describe the implementation of the Eco School program at one public elementary school, identify the factors that support and constrain its implementation, and analyze its impact on the development of environmental responsibility among elementary school students (Utami & Supriatna, 2024; Saihan & Usriyah, 2025). Using a qualitative case study approach, this research focuses on real-world Eco School activities as ecopedagogical practices embedded within school culture (Muslihah et al., 2025; Agustin et al., 2026). The novelty of this study lies in its focus on a consistently award-winning Eco School and its examination of how action-based environmental practices contribute to character development in primary education. In addition, this study provides significant contributions by offering empirical evidence on how environmental responsibility can be effectively fostered through experiential learning and daily school practices, strengthening the integration of character education and environmental education in primary schools, and enriching the discourse on ecopedagogy while providing practical insights for educators and policymakers in designing sustainable environmental learning programs.

Methods

This study employed a qualitative approach with a case study design (Creswell, 2009) to gain a deeper understanding of how the Eco School program is implemented and how it contributes to the development of environmental responsibility among elementary school students. A qualitative case study was chosen because it allows researchers to explore real-life experiences, meanings, and processes as they naturally occur within the school context (Schoch, 2020; Sugiyono, 2013). This approach is particularly suitable for examining action-based Eco School activities as ecopedagogical practices that are embedded in everyday school culture. The research was conducted at SDN Rungkut Menanggal I Surabaya from January to February. This school was selected because it has consistently received the Surabaya Eco School Award, indicating a strong commitment to environmental practices. The participants in this study included the school principal, a fourth-grade teacher, the Eco School program coordinator, students, and representatives of parents. These participants were selected purposively to provide rich and diverse perspectives. The study focused on three main aspects: the implementation of the Eco School program, the supporting and inhibiting factors, and its impact on students' environmental responsibility (Misiaszek, 2020; Agustin et al., 2026).

Data were collected using multiple techniques, including observation, in-depth interviews, environmental observation, and documentation, to ensure a comprehensive understanding of the research context. Observations were conducted directly in the natural school setting to capture authentic student behaviors and environmental practices without any intervention. The researcher observed daily student activities related to environmental care, such as disposing of waste properly, taking care of plants, and conserving water. In addition, the researcher examined environmental facilities such as biopore infiltration holes, composting areas, and rainwater harvesting systems as part of the Eco School implementation (Chatra et al., 2023; Naharuddin et al., 2024). All observations were recorded systematically using pre-prepared observation guidelines and supported by visual documentation such as photographs and field notes (Septiana et al., 2024; Maddigan, J., Deeb, A. M., Romme, K., & Isler, C., 2025). Documents from previous years were also reviewed to identify patterns and continuity in program implementation. Document analysis served as a form of data triangulation, enhancing the credibility of findings derived from observations and interviews.

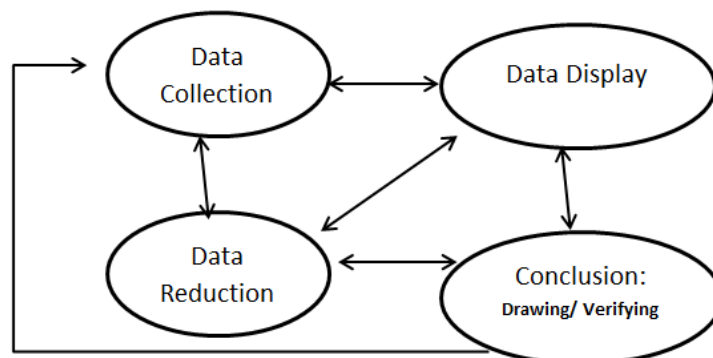


Figure 1. Qualitative Data Analysis Model Flow According to Miles et al. (2014)

