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Organic Waste Management Into Compost Fertilizer as a Form of Socialization and Practical Activities in Class 3 of SDN Keleyan 1

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ABSTRACT

The problem of organic waste in the school environment, particularly at SDN Keleyan 1, remains a challenge in creating a clean and healthy environment. The large amount of organic waste generated daily, such as food scraps and leaves, is not managed properly, thus potentially polluting the surrounding environment. One solution that can be implemented is processing organic waste into compost, which not only provides ecological benefits but can also be used as an educational tool for students. This article aims to describe practical and educational activities in processing organic waste into compost in grade 3 of SDN Keleyan 1. Through an approach involving socialization, demonstrations, and direct mentoring, students are encouraged to understand and practice the process of processing organic waste in a simple and effective way. The results of the implementation of the activity showed an increase in students' knowledge and skills in processing organic waste into compost independently. In addition, this activity also succeeded in building students' awareness of the importance of maintaining a clean environment and the sustainability of the school ecosystem. Overall, this activity has proven effective in educating students about organic waste management and introducing the concept of environmental sustainability from an early age, thereby creating a cleaner, healthier, and environmentally conscious school environment.

A. INTRODUCTION

Waste is a complex environmental problem that requires sustainable solutions, especially in schools. One approach to reducing waste volume is through processing organic waste into reusable compost. Elementary schools, as early education institutions, have a strategic role in instilling environmental awareness in students from an early age. However,

in reality, many schools still face challenges in managing waste effectively, including Keleyan 1 Public Elementary School.

Keleyan 1 Public Elementary School produces large amounts of organic waste from dried leaves and food scraps around the school grounds. Unfortunately, a lack of understanding and skills among students and educators in waste management means this organic waste is underutilized and tends to end up in landfills (FDS).

Previous research has shown that many schools still have not implemented effective waste sorting and processing systems (Nindya Ovitasari et al., 2022). Furthermore, limited supporting facilities, such as separate trash bins and dedicated composting spaces, further exacerbate waste management problems in these schools (Puteri & Yuristin., 2025). Another challenge faced in waste management at Keleyan 1 Public Elementary School is the limited green space, which is a major obstacle to implementing school-based waste management methods. As the school is located in a densely populated rural area, open space for composting activities is very limited.

Lack of environmental awareness among elementary school students often leads to irregular waste disposal practices (Ahyar et al., 2025). This is exacerbated by the lack of structured waste management education programs within the school curriculum. Based on the results of our observations, the selection of third-grade students as the target of the activity was based on the finding that students at this level demonstrate high curiosity and strong enthusiasm for practice-based learning activities. Observations indicated that most third-grade students had limited initial understanding of organic waste management; however, they were able to follow simple instructions and actively participate in compost-making practices. In addition, third-grade students showed positive responses throughout the activity, such as actively asking questions, working collaboratively in groups, and demonstrating concern for the cleanliness of the school environment. Based on these conditions, Grade 3 was considered an appropriate target for the activity, as students at this level have strong potential to receive and apply early habits of waste management, thereby supporting the development of sustainable environmental awareness.

In addition to infrastructure, the involvement of educators in waste management is also a determining factor in the success of this program. As part of the 2025 Elementary School Teacher Education (PTE) Thematic Community Service Program (KKNT) in Keleyan Village, Socah District, this educational and practical activity on organic waste management is designed to support sustainable environmental programs in elementary schools. This activity not only focuses on increasing individual student awareness but also encourages collective participation of the school community in realizing a culture of community-based waste management.

Studies have shown that integrating environmental-based KKNT programs into elementary schools has been effective in improving students' practical skills while fostering early ecological awareness (Ruswendi et al., 2024). Lack of training and mentoring for teachers and students hinders the optimization of organic waste management in schools. Several studies suggest that a viable solution is to increase student participation through project-based programs, such as a simple composting method using a composter or the application of microorganism-based composting technology to accelerate organic waste decomposition (Rayendra et al., 2024).

If organic waste management is implemented properly, the benefits are not limited to environmental aspects but also contribute to raising students' awareness of the importance of

sustainability. Processing waste into compost in schools can provide a concrete solution to reducing organic waste and creating a healthier, greener ecosystem. Furthermore, the resulting compost can be used to green the school environment, support the Adiwiyata program, and provide meaningful learning experiences for students.

Several studies have demonstrated the effectiveness of organic waste education and management programs in schools. School-based education and waste management optimization programs can foster environmental awareness and improve waste management efficiency among students and teachers (Suciati et al., 2025).

