

Socialization of Waste Management as an Effort to Develop Creativity at the Bumi Keselamatan Margarita Orphanage

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Abstract: Waste is one of the increasingly complex environmental problems faced by various regions, both urban and rural. Therefore, efforts to manage waste wisely and sustainably are urgently needed. One relevant approach is to educate the community including early age groups such as children in orphanages—to develop awareness and skills in waste management. This research or community service project aims to describe the process of implementing a socialization program, assess the level of participation and understanding of children regarding the materials provided, and explore the potential for developing creativity through waste processing activities. This study uses a qualitative approach with a descriptive analysis method. Data were collected based on supporting factors related to the research object and through interviews and surveys with the community, in order to generate data from both the field of waste management and the associated issues. The subject of this study is the Bumi Keselamatan Margarita Orphanage. The socialization program implemented at the orphanage focused on educating children about proper waste management techniques and environmental conservation. Through interactive workshops and hands-on activities, the children were encouraged to develop creative solutions for recycling and upcycling waste materials. The study's findings revealed a significant increase in the children's awareness and understanding of waste management principles, as well as their enthusiasm for participating in eco-friendly initiatives within their community.

Keywords: Waste, environment, recycling .

INTRODUCTION

Waste is an increasingly complex environmental problem in various regions, both urban and rural. Ineffective waste management can have negative impacts on health, environmental cleanliness, and aesthetic beauty. Therefore, efforts to manage waste wisely and sustainably are urgent. One relevant approach is to educate the public, including young people such as children in orphanages, to develop awareness and skills in waste management. The waste problem has become a vital national issue, so its processing requires intensive, comprehensive, and integrated attention from start to finish to achieve benefits in every aspect, both economically and socially (Dobiki, 2018). The waste found in society largely originates from human activities. The waste that is often produced is organic waste (food scraps, leaves, and the like) and inorganic waste (paper, plastic, metal, cloth, and other types) (Banowati, 2012). This problem has become a vital issue in the modern era, so its processing requires comprehensive attention to provide economic and social benefits.

Based on this core problem, the socialization activity for the second wave of Teacher Professional Education (PPG) students at Simalungun University focused on the theme "Eco-Warriors: Leading Change from Home to Learn for the Environment." Through this program, it is hoped that students can become active agents of change in protecting and

preserving the environment. This activity aims to provide students with an understanding of the importance of an environmentally friendly lifestyle, waste management, reforestation, and various concrete actions that can be taken to reduce negative impacts on the environment. Through an educational approach and hands-on practice, participants are expected to internalize the values of sustainability and apply them in their daily lives. As a step in realizing this program, it is necessary to have a target object for the implementation of environmental education. One location with great potential for implementing this program is The Bumi Keselamatan Margarita (BKM) Orphanage in Simalungun Regency is a social institution that cares for children from various social and economic backgrounds. As a place of care and character development, the orphanage plays a crucial role in instilling values of environmental awareness and empowerment in children from an early age. However, facilities and activities focused on environmental issues and creativity, particularly related to waste management, are still suboptimal. This opens up opportunities to integrate environmentally-based educational activities into the orphanage's child development program.

Waste management awareness campaigns not only aim to raise environmental awareness but can also be a means of developing their creativity. Hettiaratchi (2007:9) states that the perspective on

waste management must shift from reactive to proactive, a holistic approach that recognizes waste as a resource rather than a responsibility. Waste management practices in Indonesia, including the establishment of Waste Banks, increased recycling, and composting from organic waste, are examples of ecocentric management practices, which focus not only on the impact of pollution on humans but also on life as a whole (Keraf, 2010:116). Children can be trained to think critically, creative, productive, and environmentally responsible. This approach is expected to shape children's character by being caring, independent, and possessing skills that will be useful in the future. Some concrete examples of this approach include the creation of paving blocks from plastic waste, flour from eggshells, eco-printed tote bags, and rice water fertilizer.

Thus, this program is not simply a theoretical socialization of waste management, but also a concrete effort to develop ecological habits and creative skills among the children in the orphanage. By utilizing waste into useful products, they not only increase environmental awareness but also acquire skills that have the potential to be developed into sustainable entrepreneurial activities. If this program continues to be developed and supported by the community and relevant institutions, the children in the orphanage can become agents of change in creating a more innovative waste management system that has a broad impact on the environment (El Mahdi, 2017).

Based on this background, the waste management socialization activity at the Bumi Keselamatan Margarita (BKM) Orphanage in Simalungun Regency was designed as part of an effort to empower children through practical environmental education. This research and community service aims to describe the socialization process and the children's understanding of the material provided, as well as to evaluate the potential for developing creativity through waste management activities.