In-depth interviews were carried out using a semi-structured format to explore participants' experiences and perspectives regarding the Eco School program. Each interview lasted approximately 30–45 minutes, allowing flexibility to follow up on important emerging issues. The principal provided insights into school policies and program management, teachers explained environmentally oriented teaching practices, students shared their daily experiences in Eco School activities, and parents described observable changes in their children's environmental behavior at home. All interviews were audio-recorded and transcribed verbatim. In addition, document analysis was conducted to collect supporting data, including school reports, environmentally based curricula, Eco School guidelines from Tunas Hijau, policy documents, and activity photographs (Fadjarajani & As'ari, 2021; Zebua et al., 2024). Documents from previous years were also reviewed to identify patterns and program continuity. This combination of methods strengthened data triangulation and enhanced the credibility of the findings.

The instruments used in this study included observation guidelines, interview guides, and documentation checklists. Observation guidelines were designed to systematically record students' environmental behaviors and school conditions. The interview guide consisted of semi-structured questions that allowed participants to share their experiences openly while still focusing on the research objectives. An example of a key question is: "What Eco School programs have been implemented at SDN Rungkut Menanggal I Surabaya?" Additional follow-up questions were used to explore implementation processes, challenges, and impacts in more depth. To support data categorization, a simple Likert scale with four response options (very good, good, fair, and poor) was also used to assess observed environmental responsibility behaviors among students. The instruments were validated through content validation by experts in primary education and environmental education. Feedback from these experts was used to revise and refine the instruments to ensure their relevance and clarity. The research process was conducted systematically, starting from instrument development, data collection, data verification, and refinement throughout the fieldwork.

Data analysis in this study followed the interactive model proposed by Miles and Huberman, which includes data reduction, data display, and conclusion drawing (Miles et al., 2014). Data reduction involved selecting, simplifying, and organizing relevant data obtained from observations, interviews, and documents. The data were then grouped into key themes, such as program implementation, supporting factors, inhibiting factors, and program impact on students' environmental responsibility. Data display was carried out using narrative descriptions and tables to make the findings easier to understand and interpret. The process of drawing conclusions was conducted continuously throughout the research to identify patterns, relationships, and meanings within the data. The analysis was conducted manually using thematic coding to organize and interpret the data systematically.

The success of this study was indicated by the clarity in identifying the implementation of the Eco School program, the supporting and inhibiting factors, and observable changes in students' environmental responsibility. To ensure trustworthiness, several validation strategies were applied. Credibility was strengthened through triangulation of sources, techniques, and time. Member checking was conducted by asking participants to confirm the accuracy of the interview results (Poltak & Widjaja, 2024; Birt et al., 2016). Peer debriefing was also carried out to reduce potential bias, and an audit trail was maintained to document the research process transparently. Transferability, dependability, and confirmability were ensured through detailed descriptions and consistent data verification. Overall, this qualitative case study approach enabled a thorough exploration of the Eco School program as an action-based ecopedagogical practice (Waruwu, 2024). The methods used in this study provided a deeper understanding of how environmental responsibility is developed through real-life activities within the school environment, as well as the challenges and dynamics involved in its implementation in primary education.

Result and Discussion

This section presents and interprets the findings related to the implementation of the Eco School program. Data from observations, in depth interviews, and document analysis reveal that environmental practices in this school are not symbolic activities, but are meaningfully embedded in daily routines and school culture. This finding suggests that the program has moved beyond formal compliance and has become part of students' lived experiences, which is a key principle in ecopedagogical practice.

The implementation of the Eco School program is supported by structured environmental policies that function not only as formal regulations but also as tools for shaping students' ecological behavior. For example, the policy requiring students to bring reusable bottles and food containers does more than reduce plastic waste it gradually builds students' awareness and responsibility through consistent practice. This reflects how repeated exposure to simple environmental actions can lead to behavioral internalization. Regular evaluations conducted by the Eco School team, along with teachers' active role in integrating environmental values into classroom instruction, further strengthen this process. These findings align with previous studies emphasizing that consistent school-based practices are more effective in shaping pro-environmental behavior than one-time interventions (Hidayat et al., 2025; Rau et al., 2022). To better understand the program implementation and its impact, the main components are summarized in **Table 1**.

