



## Environmental Care Education through the Plastic Waste Reduction Movement in Realizing Environmentally Friendly Schools

Irwan Wunarlan<sup>1,\*</sup>, Nilawaty Yusuf<sup>2</sup>, Yayu Isyana D. Pongoliu<sup>3</sup>

<sup>1,2,3</sup> Universitas Negeri Gorontalo

✉ [irwan.wunarlan@ung.ac.id](mailto:irwan.wunarlan@ung.ac.id)

### ARTICLE INFO

#### Article history

Received : 10-2-2026

Revised : 21-5-2026

Accepted : 24-5-2026

#### Keywords

Environmental Education, Plastic Waste, Elementary School, Environmental Care Behavior, Eco-Friendly Schools

### ABSTRACT

*The problem of plastic waste is an environmental issue that is also faced by the elementary school environment. The partner of this service activity, namely SDN 6 Suwawa, Bone Bolango Regency, shows the low condition of students' awareness of the impact of plastic waste and the still high habit of using single-use plastics in daily activities at school. This condition has the potential to hinder the realization of a clean and environmentally friendly school environment. This community service activity aims to increase knowledge and foster an attitude of caring for the environment in students through education on reducing plastic waste from an early age. The method of implementing the activity uses an environmental education socialization approach which is carried out interactively through the delivery of materials, discussions, and simple reflections on the impact of plastic waste and environmentally friendly behaviors that can be applied by students. The results of the activity showed an increase in students' understanding of the negative impact of plastic waste on the environment, accompanied by a change in positive attitudes in the form of a commitment to dispose of waste in its place, reducing the use of single-use plastics, and starting to get used to environmentally friendly behavior at school. Overall, this activity made an initial contribution in supporting the realization of environmentally friendly schools through changing students' knowledge and attitudes towards plastic waste management.*

This is an open access article under the [CC-BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license.



## A. INTRODUCTION

The problem of plastic waste is a global environmental issue that is still a serious challenge, including in Indonesia. Single-use plastics are widely used for their practical, lightweight, and inexpensive properties, but on the other hand they have a long-term impact on the environment because they are difficult to decompose naturally. The accumulation of plastic waste contributes to soil, water, and ecosystem pollution, and has the potential to cause health impacts for humans (Geyer et al., 2017; Jermias et al., 2024). As presented by the data submitted by the Ministry of Environment and Forestry (MoEF) noted that each Indonesian citizen produces an average of 0.85 kg of waste per day, of which 17% is plastic and in 2025,



national plastic waste production will reach 12.4 million tons per year, an increase of 14% compared to 2020.

In the local context, the elementary school environment is one of the social spaces that is inseparable from the problem of plastic waste. Students' habit of using single-use plastic packaging, such as beverage bottles and food wrappers, is often not balanced by an adequate understanding of the environmental impact it causes. Several national studies show that low environmental awareness among elementary school students is closely related to the lack of contextual and sustainable environmental education in the school environment (Mantopani et al., 2023; Muslim et al., 2021; Naziyah et al., 2021). As a result, the behavior of littering and excessive use of plastic is still a common phenomenon.

Elementary schools have a strategic role in shaping the character and behavior of students from an early age, where environmental education from an early age plays a fundamental pillar. At this stage of development, students are in the phase of forming values and attitudes that will influence their behavior in the future. Environmental education provided from an early age has proven to be effective in instilling an attitude of caring for the environment and encouraging behavior changes that are more environmentally friendly (Laily et al., 2025; Lestari, 2018; Mantopani et al., 2023; Wunarlan & Botutihe, 2025). Therefore, schools function not only as formal educational institutions, but also as agents of social change in an effort to realize a sustainable society.

The concept of environmentally friendly schools is one of the relevant approaches in answering the challenge of plastic waste in the school environment. Eco-schools emphasize the integration of knowledge, attitudes, and real practices in the daily lives of school citizens. Through this approach, students are not only invited to understand the concept of the environment theoretically, but also to be actively involved in activities that encourage environmentally caring behavior (Naziyah et al., 2021).

However, the implementation of environmental education in elementary schools often faces various obstacles, such as limited learning methods, lack of materials that are suitable for the characteristics of students, and lack of continuous mentoring. At the national level, several community service activities report that a communicative and participatory approach to environmental education socialization is more easily accepted by elementary school students and is able to improve their understanding of environmental issues, including plastic waste (Jermias et al., 2024; Priyambodo et al., 2023). This shows that community service activities have an important role as a bridge between academic concepts and real practice in the field.