RESEARCH METHODS

Research Design

This research uses a qualitative approach with descriptive analysis methods to comprehensively and in-depth describe the process and impact of waste management outreach activities as an effort to develop creativity at the Bumi Keselamatan Margarita Orphanage. This approach was chosen because it allows researchers to examine phenomena holistically in their natural context and

explore the meaning of participants' experiences (Bogdan R. &, 2007).

RESEARCH LOCATION AND SUBJECTS

This research was conducted at the Bumi Keselamatan Margarita Orphanage, located in Simalungun Regency, North Sumatra. The subjects were children living at the orphanage aged 7 to 17, as well as the orphanage administrators who participated in the outreach activities. This location was chosen based on the consideration that the orphanage did not yet have an educational program focused on waste management and empowering environmental creativity.

Data Collection Techniques

Data in this study were collected using several techniques, namely:

- Participatory observation, in which the researcher was directly involved in waste management outreach and training activities to record responses, participation, and interactions (Spradley, 1980).
- Semi-structured interviews were conducted with the children and orphanage administrators to gain a deeper understanding of their perceptions of the activities, the materials presented, and the impact of the socialization on their knowledge and creativity (Miles & Huberman, 1994).
- Documentation, in the form of photos of activities, children's work made from recycled materials, and activity notes collected during the socialization process.

Data Analysis Techniques

Data were analyzed using qualitative descriptive analysis techniques, namely by organizing and categorizing the information obtained during the research, then systematically describing it to understand the patterns, meanings, and implications of the activities. The analysis process was carried out through three main stages, as outlined by Miles and Huberman (1994):

- Data reduction: filtering data from observations and interviews to extract information relevant to the research objectives.
- Data presentation: organizing data in the form of descriptive narratives, tables, and quotations to clarify the findings.
- Conclusion drawing and verification: interpreting data to derive meaning and understand the impact of activities on children's knowledge and creativity.

Data Validity

To ensure the validity and reliability of the data, this study used the triangulation technique of sources and methods (Patton, 1990). Triangulation was conducted by comparing data from observations, interviews, and documentation to ensure the consistency and accuracy of the information. Furthermore, the researcher conducted member checks, which involved reconfirming the interpretations with informants to avoid biased interpretations.

Implementation Procedure

The socialization activities were carried out in several stages:

- Preparation stage, namely identifying needs, coordinating with the orphanage management, and preparing educational materials.
- Implementation stage, consisting of delivering educational materials regarding types of waste, their impact on the environment, and waste processing techniques (recycling and composting). Children were also involved in practical activities such as making crafts from inorganic waste and simple composting from organic waste.
- Evaluation stage, conducted to assess the extent to which children's understanding, participation, and creativity developed through the activities.

RESULTS AND DISCUSSION

In the midst of the Silau Malaha hills of Simalungun Regency stands the Bumi Keselamatan Margarita (BKM) Orphanage. This place is not just a place for children to live, but also a place to build character and broader social awareness. In the context of ecology and community life, children have an equally important role as adults in general as agents of change. Ecological awareness and the relationship between humans and nature are collective responsibilities that need to be instilled from an early age. Departing from this argument, the socialization activity with the theme "Eco-

Warriors: Leading Change from Learning Houses for the Environment" is present to encourage positive change that begins from the educational community. Learning houses, as places for the transfer of knowledge and values, have great potential to produce individuals who not only possess knowledge but can implement it in creative activities that will later be beneficial for sustainable living. The goal of this activity is to build collective awareness and encourage real action in society through an innovative environmental education approach. Transformation begins with simple steps in everyday life that will cumulatively have a significant impact on the planet we love. One concrete example of simple steps relevant to their daily lives is utilizing household waste through various creative activities. Here are some of the activities we've undertaken to promote ecological awareness:

Observation

Held on January 29, 2025, this activity was carried out as an initial stage of observation to gain a comprehensive understanding of environmental conditions, needs, potential, and challenges faced in program implementation. This observation aims to collect data needed by the group, including the number of children living in BKM, which is 29 people with details of 8 elementary school children, 3 junior high school children, 2 high school children, 11 vocational school children, 2 college students, and 3 children who are looking for work. In addition, information was obtained regarding the background of the establishment of BKM which was officially established on July 24, 2005, based on a donation from an individual who wanted to fulfill the will of his wife, Mrs. Margarita, whose name was later immortalized as the identity of the orphanage. During this observation, it was also the beginning of establishing a close relationship with the BKM environment and BKM residents.