Table 1. Implementation of the Eco School Program

Program Components	Implementation	Impact
Water Conservation	Biopores, rainwater tanks, ablution water filtration	Water conservation and awareness raising
Waste management	Composting, waste sorting, plastic-free canteen	Getting used to sorting waste from an early age
Environmental Education	Integration of social science subject, and real action	Increasing ecological literacy
School Community Participation	Involvement of teachers, parents, community	Strong support and environmental culture

Water conservation emerges as a central focus of the program, not only in terms of infrastructure but also as a learning medium. Facilities such as biopore infiltration holes, rainwater storage tanks, and simple water filtration systems provide students with direct experiences of sustainable water management. More importantly, these facilities function as pedagogical tools that connect theoretical knowledge with real-world application. When environmental concepts are experienced directly, students are more likely to develop meaningful understanding and long-term awareness. This supports international perspectives that emphasize experiential learning as a key strategy in environmental education (Ariskayanti et al., 2024; Aribowo et al., 2025). Similarly, waste management practices in the school demonstrate how routine activities can transform into character-building processes. Students are not only instructed to sort waste but are consistently engaged in doing so as part of their daily routines. The use of composters and the implementation of a plastic-free canteen further reinforce these practices. The observed reduction in inorganic waste indicates that students have moved beyond awareness toward actual behavioral change. This finding resonates with international studies showing that sustained participation in waste management activities significantly improves students' environmental responsibility and habits (Intsiful et al., 2025).

Environmental education is also strengthened through its integration into classroom learning, particularly within social science subject and project-based activities. Teachers encourage students to conduct direct observations, participate in composting projects, and engage in environmental explorations outside the

classroom. These strategies reflect an experiential and inquiry-based learning approach, where students actively construct their understanding through interaction with their environment. Such practices are consistent with ecopedagogical principles that emphasize critical awareness and action-based learning. Moreover, international research highlights that combining classroom instruction with real-life environmental engagement can significantly enhance ecological literacy and student participation (Susilawati et al., 2026; Setiawan et al., 2026; Saifulloh et al., 2020).

The success of the Eco School program is influenced by several supporting factors. Strong leadership from the school principal plays a crucial role in ensuring program consistency and sustainability. Teachers act as facilitators who integrate environmental values into daily learning, while parents contribute by reinforcing environmentally friendly practices at home. Collaboration with the *Tunas Hijau* community further strengthens program implementation by providing guidance and support. This multi-stakeholder involvement creates a positive ecosystem that supports the development of environmental responsibility, in line with global findings that emphasize the importance of community engagement in environmental education (Aziz & Adi, 2021). However, the study also identifies several challenges that influence program effectiveness. Limited composting facilities restrict the school's capacity to process all organic waste, while some students still demonstrate inconsistent behavior in waste sorting. In addition, environmental learning media are relatively limited, and several water conservation facilities require ongoing maintenance (Karmilasari et al., 2025). These challenges indicate that while behavioral change has begun to develop, it requires continuous reinforcement and institutional support to become fully sustainable.

The impact of the Eco School program is reflected in observable changes in students' behavior. Students show increased awareness of environmental issues, improved habits in waste management, and greater responsibility in maintaining school cleanliness. These behavioral changes suggest that environmental values have been internalized through daily practice rather than imposed through instruction. This finding supports the argument that long-term habituation is essential in developing environmental responsibility as a character trait (Suryaningtyas, 2022; Ioannou & Anastassiou-Hadjicharalambous, 2021). Despite providing valuable insights, this study has several limitations. First, the research was conducted in a single school with a strong Eco School background, which may limit the generalizability of the findings to other schools with different contexts. Second, the study relied primarily on qualitative data, which may be influenced by participants' perceptions and researcher interpretation. Third, the duration of the study was relatively short, which may not fully capture long-term behavioral changes. Future research is recommended to involve multiple schools, apply mixed-method approaches, and examine long-term impacts to provide a more comprehensive understanding of Eco School implementation in primary education.