This program also helps students understand the importance of sorting waste and processing it into more useful products, such as compost. Training and mentoring in organic waste management can improve students' practical skills in processing organic waste (Cundari et al., 2019). Other research highlights that implementing composting in schools not only has a positive impact on the environment but can also be part of a project-based curriculum that actively engages students in learning (Ismawati & Rahayu, 2024).

Empirically, school-based waste management has been implemented in several other educational institutions. Research shows that the Takakura composting method in elementary schools has a positive impact on changing students' behavior in sorting and processing waste. Furthermore, green school programs involving composting have also been shown to improve food security by utilizing compost as fertilizer for plants in the school environment.

Based on various studies that have been conducted, it can be concluded that the main challenges in waste management in elementary schools, including at Keleyan 1 Public Elementary School, include the lack of understanding and skills of students and teachers in managing organic waste, limited facilities and infrastructure that support waste sorting and processing systems, minimal mentoring and training for educators, and the lack of involvement of the school community in supporting environmental sustainability initiatives. Therefore, education and practice of managing organic waste into compost in schools not only provide benefits for the environment, but also have social and educational impacts.

This activity is expected to serve as a model for other schools to implement in an effort to create a more environmentally conscious educational ecosystem. The goal is to increase awareness, skills, and active participation of all school members in creating a clean, healthy, and sustainable learning environment. Through this collaborative and sustainable approach, it is hoped that positive behavioral changes in waste management in the school environment will be fostered from an early age.

Figure 1. Documentation of the Condition of the Keleyan 1 Public Elementary School

B. METHODS

This community service activity was carried out through socialization and direct practice methods to improve students' understanding and skills in managing organic waste into compost. This method was implemented in three main stages: material delivery, composting practice, and evaluation of results. This activity was held on Saturday, September 27, 2025, from 08:00 WIB until finished, with the gathering point in the 3rd grade classroom of Keleyan 1 Public Elementary School. All students involved in this activity were 3rd grade students and were accompanied by KKNT friends. During the practical stage, the tools used included a simple composting container made from a perforated plastic bucket, small shovels, buckets, and mixing tools.

The materials consisted of organic waste such as food scraps and dry leaves, soil, ash from burned dry leaves, water, and a microorganism activator solution (EM4) that had been diluted beforehand. The compost was prepared using a mixture ratio of organic waste to soil of 2:1, followed by the addition of ash as needed and EM4 solution at a ratio of approximately 10 ml of EM4 per 1 liter of water to accelerate the decomposition process. All tools and materials were selected based on their availability in the school environment and were designed to be easy for elementary school students to use, ensuring that the compost-making practice could be carried out safely, simply, and effectively.

The first stage is a socialization session, which involves a presentation on the importance of organic waste management and its benefits for the environment. This presentation utilizes visual media such as posters and simple props to facilitate student comprehension. During this session, students are encouraged to actively participate through discussions and Q&A sessions to enhance their understanding of the 3R concept (Reduce, Reuse, Recycle) and the importance of organic waste management.

Following the socialization, the activity continued with a hands-on compost-making workshop. Students were guided in sorting organic waste, mixing it with additional materials such as ash powder from burning dry leaves, and observing the compost fermentation process. This workshop was conducted in groups to foster student collaboration and engagement in independent waste management. Through this hands-on workshop, students gained not only theoretical insights but also skills that can be applied in their daily lives.

The final stage is evaluation to measure the success of this activity. Evaluation is conducted using two methods: qualitative and descriptive. Qualitatively, the program's success is measured through observations of changes in students' attitudes toward waste management in the school environment.

Attitude evaluation was conducted using an attitude observation sheet and a behavior change assessment rubric, which included indicators such as active participation in composting activities, waste sorting habits, concern for environmental cleanliness, and student initiative in reminding their peers to manage waste properly. Positive attitudinal changes were demonstrated by increased student involvement in practical activities and new habits of sorting organic waste in the classroom and schoolyard.

Additionally, evaluation was conducted through a question-and-answer session at the end of the activity, where students were asked questions related to the material and the practical exercises they had completed to gauge their understanding. During this session, students asked several questions, including questions about which leaves can be composted,

how long it takes to make compost, and how to easily distinguish between organic and inorganic waste. These questions demonstrated that students were beginning to show interest and concern about waste management. Indicators of attitude change were seen in the relevance of the questions, students' active participation in asking questions, and their desire to apply this knowledge in their daily lives (Fadila & Kusmana, 2024).