Figure 1. PPG students conduct observations at the BKM orphanage (Source: personal document, 2025)

Zine Data Collection

Held on February 22, 2025, as an output of the "Eco-Warrior" activity, the zine was designed by the group and written by BKM children as a manifesto reflecting their thoughts and aspirations for the environment. During the realization process, several children from the orphanage also

shared their daily experiences at BKM, which indirectly enriched the content and provided a more humanistic perspective in the zine. To encourage children to write, we provided refreshments and games during the activity to maintain the BKM children's enthusiasm.



Figure 2. BKM children are writing for a zine (Source: Personal document, 2025)

Making Flour from Eggshells

Held on March 8 and 15, 2025, the eggshells are collected, cleaned, dried, and then ground into a fine powder that can be used as a natural source of calcium for various purposes, such as animal feed or as a nutritional supplement. Through this

activity, participants not only gain practical skills in waste management but also understand the importance of recycling concepts to reduce environmental impact and support a healthier ecosystem.



Figure 3. PPG students and BKM children are cleaning egg shells (Source: personal document, 2025)

Making Rice Water Fertilizer

Held on March 15, 2025, the project aims to utilize rice washing wastewater as a nutrient source for plants, while supporting sustainable agricultural practices based on natural ingredients. In the process, mineral- and vitamin-rich rice water is collected and fermented with specific microorganisms to enhance its nutritional content before being applied to plants. This method not

only strengthens soil fertility but also reduces dependence on chemical fertilizers, thus contributing to a more environmentally friendly and resource-efficient agricultural ecosystem. Through this activity, participants gain an understanding of the concept of nutrient recycling and the importance of optimizing organic materials to support natural and sustainable plant growth.



Figure 4. BKM students and PPG students display the results of making rice water fertilizer (Source: personal document, 2025)

Making Paving Blocks and Tote Bags

Held on March 12, 2025, Paving blocks were made using plastic waste that had been processed through shredding and mixing with construction materials such as sand and cement, resulting in a strong and durable product for infrastructure purposes. Meanwhile, in making tote bags, participants applied the eco-print technique, a

fabric dyeing method that utilizes natural materials such as leaves, flowers, and bark to create unique and environmentally friendly organic motifs. This technique is done by attaching plant material to the fabric, then through a heating and fixation process, the natural pigments from the plants are transferred to the textile surface, producing a distinctive and aesthetic pattern. Through this activity,

participants not only gained skills in material recycling, but also understood how innovations in waste processing can contribute to reducing

environmental impacts and encouraging the use of more sustainable products in society.



Figure 5. BKM children together with two BKM female students display their tote bag creations (Source: personal document, 2025)



Figure 6. BKM children are melting plastic waste to be used as the main material for paving blocks (Source: personal document, 2025)

Closing

Held on April 26, 2025, the event included a discussion on achievements and challenges, as well as the formulation of strategic steps to maintain the sustainability of the initiatives that had been initiated. This closing also served as a forum to strengthen a shared commitment to implementing sustainability principles in everyday

life, while opening up opportunities for creative ideas in the utilization of recycled waste. In this closing, PPG students prepared games as a fun final entertainment. The games included a water relay, a rubber relay, and a sarong relay. To boost their enthusiasm, we prepared prizes for the winners.



Figure 7. BKM children are paying attention to the closing ceremony of the socialization (Source: Personal document, 2025)



Figure 8. BKM children are playing a water relay game (Source: Personal document, 2025)

Orphanage Children's Understanding of Waste Management

Prior to the outreach activities, the children at the Bumi Keselamatan Margarita (BKM) Orphanage's understanding of waste management was rudimentary and limited to conventional hygiene practices, lacking a comprehensive understanding of the concept of separating organic and inorganic waste and the ecological implications of poorly managed waste accumulation. Interviews with the orphanage's caretakers revealed that the children's previous education on waste management was primarily theoretical and not integrated with hands-on practice, thus failing to provide practical experiences that could motivate behavioral change in their daily lives. The lack of an action-based approach left their environmental awareness at a conceptual level, lacking the internalization of sustainability principles that could encourage active participation in environmental conservation efforts.

Following the outreach activities combined with hands-on practice, there was an increase in understanding, which, while still gradual, began to show changes in the children's behavior toward waste management. They began to separate waste into organic and inorganic categories (still sporadically) and utilize household waste through simple methods such as making rice water fertilizer. While the scale of change is still limited, active engagement in these practices reflects the beginnings of internalization of sustainability concepts, which has the potential to develop further as the frequency of education and engagement in action-based programs increases.