The findings of this study suggest that the effectiveness of the Eco School program is not shaped by a single factor, but rather by the interaction between school policies, experiential learning practices, and the broader social environment. Among these, school policies appear to play a foundational role by providing structure and consistency, while experiential learning acts as the main mechanism through which students internalize environmental values. Clear and consistently implemented policies guide students' daily actions, but it is the repeated engagement in real world practices that transforms these actions into meaningful habits. This reflects a key principle of ecopedagogy, where learning is not limited to knowledge acquisition but is realized through praxis continuous interaction between reflection and action (Ariskayanti et al., 2024; Lozjanin et al., 2025). From a behavioral perspective, the study shows that change occurs gradually through habituation. Students begin by following rules, such as bringing reusable containers or sorting waste, but over time these actions become part of their daily routines. However, a critical reflection is needed to determine whether these changes are deeply internalized or remain at a surface level. Some inconsistencies in student behavior indicate that not all practices have reached the level of critical awareness. This suggests that without reflective processes, environmental activities risk becoming routine actions without deeper meaning. In ecopedagogical terms, this highlights the importance of fostering critical consciousness, where students not only act but also understand the reasons behind their actions (Sudarto et al., 2025).

In the context of water conservation, the program demonstrates how simple, context-based innovations can function as powerful learning tools. Facilities such as biopores, rainwater harvesting systems, and water filtration are not only technical solutions but also pedagogical media that connect abstract environmental concepts with students' everyday experiences (Al-Barakat et al., 2026; Widodo et al., 2024). This aligns with experiential learning theories, which emphasize that meaningful understanding emerges when learners interact directly with real-life situations. At a broader level, this approach is consistent with international frameworks such as UNESCO's Education for Sustainable Development (ESD), which promote action-oriented and context-based learning as key strategies for sustainability education (UNESCO, 2020). Waste management practices further illustrate how ecopedagogical principles are enacted through daily school life. Activities such as waste sorting, composting, and the implementation of a plastic-free canteen reflect the application of the 3R concept

(reduce, reuse, recycle) in a practical context. These practices support not only behavioral change but also cognitive and social development, as students learn to take responsibility and collaborate in maintaining their environment (Aminah et al., 2022; Paul & Ghosh, 2024). Compared to global green school initiatives, such as eco-schools promoted in various countries, this program shares a similar emphasis on student participation and whole-school approaches. However, what makes this case distinctive is its strong integration with local culture, including the use of familiar daily practices such as ablution water reuse, which makes environmental learning more relatable and meaningful.

The integration of environmental education into IPAS and project-based learning also reflects a transformative learning process. Students are encouraged to observe, question, and act, which supports the development of critical thinking and ecological awareness. In this sense, the Eco School program can be seen as a form of transformative education, where learning leads to changes in perspective and behavior. This finding is consistent with previous studies showing that environmentally oriented learning contributes not only to knowledge development but also to character formation and the strengthening of Pancasila student profiles (Sari & Rachmadyanti, 2025). Social and cultural factors also play a significant role in shaping the program's success. Strong leadership, teacher commitment, parental involvement, and collaboration with the Tunas Hijau community create a supportive ecosystem that reinforces environmental values. This reflects the socio-cultural dimension of ecopedagogy, where learning is influenced by interactions within a community. International studies similarly highlight that environmental education is most effective when supported by collective engagement and shared responsibility (Ramadhan & Anwar, 2025;). At the same time, the study reinforces the urgency of introducing environmental education at an early stage, as previous research indicates that even prospective teachers may still lack sufficient environmental awareness (Aminah & Gunansyah, 2024).