Several previous studies and community service activities have addressed issues related to environmental education and plastic waste reduction in the school environment. However, these activities have generally focused on improving students' knowledge regarding environmental cleanliness and waste management. Previous studies predominantly emphasized environmental care character education through school culture programs, habituation, and general socialization activities without specifically focusing on efforts to reduce students' behavior in using single use plastics. (Mantopani et al., 2023; Naziyah et al., 2021). In addition, previous community service activities have predominantly been carried out at the secondary school level and within community groups, while environmental education interventions targeting elementary school students through participatory and contextual approaches remain limited (Jermias et al., 2024; Priyambodo et al., 2023).

In addition, previous activities were still limited in integrating environmental care education with simple practices that support environmentally friendly schools. Therefore, this community service activity focuses on fostering students' environmentally friendly behavior



through simple habits, such as reducing the use of single-use plastics and promoting waste-conscious behavior in the school environment.

Based on this background, this community service activity is focused on environmental care education through the plastic waste reduction movement at SDN 6 Suwawa, Bone Bolango Regency, with the target of grade IV students. This activity is designed as a form of socialization of environmental education which aims to increase students' knowledge about the impact of plastic waste and foster an attitude of caring for the environment from an early age. Conceptually, this activity is expected not only to result in an increase in knowledge, but also to trigger changes in students' attitudes and behaviors in the use of single-use plastics in the school environment. Thus, this community service contributes to efforts to realize environmentally friendly schools while supporting the sustainable development agenda through environmental education. Furthermore, this activity is expected to be a starting model that can be replicated in other elementary schools with similar problem characteristics.

## **B. METHODS**

This community service activity was carried out at SDN 6 Suwawa, Bone Bolango Regency, with the target of grade IV elementary school students. The selection of locations and targets is based on the consideration that elementary school students are a strategic age group in forming attitudes and behaviors of caring for the environment from an early age, especially related to the problem of the use of single-use plastic waste in the school environment.

The method of implementing activities uses an environmental education socialization approach, which is designed to increase knowledge while fostering an attitude of caring for the environment in students. This approach was chosen because it is assessed in accordance with the characteristics of elementary school students who require simple, communicative, and interactive learning methods. In general, the implementation of service activities is divided into three main stages, namely the preparation stage, the implementation stage, and the evaluation stage.

### **1. Preparation Stage**

The preparation stage is carried out by conducting initial coordination with the school SDN 6 Suwawa to obtain an overview of the condition of the school environment and student habits related to the use of single-use plastics as well as determining the implementation time and targets of the students to be involved. At this stage, the main problems faced were also identified, namely the low awareness of students about the impact of plastic waste and the still high use of single-use plastics in daily activities at school. Based on the results of the identification, the service team compiled educational materials that were adjusted to the level of understanding of grade IV students.

### **2. Implementation Stage**

The implementation stage was carried out through environmental education socialization activities which were carried out at SDN 6 Suwawa on August 27, 2025 with the target of grade IV students. The delivery of material was carried out by an interactive lecture method combined with discussions and questions and answers. Students are invited to recognize examples of plastic waste that they often use, understand their impact on the environment, and discuss alternative behaviors that are more environmentally friendly. A participatory approach is applied by providing opportunities for students to express their opinions and



experiences regarding the use of plastic at school and at home. Through this way, it is hoped that students will not only passively receive information, but also be actively involved in the learning process and reflection of the environment.

### **3. Evaluation Stage**

The evaluation stage was conducted qualitatively to identify changes in students' knowledge and attitudes after participating in the environmental education activities. The evaluation instruments used in this activity consisted of: (1) observation sheets to assess students' participation, enthusiasm, and responses during the socialization process; and (2) simple reflective question sessions conducted orally at the end of the activity to measure students' understanding of the impact of plastic waste and environmentally friendly behavior.

The observation indicators included students' activeness in discussions, ability to answer questions related to plastic waste, willingness to express opinions, and participation in identifying environmentally friendly actions that can be implemented at school. Meanwhile, the reflective questions focused on students' understanding of the dangers of plastic waste, the importance of reducing single-use plastics, and simple actions that students can apply in their daily activities. The success indicators of this activity were demonstrated through increased student participation during the activity, students' ability to explain the impact of plastic waste, and the emergence of commitments to reduce the use of single-use plastics and maintain cleanliness in the school environment.

