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INTRODUCTION TO THE IMPORTANCE OF WASTE MANAGEMENT FOR ELEMENTARY SCHOOL STUDENTS IN SUMBEREJO VILLAGE, MADIUN

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Keywords

Waste Management, Waste, Recycling

Abstract

In 2022, based on data from the National Waste Management Information System (SIPSN) and the Ministry of Environment and Forestry (KLHK), Indonesia produced around 19.45 million tons of waste. The increase in waste continues with the increasing population and community consumption. The waste management program at the elementary school level aims to increase student awareness of waste reduction, environmental conservation, and participation in recycling practices. Socialization is carried out through material presentations, recycling practices, and interactive Q&A, with a focus on the role of individuals in protecting the environment. This program took place at SD Desa Sumberejo, Madiun District, Madiun Regency, and involved students in organic and inorganic waste sorting activities. The results of the activities showed an increase in students' understanding of the concept of recycling and their motivation to take real action, such as managing waste independently. The high enthusiasm from students and the positive response from the school showed the success of the socialization. However, the effectiveness of long-term behavioral change was measured through post-program surveys and follow-up observations that showed an increase in waste sorting in the school environment as an indicator of the program's sustainability.

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INTRODUCTION

Waste is a term that refers to materials that are considered unwanted, useless, or no longer have value, and are generally discarded or disposed of. Waste can be generated from a variety of sources, including household, industrial, commercial, agricultural, and other sectors. It is important to emphasize that improper waste management can have a negative impact on the environment and human health. Waste that is disposed of carelessly can pollute the soil, water, and air, and hazardous chemicals contained in the waste can also harm the health of humans and other living things. Therefore, efforts to reduce, recycle, and properly dispose of waste are essential, and many communities and governments around the world are working to raise awareness of sustainable waste management, including educating the public about the importance of reducing the use of single-use materials, recycling recyclable materials, and adopting efficient recycling practices. Waste management is an approach used to manage and reduce the negative impacts of waste on the environment and human health. This approach involves actions such as reduce, reuse and recycle, the goal being to reduce the amount of waste that ends up polluting the environment and maximize the reuse of materials that still have value. The importance of awareness of the environmental and social impacts of waste management has driven global efforts to reduce waste production, increase recycling, and find sustainable solutions to address waste issues.

Waste management is a critical global issue due to its impact on the environment and human health. Waste, generated from various sources such as households, industries, and commercial sectors, if improperly managed can pollute the soil, water, and air. In various countries, including Indonesia, steps have been taken through campaigns and educational programs to raise public awareness regarding sustainable waste management. One significant program is the campaign to reduce single-use waste and increase recycling practices, which is in line with global efforts to reduce pollution and waste. However, to improve the effectiveness of waste management, more than just awareness is needed.

Law No. 18 of 2008 on Waste Management in Indonesia emphasizes that waste is categorized into household waste, household-like waste, and specific waste. The importance of a strong understanding of this law must be integrated into environmental education for children from an early age. Household waste is waste generated from daily household activities, excluding feces and specific waste. Household-type waste is waste that comes from commercial areas, industrial areas, special areas, social facilities, public facilities, and/or other facilities. Meanwhile, specific waste includes 1) waste containing hazardous and toxic materials; 2) waste containing

hazardous and toxic waste; 3) waste arising from disasters; 4) building demolition debris; 5) waste that cannot be processed technologically; 6) waste that arises periodically (Purnami, 2020). Waste management patterns can be carried out in terms of knowledge, attitudes, and skills. Waste management reviewed from the knowledge side is a waste management pattern by provides a foundation of knowledge to children from an early age. Knowledge about the types of waste and the dangers of waste is initial knowledge that children must have from an early age. This initial knowledge is part of environmental education (Purnami, 2020). Environmental problems do not only focus on development, but the basis for solving environmental problems is knowledge and education about the environment. An interesting environmental education pattern for children will certainly help children to better understand learning. Enjoyable learning is every child's desire (Fati et al. 2014).

METHOD

This activity was carried out using the method of socialization and practice of waste recycling management, surveys, and questions and answers/ interactive dialogues to elementary school-age people in Sumberejo Village, Madiun District, Madiun Regency related to scientific waste management.

The steps for implementing activities in this program are as follows: 1) Initial Survey and Consultation with the Village: The MMD implementation team conducted an initial survey of Sumberejo Village and consulted with the village head and related apparatus for the science-based waste management program; 2) Socialization Planning: The implementation team determined the time, location, and materials for socialization related to organic, inorganic waste management, recycling, and composting at MI Mukhtarul Ulum and SDN 02 Sumberejo; 3) Implementation of Socialization and Practice: Socialization and direct practice of science-based waste management involving students were carried out, including sorting, recycling, and compost processing; 4) Follow-up and Sustainability: After the socialization, community and student working groups were formed to ensure sustainable practices. Additional training was provided to this group to monitor long-term waste management. The monitoring plan will be carried out periodically by the MMD team with support from village apparatus, to evaluate the effectiveness of the program and make adjustments if necessary; 5) Evaluation and Development: The follow-up program will include further development such as providing waste processing facilities in schools and greater involvement of the surrounding community.

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RESULTS AND DISCUSSION

Based on the results of the posttest that has been conducted, the results obtained were 82.1% of students very much understand, 14.3% understand, and 3.6% do not understand the sorting of waste types, namely organic & non-organic. In addition, the results of the post-test regarding the positive impact of waste, students showed that 75% very much understood, 21.4% understood, and 3.6% did not understand. In understanding the 3R program (Reuse, Reduce, and Recycle), the results of the post-test showed that 80.3% of students were very much understanding, 17.9% understood, and 1.8% did not understand. The composting material that we have presented, obtained posttest results that showed that the understanding of students was 73.8% very much understand; 22.6% understand and 3.6% do not understand.