Despite these strengths, the findings also reveal important challenges that require critical consideration. Limitations in facilities and inconsistencies in student behavior indicate that behavioral change is an ongoing process rather than an immediate outcome. These challenges suggest that while the program has successfully initiated change, sustaining and deepening this change requires continuous reflection, innovation, and reinforcement. In some cases, there is a risk that environmental activities become routine obligations rather than meaningful learning experiences. Therefore, incorporating reflective discussions and critical inquiry into daily practices becomes essential to ensure that students develop deeper ecological awareness. Overall, this study demonstrates that the Eco School program represents a contextual model of ecopedagogical practice that integrates policy, action, and community involvement. Its relevance extends beyond the local context, as it reflects key principles found in global environmental education frameworks, such as experiential learning, whole-school approaches, and sustainability-oriented practices. At the same time, its strength lies in its ability to adapt these principles to local cultural contexts, making environmental education more accessible and meaningful for primary school students. By highlighting both its achievements and challenges, this study contributes to a more nuanced understanding of how environmental responsibility can be developed not only as a set of behaviors, but as a transformative learning process rooted in everyday school life.

Conclusion

This study concludes that the Eco School program at SDN Rungkut Menanggal I Surabaya has been implemented in a well structured and consistent manner, contributing to the development of students environmental responsibility through school policies, continuous ecological habituation, and real-world environmental practices. Rather than measuring effectiveness in a quantitative sense, this conclusion is based on qualitative evidence showing meaningful changes in students daily behaviors, increased environmental awareness, and active participation in school based environmental activities. The presence of supportive factors such as strong school leadership, active teacher involvement, parental participation, and collaboration with the community further strengthens the sustainability of the program, although challenges related to facilities and behavioral consistency remain. Based on these findings, future efforts should focus on strengthening reflective learning processes so that environmental practices are not only routine but also deeply understood by students. Schools are also encouraged to improve supporting facilities, diversify environmental learning media, and maintain continuous collaboration with external partners. Further research is recommended to involve broader contexts, longer observation periods, and comparative studies across schools to gain a more comprehensive understanding of how Eco School programs can be adapted and sustained in different primary education settings.