## **C. RESULTS AND DISCUSSION**

The implementation of community service activities through environmental care education for grade IV students of SDN 6 Suwawa was held on Wednesday, August 27, 2025 which took place in the classroom, a series of community service activities began with remarks by school representatives which were then continued with the introduction of the PkM team and then the presentation of the material. The activity, which began with the presentation of the condition of the plastic waste crisis, provided students with an initial understanding that environmental problems do not only occur at the global level, but also have a direct impact on daily life. The presentation of material on Indonesia's position as one of the contributors of plastic waste encouraged the emergence of students' initial awareness that individual behavior has a contribution to broader environmental problems.

At the stage of exposure to waste flows, students are introduced to the concept that plastic waste disposed of on land or rivers can end up in the ocean and return to the human environment. This material helps students understand the causal relationship between the habit of littering and environmental pollution. The results of observations during the activity showed that students were able to re-explain the flow of the movement of plastic waste in simple language, which indicates an increase in conceptual understanding of the impact of plastic waste on the ecosystem.

Furthermore, the delivery of material on the characteristics of plastic waste that is difficult to decompose over a long period of time provides a new understanding for students about the long-term impact of plastic waste. The information that one plastic bag can take years to decompose elicits a reflective response from students. Some students showed concern and began to question the habit of using single-use plastics that they had been doing. This indicates that educational materials are not only cognitively accepted, but also begin to touch the affective aspects of students.



Figure 1. Material Presentation Session to Students

The results of the activity can also be seen from the change in students' attitudes towards environmentally friendly behavior. Through the delivery of material about simple actions that can be taken as students, such as disposing of garbage in its place, cultivating LISA (See Raised Waste), using refillable drinking bottles, and reducing the use of plastic, students showed high enthusiasm. As done by (Mantopani et al., 2023) explained that the implementation of environmental care character education runs optimally through the LISA (Liat Sampah Ambil program). The interactive discussions that were conducted showed that students were able to relate the material to daily habits at school. Some students spontaneously expressed their willingness to bring their own drinking bottles and no longer litter in the school environment.

The implementation of the activity involved 25 fourth-grade students of SDN 6 Suwawa who actively participated throughout the educational session. During the material presentation and discussion session, most students showed high enthusiasm, which was reflected in their active participation in answering questions and sharing their experiences related to plastic use in daily school activities. Based on the results of observations and brief reflective discussions, around 20 students were able to explain again the negative impacts of plastic waste on the environment, while 18 students stated their willingness to reduce the use of single-use plastics by bringing reusable drinking bottles and disposing of waste in its proper place. In addition, several students responded that they had previously not realized that plastic waste could pollute rivers and oceans.



Figure 2. Team Photo with Students



In terms of discussion, the results of this activity show that a simple and contextual approach to environmental education is very effective in applying to elementary school students. Education that emphasizes concrete examples and practical behavior is easier for students to understand and internalize than abstract concepts. This is in line with the cognitive development characteristics of elementary school students who are more responsive to experiential and visual learning. This result is confirmed by a study (Naziyah et al., 2021) which explains that environmental care character education in elementary schools is carried out through routine, spontaneous, exemplary, conditioning, school culture, and environmental health.

In addition to increasing knowledge and attitudes, this activity also makes an initial contribution to efforts to realize environmentally friendly schools. A clean and beautiful school environment is positioned as a common goal that can be achieved through simple but consistent behavior change. Environmental care education carried out through this service activity acts as an initial trigger for the formation of a culture of environmental care in schools, although it still requires support and sustainability from all school residents.

Reflectively, the results of the activity show that education-based community service has a strategic role in bridging environmental knowledge with real practice. Although the observed behavior changes are still in its early stages, these activities have instilled a basic awareness and commitment in students to participate in the plastic waste reduction movement. Thus, this service activity not only provides short-term benefits in the form of increasing knowledge, but also opens up opportunities for the formation of sustainable environmentally friendly behavior in the long term. This result is in line with what was done by (Wunarlani & Botutihe, 2025) to increase the awareness and understanding of TPQ At Thariq students regarding the importance of preserving the environment, both from the perspective of Islamic teachings and the principle of sustainability. Participants were able to identify simple actions in daily life that contribute to environmental conservation, such as throwing garbage in place, reducing water waste.

#### **D. CONCLUSION**

Community service activities through environmental care education carried out at SDN 6 Suwawa, Bone Bolango Regency have had a positive impact on increasing the knowledge and attitudes of elementary school students regarding the problem of plastic waste. The problem of low student awareness of the impact of single-use plastic use can be effectively responded to through a simple, communicative, and socialization approach to environmental education that is in accordance with the characteristics of elementary school-age students.