This entire activity was carried out collectively with the active involvement of all third-grade students, fellow KKNT participants, and teachers as facilitators. Teacher involvement is crucial in supporting the sustainability of the organic waste management education program at the school, ensuring its continued implementation even after the community service activities have concluded. With this activity, it is hoped that Keleyan 1 Public Elementary School can become a more environmentally conscious school and be able to manage organic waste sustainably.

C. RESULTS AND DISCUSSION

Results

Prior to the outreach, most students lacked a solid understanding of organic waste management and its benefits. This was evident in the initial survey, which showed that only 25% of students were aware of the benefits of compost, and only 10% had tried making it themselves. Furthermore, 90% of students admitted they still struggled to understand how to make compost due to a lack of education and hands-on experience in organic waste processing.

However, after participating in this activity, students' understanding and skills in sorting and processing organic waste into compost improved. Based on the post-socialization evaluation, 95% of students stated they understood composting well, and 80% felt capable of making compost independently.

The improvement in students' understanding and skills after the composting socialization and practice activities indicates that the experiential learning approach is effective in improving environmental literacy in elementary school students. This finding aligns with constructivist learning theory, which states that knowledge is actively constructed through direct experience and student involvement in the learning process. The results of this activity also support the findings of (Munandar et al., 2024) who stated that environmental education combined with direct practice can significantly improve students' understanding and skills compared to lecture methods alone.

The increase in the percentage of students who are able to understand and practice composting independently indicates that active student involvement plays a significant role in shaping environmentally conscious attitudes and behaviors. Furthermore, the increase in student motivation (85%) indicates that this activity not only impacts cognitive and psychomotor aspects, but also affective aspects, as emphasized by (Ruswendi et al., 2024)that school-based waste management programs can foster environmental awareness and responsibility from an early age. Thus, the results of this activity strengthen the empirical evidence that organic waste management education integrated with direct practice is an effective strategy in building sustainable behavior in elementary school environments.

Furthermore, 85% of students became more motivated to process organic waste at school and at home. These results demonstrate that the outreach and hands-on practice methods implemented in this activity successfully increased students' awareness and skills in managing organic waste sustainably.

Figure 2. Documentation of Compost Making Socialization in Grade 3 of Keleyan 1 Public Elementary School


Figure 3. Documentation of Compost Fertilizer Making Materials



Figure 4. Documentation of Compost Fertilizer Making Practical Activities


Figure 5. Documentation of the Results of Compost Fertilizer Making Practices

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This socialization activity was carried out simultaneously with all third-grade students, KKNT friends and accompanied by accompanying teachers. The educational activity began with an interactive session for third-grade students regarding compost fertilizer in general and organic waste management, to assess the extent of student knowledge. Next, socialization was carried out regarding the management of organic waste into compost fertilizer. After the socialization activity, a joint practice of making compost fertilizer was carried out and at the end a question and answer session was held with third-grade students to assess understanding after the socialization and practice. At the end of the activity, a question and answer session was held with prizes given to third-grade students who actively answered during the activity as a token of gratitude for their active participation. To measure the success of this activity, an evaluation was carried out through observation, a question and answer session, and interviews with students and teachers. The following are the results of student responses before and after the socialization:

Table 1. Grade 3 Students' Responses to Organic Waste Management Before Socialization

Statement	**Response (%)**	
	Yes	**No**
Students have heard about organic waste processing	55%	45%
Students have difficulty understanding how to make compost	85%	15%
Students have learned the benefits of compost fertilizer	25%	75%
Students have tried making compost	10%	90%
Students are interested in processing organic waste into compost	60%	40%

Table 1. Comparison Before and After Liveworksheets Training

Statement	**Response (%)**	
	Yes	**No**
Students understand the material presented well	90%	10%
Students understand how to make compost	95%	5%
Students learn about the benefits of compost fertilizer	85%	15%
Students are able to make compost independently	80%	20%
Students are motivated to continue processing organic waste	85%	15%

Based on the evaluation results above, it is clear that third-grade students' understanding and skills have improved after participating in the socialization and practical sessions. Most students who previously didn't know the benefits of compost now have a better understanding and are motivated to process organic waste independently. This was reflected in the question-and-answer session at the end of the activity.