References

- Aeni, N., Nursalam, N., & Idawati, I. (2020). Adiwiyata implementation in understanding environmental education. *Indonesian Journal of Primary Education*, 4(2), 184-196.
- Agustin, Y., Gunansyah, G., & Rachmadyanti, P. (2026). Implementation of the eco school program in cultivating environmental awareness among elementary school students. *Jurnal Elementaria Edukasia*, 9(1), 157-168.
- Aisyah, A., Putri, K. A. J. A., & Firjanah, L. (2024). Pentingnya membangun kesadaran lingkungan melalui pembelajaran PKN di sekolah dasar guna membentuk karakter peduli lingkungan pada siswa. *Jurnal Pendidikan Guru Sekolah Dasar*, 1(3), 11.
- Aisyah, A., Putri, K. A. J. A., & Firjanah, L. (2024). Pentingnya membangun kesadaran lingkungan melalui pembelajaran PKN di sekolah dasar guna membentuk karakter peduli lingkungan pada siswa. *Jurnal Pendidikan Guru Sekolah Dasar*, 1(3), 1-11.
- Al-Barakat, A. A., AlAli, R. M., Alotaibi, S. B., Alrosaa, T. M., Abdullatif, A. K., & Zaher, A. M. (2026). The contribution of early science education in developing children awareness of carbon footprints. *Scientific Reports*, 16(4271),
- Aminah, H. K., Sukarno, S., & Yulisetiani, S. (2022). Analisis implementasi program sekolah sehat dalam membangun karakter peduli lingkungan di sekolah dasar. *Didaktika Dwija Indria*, 10(4), 1-6.
- Aminah, N. C., & Gunansyah, G. (2024). Studi komparasi program Adiwiyata pada sekolah dasar negeri di Surabaya (Studi di SDN rungkut menanggal 1/582 Surabaya dan SDN tanah kali kedinding 1/251 Surabaya). *Jurnal Penelitian Pendidikan Guru Sekolah Dasar*, 12(3), 448-456.
- Annas, F. B., Lubis, D. P., Hapsari, D. R., & Sumardjo, S. (2025). Action-based learning in environmental education for elementary school students through ecotourism. *Proceedings Series on Social Sciences & Humanities*, 25, 771-778.
- Aribowo, S., Nadiroh, N., & Faesal, M. (2025). Implementation of experiential learning methods in environmental education. *International Journal of Business, Law, and Education*, 6(1), 468-476.
- Ariskayanti, V., Jannah, W. N., & Faiz, A. (2024). Penerapan model pendidikan karakter berbasis ecopedagogy di SD negeri taman kalijaga permai. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, 9(3), 592-606.
- Aziz, F. A., & Adi, A. S. (2021). Implementasi program Surabaya eco school di SMPN 40 kota Surabaya. *Kajian Moral dan Kewarganegaraan*, 9(2), 359-373.
- Birt, L., Scott, S., Cavers, D., Campbell, C., & Walter, F. (2016). Member checking: A tool to enhance trustworthiness or merely a nod to validation?. *Qualitative health research*, 26(13), 1802-1811.
- Chatra P, M. A., Achjar, K. A. H., Ningsi, Rusliyadi, M., Zaenurrosyid, A., Rumata, N. A., Nirwana, I., & Abadi, A. (2023). *Metode penelitian kualitatif: Panduan praktis untuk analisis data kualitatif dan studi kasus*. PT. Sonpedia Publishing Indonesia.
- Creswell, J. W., (2009). *Research design: Qualitative, quantitative, and mixed methods approaches 3rd ed*. SAGE Publications, Inc
- Fadjarajani, S., & As'ari, R. (2021). Ecopedagogy based learning as an effort to increase student ecoliteration and the development of environmental care characters. *IOP Conference Series: Earth and Environmental Science*, 683(1), 012046.
- Fubani, A., Diheim, M., Makhya, N., & Velasufah, W. (2024). Pengetahuan dan perilaku ramah lingkungan mahasiswa. *Journal of Character and Environment*, 1(2), 138-160.
- Gunansyah, G., Suryanti, S., & Nafisah, D. (2024). Prospective teacher as environmental agent: Between hope, opportunities and possibilities toward sustainable environmental. *Jurnal Pendidikan Progresif*, 14(2), 883-901.
- Hidayat, M., Zurahmah, Z., Ramli, N., & Guntara, F. (2025). Efforts to foster students' ecological awareness through an ecopedagogical approach in social studies at SMPN 4 Parepare. *Jurnal Pendidikan IPS*, 15(2), 469-482.