An important contribution of this program is the emergence of students' initial commitment to reducing the use of single-use plastics, such as bringing reusable drinking bottles, disposing of waste properly, and building awareness of maintaining environmental cleanliness in schools. Therefore, this activity not only contributed to increasing students' environmental knowledge but also became an initial effort in fostering environmentally friendly behavior and supporting the realization of eco-friendly schools. Sustainable environmental education activities integrated with school programs are expected to strengthen the culture of environmental care among elementary school students in the long term.

Overall, this service activity contributes to supporting the realization of environmentally friendly schools by strengthening the role of students as agents of change from an early age. Although the resulting changes are still in their infancy, this activity shows that environmental education that is carried out in a sustainable manner and integrated with school programs has great potential to create a culture of environmental care in the primary



education environment. In the future, similar activities need to be developed with continuous assistance so that the resulting impact can be more optimal and sustainable.

## **E. ACKNOWLEDGEMENTS**

The author expresses his deepest gratitude to the UNG Thematic KKN-Thematic Team of Ulantha Village, then to the school of SDN 6 Suwawa, Bone Bolango Regency for the warm welcome, support, and cooperation given during the implementation of this community service activity. Appreciation was also conveyed to the fourth grade students for the active participation and enthusiasm shown during the educational activities. In addition, the author thanks the academic institution.

## **F. AUTHOR CONTRIBUTIONS**

All authors actively contribute to the writing of this service journal, then for the second author and the third author play a role in planning service activities, preparing environmental care educational materials, implementing socialization to students and all authors have read and approved the final version of the manuscript to be published.

## **G. REFERENCES**

- Geyer, R., Jambeck, J. R., & Law, K. L. (2017). Production, use, and fate of all plastics ever made. *Science Advances*, 3(7). <https://doi.org/10.1126/sciadv.1700782>
- Jermias, E. O., Rahman, A., Manda, D., & Ahmadin. (2024). Sosialisasi Cara Mengurangi Sampah Plastik pada Kalangan Pemuda di Tanjung Dapura Kota Makassar. *Society: Jurnal Pengabdian Masyarakat*, 3(5), 298-305. <https://edumediastudies.com/index.php/society>
- Laily, D. W., Roidah, I. S., Nurohmah, L., & Damayanti, A. L. (2025). Edukasi Lingkungan Melalui Penanaman Tanaman Hias Di TPQ At Tholabah: Inisiatif Kkn Untuk Pemberdayaan Dan Pembelajaran. *Jurnal Pengembangan Dan Penelitian Pendidikan*, 07(1), 64-72. <https://journalversa.com/s/index.php/>
- Lestari, Y. (2018). Penanaman Nilai Peduli Lingkungan Dalam Pembelajaran Ilmu Pengetahuan Alam. *Trihayu: Jurnal Pendidikan Ke-SD-An*, 4(2), 332-337.
- Mantopani, I., Muhajir, M., & Azis, A. (2023). Pendidikan Karakter Peduli Lingkungan di Sekolah Dasar. *JUDIKDAS: Jurnal Ilmu Pendidikan Dasar Indonesia*, 2(4), 191-198. <https://doi.org/10.51574/judikdas.v2i4.931>
- Muslim, A., Azizah, N. D., Supriatna, & Nurwulan, E. D. (2021). Penanaman Pendidikan Karakter Peduli Lingkungan Di Sekolah Dasar. *Khazanah Pendidikan-Jurnal Ilmiah Kependidikan (JIK)*, 15(1), 98-101.
- Naziyah, S., Akhwani, A., Nafiah, N., & Hartatik, S. (2021). Implementasi Pendidikan Karakter Peduli Lingkungan di Sekolah Dasar. *Jurnal Basicedu*, 5(5), 3482-3489. <https://doi.org/10.31004/basicedu.v5i5.1344>
- Priyambodo, H. Y., Yosef Hano'e, E. M., & Kamaluddin. (2023). Sosialisasi Dampak Sampah Plastik Terhadap Kesehatan dan Lingkungan di SMP Negeri 1 Mollo Utara Desa Kapan, Kabupaten TTS. *Jurnal Umum Pengabdian Masyarakat*, 2(4), 8-13. <https://doi.org/10.58290/jupemas.v2i4.169>
- Wunarlani, I., & Botutihe, M. R. (2025). SDGs-Based Environmental Education at TPQ At Thariq, Bone Bolango Regency. *SOCIETY: Jurnal Pengabdian Masyarakat*, 4(3), 492-497.