Some students asked questions such as, “How long does it take to make compost from leaf litter?”, “Can compost be used for all types of plants?”, “How can I speed up the

composting process at home?" and "What is an easy way to determine organic and inorganic waste?".

These questions demonstrate that students not only understand the basic concepts of organic waste management but are also beginning to think about how to apply them to their daily lives. Their active questioning indicates a growing understanding and awareness of the importance of organic waste management (Fadila & Kusmana, 2024).

Discussion

Educational activities and practical work on organic waste management at Keleyan 1 Elementary School aim to increase students' awareness and skills in managing organic waste into compost. Socialization and hands-on practice methods are considered effective in supporting students' understanding of the importance of waste management. The effectiveness of socialization is greatly influenced by communicative material delivery, engaging learning media, and active student involvement in the learning process.

The improvement in student understanding is reflected in the evaluation results. Before the socialization, only 25% of students understood the benefits of compost, while after the socialization, this increased to 85%. This change in understanding is supported by practice-based learning methods, which are considered more effective than conventional methods because they involve students' direct experience (Munandar et al., 2024)

Practical applications of composting in schools involve simple materials such as dry leaves, food scraps, ash from burning, and soil. Compared to biogas or vermicomposting methods, conventional composting is more suitable for elementary schools due to its lower cost and shorter training time (Ruswendi et al., 2024).

Students' skill mastery was also evaluated through a post-practical question-and-answer session. Based on the evaluation results, approximately 90% of students were able to re-explain the composting steps and demonstrate their abilities in independent practice. The question-and-answer evaluation method is effective for directly measuring students' cognitive levels in experiential learning situations (Samudra et al., 2024).

However, implementing this activity also faces several challenges. One is the limited time available for practical work, which means not all students can try all stages of composting. To overcome this obstacle, it's necessary to implement a more efficient activity scheduling strategy, such as dividing students into small groups to ensure more equitable and controlled implementation. Furthermore, follow-up activities in the form of regular mentoring in the following days can strengthen the understanding of students who haven't had the opportunity to practice directly. Schools can also implement a rotation or shift system for practical work, so that all students continue to receive balanced learning opportunities.

This type of engagement-enhancing strategy is considered effective because it builds repeat experiences, strengthens technical skills, and fosters students' sense of responsibility for organic waste management at school. formation of small work groups and a project-based approach can significantly increase student participation in waste management in elementary schools.

Future development opportunities are significant, including the establishment of a student-managed "School Green Community." The resulting compost can be used to reforest the school grounds or sold to support the environmentally friendly Adiwiyata program .

Overall, the educational and hands-on activities in organic waste management at Keleyan 1 Elementary School have successfully increased students' environmental awareness and developed basic technical skills essential for sustainable waste management.

D. CONCLUSION

Based on the community service activities that have been carried out at Keleyan 1 State Elementary School regarding education and practice of managing organic waste into compost, it can be concluded that this activity has succeeded in increasing students' understanding, skills, and interest in managing organic waste.

Students demonstrated a change in attitude toward greater environmental concern, in line with the activity's goal of building environmental awareness from an early age through practice-based learning. Education combined with hands-on practice was effective in developing students' concrete understanding of the importance of waste management, as demonstrated found that field practice significantly improved students' critical thinking skills and environmental awareness.

Despite challenges such as limited practice time and technical difficulties for some students, overall, this activity had a positive impact and supported the creation of a cleaner, healthier, and more sustainable school culture. For future development, this activity needs to be carried out routinely and integrated with school environmental programs to strengthen environmental awareness among students and the academic community, as suggested by Ruswendi et al. (2024) that sustainability education in schools is effective in fostering long-term environmentally friendly behavior.

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F. AUTHOR CONTRIBUTIONS

Implementation of activities: Zainul Umam (ZU), Ilham Widiyanto Saputra (IWS), Fika Riehah Wardah (FRW), M. Fadlillah (MF), Article preparation: Zainul Umam (ZU), Fika Riehah Wardah (FRW), M. Fadlillah (MF), Impact analysis: Zainul Umam (ZU), Ilham Widiyanto Saputra (IWS), M. Fadlillah (MF), Presentation of results: Zainul Umam (ZU), Fika Riehah Wardah (FRW), Article revision: M. Fadlillah (MF), Zainul Umam (ZU), Other contributions (coordination with schools, documentation of activities, and preparation of final reports): Zainul Umam (ZU), Ilham Widiyanto Saputra (IWS), Fika Riehah Wardah (FRW).

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