- Intsiful, J. J., Intsiful, E., & Boateng, F. K. (2025). On the transformative potential of ecopedagogy in environmental education. *Southern African Journal of Environmental Education*, 41(1), 1–16.
- Ioannou, A., & Anastassiou-Hadjicharalambous, X. (2021). *Habituation*. In encyclopedia of evolutionary psychological science (pp. 3594-3600). Cham: Springer International Publishing.
- Ismail, K., Rohmah, M., Rahmadani, R., Sari, N. L., & Azmiyati, A. (2024). Analisis program adiwiyata pada implementasi pembelajaran green economy dalam menumbuhkan karakter ecological literacy OKU Timur. *Jurnal Neraca: Jurnal Pendidikan dan Ilmu Ekonomi Akuntansi*, 8(2), 207–227.
- Karmilasari, V., Putri, D. S., & Faedlulloh, D. (2020). Strategi program eco-school dalam menghadirkan karakter peduli lingkungan. *Administratio: Jurnal Ilmiah Administrasi Publik dan Pembangunan*, 11(2), 129–139.
- Lozjanin, A., Chhabra, G., & Mehdian, N. (2025). Exploring green pedagogy for eco-centric praxis-based learning in higher education. *Journal of Applied Learning & Teaching*, 8(S1), 66-79.
- Maddigan, J., Deeb, A. M., Romme, K., & Isler, C. (2025). Field observation in mental health inpatient settings: An integrative review and reporting guideline. *International Journal of Qualitative Methods*, 24, 16094069251348545.
- Miles, M. B., Huberman, A. M., & Saldana, J. (2014). *Qualitative data analysis* (3rd ed.). SAGE Publications.
- Misiaszek, G. W. (2020). Ecopedagogy: Teaching critical literacies of ‘development’, ‘sustainability’, and ‘sustainable development’. *Teaching in Higher Education*, 25(5), 615–632.
- Muslihah, S., Nurudin, F., Rewinta, R., Aji, S. B., Indayana, S. A., Basuki, S. R., Sulistianingsih, S., Nur, T. M., Nurfaidah, V., Khoiriyah, W. H., & Hidayah, R. (2025). Environmental learning dalam implementasi P5 di sekolah dasar. *Edukasi: Jurnal Penelitian dan Artikel Pendidikan*, 17(1), 491–510.
- Naharuddin, N., Massiri, S. D., Pribadi, H., Maiwa, A., & Ihsan, M. (2024). Evaluation of rainwater harvesting and bio-pore infiltration holes for flood mitigation and soil conservation. *Journal of Civil and Hydraulic Engineering*, 2(3), 142-151.
- Nizaar, M. (2022). Green education untuk mengembangkan karakter entrepreneurship siswa abad 21. *Prosiding Seminar Nasional Penelitian dan Pengabdian kepada Masyarakat (SNPPM) Universitas Muhammadiyah Metro*, 4(1), 6–15.
- Paul, U., & Ghosh, N. (2024). Enhancing collaborative learning environment in social science education: Strategies, challenges and opportunities at school level. *International Journal of Indian Psychology*, 12(2).
- Poltak, H., & Widjaja, R. R. (2024). Pendekatan metode studi kasus dalam riset kualitatif. *Local Engineering*, 2(1), 31–34.
- Prayogo, W., Ratnaningsih, W., Suhardono, S., & Suryawan, I. W. K. (2024). Environmental education practices in Indonesia: A review. *Journal of sustainable infrastructure*, 3(1).
- Purwanti, D. (2017). Pendidikan karakter peduli lingkungan dan implementasinya. *Dwija Cendekia: Jurnal Riset Pedagogik*, 1(2), 14–20.
- Ramadhan, S. A., & Anwar, K. (2025). Meregenerasi konsep fikih al-bi’ah dalam dunia pendidikan: Program adiwiyata berbasis PAI progresif sebagai upaya membumikan karakter cinta lingkungan. *Jurnal Intelektualita: Keislaman, Sosial dan Sains*, 14(1), 183–199.
- Rau, H., Nicolai, S., & Stoll-Kleemann, S. (2022). A systematic review to assess the evidence-based effectiveness, content, and success factors of behavior change interventions for enhancing pro-environmental behavior in individuals. *Frontiers in Psychology*, 13, 901927.
- Saifulloh, M., Wahyuddin, Soedarso, Suryani, A., Muhibbin, Z., Hanoraga, T., Nurif, M., Trisyanti, U., Rahmawati, D., & Rahadiantino, L. (2022). Pengembangan karakter cinta lingkungan sekolah melalui eco-school branding dan peer teamworking. *Sewagati*, 4(2), 108–114.
- Saihan, S., & Usriyah, L. (2025). Green school initiatives: Cultivating environmental awareness in elementary education. *Journal of Educational Research and Practice*, 3(1), 50-68.
- Salazar, C., Jaime, M., Leiva, M., & González, N. (2024). Environmental education and children’s pro-environmental behavior on plastic waste: Evidence from the green school certification program in Chile. *International Journal of Educational Development*, 109, 103106.