According to Jamil et al. (2021), many people only understand the principles of waste management but fail to practice the 3R principle. More than 90% of students have processed organic waste. In addition, more than 80% of students have applied the 3R principle in waste management. In the composting material, more than 90% of students understand how to make compost. According to Mahmood et al. (2019), the management of organic waste can be reused for plant needs in the form of compost fertilizer.

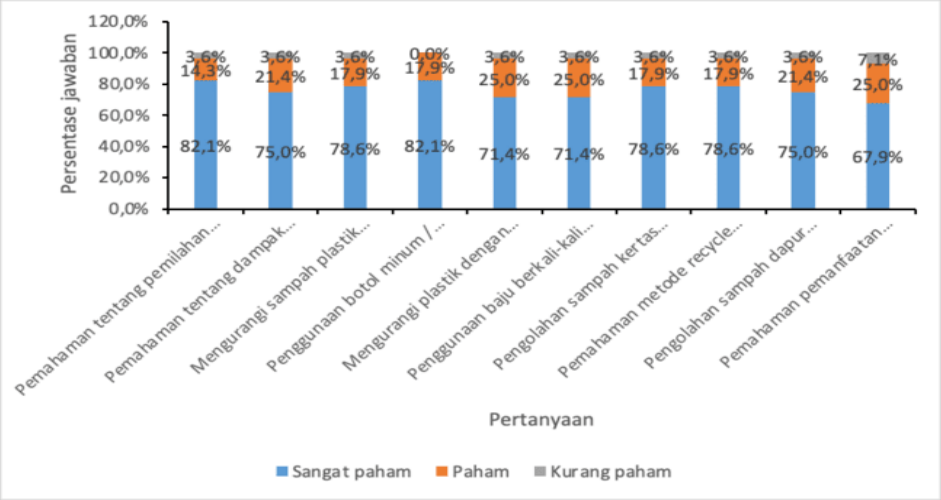

Figure 1
Posttest Results

The posttest results shown in Figure 1 indicate that students of MI Mukhtarul Ulum and SDN 02 Sumberejo have quite understood the importance of waste management. This is because the method used in this activity is not only socialization with PowerPoint as seen in Figure 2 and Figure 3, but also direct practice related to waste management.

Figure 2
Delivery of material at SDN 02 Sumberejo

Figure 3
Delivery of material at SDN 02 Sumberejo

The practices we do are divided into two, namely composting and recycling. In the composting practice, the materials used are dry leaves, soil, water, rice husk charcoal, agricultural lime fertilizer, EM4 fertilizer liquid, and compost container (jar + lid) with the results of making compost in the form of one compost jar containing the ingredients. Compost is made from dry leaves that are put into a jar, then given soil in an amount that does not exceed the amount of waste, or is equal to the amount of dry leaf waste. the surface of the soil is given enough water and added again by organic dry leaf waste that has been mixed with rice husk charcoal and agricultural lime. and watered with water mixed with EM4 covered with soil and waited for 3 weeks.

This activity aims to improve students' understanding of how to make compost, the materials needed to make compost, the types of waste that can be used to make compost, and how to manage waste properly, one of which is compost to reduce the negative impact on the

environment due to waste, and to increase students' creativity in waste management. Making compost produces students who understand composting and students who are enthusiastic about learning and asking questions about the compost material, as shown in Figure 4.

Figure 4
Composting practice with MI Mukhtarul Ulum students

After that, recycling practice was carried out. This practice requires several materials such as paint and brushes that have been provided for the needs of decorating the items to be used. Then, so that students become more knowledgeable and understand the meaning of waste management, especially recycling, they were asked to bring plastic bottles from their respective homes.

This activity is useful for inviting students to change unused plastic bottles into useful items, such as stationery holders or flower pots. So that by implementing it directly to each student, the ability to grasp and remember recycling will faster and stronger. In addition, creativity is also trained in decorating each plastic bottle. Practice is very much enjoyed by each student, which can be seen from the high concentration of students decorating their respective plastic bottles as shown in Figure 5.

Figure 5
Recycling Practices at MI Mukhtarul Ulum

Figure 6
Recycling Practices at MI Mukhtarul Ulum

Qualitative evaluation of student responses during the activities showed high enthusiasm, especially in hands-on practice. Teachers provided positive feedback, stating that students were more engaged in learning when they were involved in practical activities rather than just listening to presentations. This indicates that practical approaches such as composting and recycling are more effective in improving students' understanding and skills.

The posttest was conducted using questions that had been previously validated by the teacher, but aspects of students' practical skills were also evaluated through direct observation during the activity. This observation showed that students were better able to practice composting and recycling methods well, although some students needed further guidance in some technical stages. The difference in the level of understanding between composting and organic waste management materials is caused by students' previous practical experiences. Students who are more familiar with composting materials, for example, show better understanding because they have practiced it before at home.

Challenges faced by students included limited time for the program and the availability of resources for home practice. Teachers and students stated that support from parents and schools greatly contributed to the success of this activity. The long-term effects of the program need to be further monitored through post-activity monitoring activities. The formation of working groups in schools will help ensure sustainable practices and build a better waste management culture among students.

CONCLUSION

Environmental education, especially waste management, must be given to children from an early age, this aims to foster awareness of environmental concerns and form behavioral patterns to habit patterns in caring for the environment. Environmental care behavior patterns

start from simple things, namely waste management around the school. The 3R type waste management pattern is the basis for waste management that can reduce, reuse waste, and recycle. Environmental education through proper waste management is the basis for environmental concerns that must be continuously instilled in children from an early age until children have environmental awareness. Environmental awareness will form ecological concerns in children.

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