Developing Creativity Through Waste Processing

In an effort to optimize household waste utilization and raise ecological awareness among participants, various recycled-based products were successfully developed as a way to implement sustainability principles. One innovation produced was paving

blocks made from plastic waste. Through a process of shredding, heating, and mixing with aggregates such as sand and used oil, the resulting material is highly durable and has the potential to reduce the accumulation of plastic waste in the environment. In the production of these paving blocks, collaborative skills developed, becoming a key competency, as they learned to communicate effectively. Furthermore, participants designed tote bags using eco-printing techniques. Creativity skills also developed, particularly in the design process for recycled products, such as determining patterns using eco-printing techniques or creating innovative variations in paving blocks made from plastic waste. Using eggshells, participants developed creativity in processing the waste into calcium powder, a natural nutrient source that can be used as an ingredient in cakes. In this process, participants developed creativity in processing the waste into calcium powder, which can be marketed as a nutritional supplement in food products.

With extensive fields planted with corn and sweet potatoes, the potential for utilizing rice water fertilizer is even greater in supporting sustainable agricultural systems. Besides serving as a nutrient source that can improve soil fertility, rice water fertilizer also provides an environmentally friendly alternative to reduce dependence on synthetic fertilizers. According to interviews with the BKM Orphanage Caretaker, rice water fertilizer is the innovation most accepted and utilized by the orphanage children in their daily lives, demonstrating that the concept of sustainability can take root more firmly when aligned with daily needs and activities. The internalization and consistent use of rice water fertilizer indicates a change in behavior.

Critical analysis and future potential

The waste management outreach activities conducted at the Bumi Keselamatan Margarita (BKM) Orphanage have contributed to changes in the children's behavior patterns, although they are still in the early stages and are gradual. Referring to the Theory of Behavior Change (Prochaska, 1983), this change process follows a gradual process, starting with the precontemplation phase, where the children are initially unaware of the importance of waste sorting and processing. After the outreach, they begin to enter the contemplation and preparation phase, where their understanding of sustainability increases, although waste sorting practices remain sporadic. However, the main challenge that emerged was the inconsistency in the implementation of the waste sorting system,

which hampered the transition to the action and maintenance phase. Therefore, the sustainability of this initiative requires more systematic and ongoing intervention (Bandura A., 1977).

Furthermore, from the perspective of Creativity Theory (Fakhriyani, 2016), this activity encouraged participants to think more flexibly and develop innovative solutions for waste utilization. Divergent thinking skills were evident in the creation of paving blocks from plastic waste, eco-printed tote bags, and the use of eggshell flour as a nutritional supplement. However, while creativity in waste processing is growing, the main challenge lies in the participants' ability to integrate sustainability with economic potential. This requires further guidance to ensure creativity is not merely exploratory but also generates concrete, long-term impact.

CONCLUSION

This research discusses outreach activities at the Bumi Keselamatan Margarita (BKM) Orphanage, which aim to raise children's ecological awareness through education and hands-on practice. The program, titled "Eco-Warriors: Leading Change from a Learning Home for the Environment," seeks to foster a sustainable mindset from an early age, through various activities such as making rice water fertilizer, utilizing eggshells, and producing paving blocks from plastic waste. Through observation and active involvement, the children at the orphanage are beginning to understand the importance of waste sorting and the benefits of waste processing in their daily lives. Although the changes are still in their early stages, there are indications that their environmental awareness is gradually growing.

In addition to increasing understanding of sustainability, the program also encourages creativity in processing waste into valuable products. Eco-printed tote bags and plastic paving blocks are examples of innovations resulting from this program. However, the main challenges faced are consistency in implementing waste sorting and integrating sustainability aspects with economic potential. The sustainability of this initiative requires long-term support and mentoring so that the behavioral changes that have begun to take shape can continue to develop and have a real impact on the environment and surrounding community.

SUGGESTIONS

Based on the results obtained, several suggestions are provided to improve the effectiveness and sustainability of the outreach program at the Bumi Keselamatan Margarita (BKM) Orphanage:

- **Strengthening Consistency in Waste Management.** To ensure that the children at the orphanage are more disciplined in sorting and managing waste, long-term strategies are needed, such as establishing a clearer waste sorting system and regular training. The use of visualizations such as educational posters or waste category labels can help them better understand how to sort.
- **Increasing Mentoring and Collaboration.** To ensure the sustainability of the program, the involvement of the community and external parties, such as environmental organizations or academics, can be expanded. Long-term mentoring will help them develop their skills and ensure sustainable practices are maintained.
- **Leveraging Technology for Sustainable Education.** Technology can be utilized in the form of digital learning modules, video documentation, or community-based platforms to share ideas and best practices. With a digital approach, children can continue to learn and broaden their horizons about sustainability.

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