- Saputri, D. Y., Sukarmin, S., Asrowi, A., & Riyadi, R. (2026). Ecopedagogy-based experiential learning model: An effective effort in shaping environmentally concerned attitudes. *Journal of Pedagogical Research*, 1-28.
- Sari, N. A. D., & Rachmadyanti, P. (2025). Pengembangan media board game narji untuk pembelajaran IPAS kelas VI SD. *Jurnal Penelitian Pendidikan Guru Sekolah Dasar*, 13(4), 1183–1197.
- Schoch, K. (2020). Case study research. *Research design and methods: An applied guide for the scholar-practitioner*, 31(1), 245-258.
- Septiana, N. N., Khoiriyah, Z., & Shaleh, S. (2024). Metode penelitian studi kasus dalam pendekatan kualitatif. *Didaktik: Jurnal Ilmiah PGSD STKIP Subang*, 10(4), 233–243.
- Setiawan, D., Rahmat, R., & Elihami, E. (2026). Integrating ecological literacy in Indonesian language learning to promote environmental behavior. *Jurnal Cakrawala Pendas*, 12(2), 318-334.
- Sudarto, S., Wardo, W., Sariyatun, S., & Musadad, A. (2025). Integrasi pedagogi reflektif dan eco-pedagogy dalam konstruksi kausalitas sejarah: Membangun kesadaran nilai lingkungan melalui landscape budaya dalam pembelajaran sejarah. *Jurnal Artefak*, 12(1), 213–236.
- Sugiyono. (2013). *Metode penelitian kuantitatif, kualitatif, dan R&D*. Alfabeta.
- Suryaningtyas, W. (2022). Pelaksanaan program eco school land KKN tematik SDN Sutorejo I/240 Surabaya. *Dedikasi Sains dan Teknologi (DST)*, 2(2), 139–153.
- Susilawati, S., Maulana, F. R., & Sundari, N. (2026). Integrating ecological literacy into sundanese language learning in elementary schools. *KASTA: Jurnal Ilmu Sosial, Agama, Budaya dan Terapan*, 6(1), 206-220.
- Triyandana, A., Ibrohim, I., Yanuwiyadi, B., Amin, M., & Hajar, M. U. (2025). Strategies to enhance eco-friendly culture and environmental awareness by green curriculum integration in Indonesian elementary science classroom. *International Electronic Journal of Elementary Education*, 17(1), 217–231.
- UNESCO. (2020). *Education for sustainable development: A roadmap*. UNESCO.
- Utami, L., & Supriatna, N. (2024). Inovasi pendidikan berbasis green pedagogy sebagai upaya membangun kecerdasan ekologis dalam pembelajaran IPS. *Journal Education Innovation (JEI)*, 2(2), 288–293.
- Waruwu, M. (2024). Pendekatan penelitian kualitatif: Konsep, prosedur, kelebihan dan peran di bidang pendidikan. *Afeksi: Jurnal Penelitian dan Evaluasi Pendidikan*, 5(2), 198–211.
- Widodo, S. F. A., Fahmi, M. I., Widiastuti, A., Ahmed, T., & Shahzeb, S. (2024). Implementasi dan dampak pendidikan holistik berbasis lingkungan pada siswa: Studi kasus di sekolah alam. *Humanika: Kajian Ilmiah Mata Kuliah Umum*, 24(2), 193–204.
- Zebua, A. M., Suaidi, S., Fadlillah, F., Pohan, M. M., & Novianto, W. (2024). Sustainable environmental culture development: A qualitative study of environmental leadership in adiwiyata schools in Indonesia. In *7th International Colloquium on Interdisciplinary Islamic Studies (ICIIS)*.