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# Zero Waste-Based Organic and Non-Organic Waste Sorting Education

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**ABSTRACT**

*Waste is generated from the activities of living organisms and is divided into organic, inorganic, and hazardous categories. Proper disposal of waste is crucial for minimizing environmental pollution. One effective approach is educating people about Zero Waste principles and implementing the 3Rs: reduce, reuse, and recycle. This activity involved repurposing mineral water gallons as bins for organic and inorganic waste. The PkM activity took place at SD YBPK Kota Kediri on April 26, 2024, targeting all students from grades I to VI, totaling 70 participants. The PkM was conducted using the Participatory Action Research (PAR) method and work performance evaluations. The outcomes of this PkM activity included increased knowledge among participants about identifying organic and inorganic waste, as well as heightened awareness of proper waste disposal according to waste classification.*

***Keywords:*** *Anorganic; Organic; Zero-Waste; Participation Action Research; Work Performance.*



## 1. Introduction

Waste problems have become an important national issue in environmental problems, both in rural and urban areas (Saputro, Y.E & Syafrudin, S., 2016; Sabila, et.al., 2023). Waste is divided into three types, namely: organic, inorganic, and B3 (Toxic and Hazardous Materials) waste, where each type of waste has different characteristics and management methods (Ratnasari et al., 2019). Organic waste is waste that comes from the remaining activities of living things such as animals, humans, plants, and other organic materials that experience decay, decomposition, or weathering (Taufiq, 2015). Organic waste can be divided into two types, namely wet organic waste and dry organic waste. Wet organic waste includes fruit peels, vegetable scraps, feces, and so on. Dry organic waste includes leaves and tree branches (Prodyanatasari, 2024a; Anwar et al., 2022). Organic waste is environmentally friendly because it can be decomposed by bacteria naturally and quickly (Hasibuan, 2023; Latifatul et al., 2018). Inorganic waste is waste generated from non-living materials, both derived from synthetic products and processing technology of mining materials or natural resources and cannot or are difficult to decompose, such as plastic bottles, plastic bags (kresek), cans, and so on (Sabilla, 2023; Amalia & Kusuma Putri, 2021; Santoso et al, 2021).

The production and accumulation of waste will increase over time and will result in environmental pollution and interfere with public health. The high volume of waste will

reduce the space for human activities and can disrupt and affect human activities. Waste is also able to reduce the level of human quality of life because many diseases are caused by piles of garbage that accumulate. Proper waste management needs to be done by everyone. The use of items that will produce inorganic waste that is difficult to decompose also needs to be considered and minimized. One of them is the use of disposable mineral water gallons. Disposable mineral water gallons produce used gallon waste which becomes a social and community problem. This is because many used gallons of mineral water are discarded and cannot be reused, thereby increasing the production of inorganic waste that can interfere with the environment. One of the efforts that can be made to reuse used gallons of drinking water is to turn used gallons of mineral water into trash cans. A trash can is a container that is used to temporarily accommodate various kinds of waste generated from human activities, both organic and inorganic waste.

SD YBPK Semampir Kota Kediri is one of the elementary schools located in Kediri City, East Java. The school is located right on the edge of the main provincial road. Students' awareness and concern for disposing of waste in its place according to the category of waste is still lacking. Students still have difficulty in categorizing organic and inorganic waste. This causes students to throw garbage in the trash can not in accordance with the correct category. Based on this, students need to be educated about organic and inorganic waste and invite them to get used to disposing of waste according to these categories of waste. Students are also invited to apply the 3Rs (reduce, reuse, recycle) by recycling used gallons of mineral water into trash cans (Kiraina, 2024; Prodyanatasari, 2023b).

The PkM activities carried out are in accordance with the Activity Program of Kampus Mengajar Batch Sekolahku Bersih, Jiwaku Sehat". As a form of implementation of the Program, an activity was carried out with SD YBPK Semampir students in Kediri city to utilize used disposable mineral water gallons into trash cans. This program not only reduces used bottle waste, but also as a form of innovation and school infrastructure. This PkM activity was carried out to raise students' awareness and concern for waste around the school environment. This is because the waste problem has become a very important national problem and needs serious attention and handling.

Students of SD YBPK Semampir Kota Kediri were invited to convert used gallons of mineral water into organic and inorganic waste bins. This activity aims to train and provide learning experiences to students in reusing used goods into products that have use value, aesthetics, and reduce plastic waste from disposable gallons. The used gallons made will be used as trash cans in the school environment. To distinguish between organic and inorganic waste bins, the used gallons of mineral water will be given different colors. Green color for organic waste bins and yellow color for inorganic waste bins.

## 2. Method

Community Service activities (PkM) were carried out at SD YBPK Semampir, Kediri City on April 26th, 2024, with the target of all students in grades I to VI with a total of 70 students. The method used is Participatory Action Research (PAR) (Afandi, et al, 2022). This PkM activity was divided into two sessions, where the first session was filled with education on the selection of organic and inorganic waste. Before the first session began, students were asked to fill out a questionnaire about organic and inorganic waste to find out students' initial knowledge about organic and organic waste. After the first session was completed, the second session continued with the demonstration method, where students were invited to apply the 3Rs (reduce, reuse, and recycle) by recycling used gallons of mineral water into trash cans

(Agus et al., 2019). In this session two. At the end of session two, students were asked to ask questions about waste sorting and the 3Rs, then students were asked to complete a questionnaire to determine students' knowledge after being given education.

## 3. Result and Discussion

In this PkM activity, the average scores for pretest and posttest can be seen in Table 1.

**Tabel 1.** Average Score Pretest and Postest

| Number of participants | Pretest average | Postest avegare |
|---|---|---|
| 70 | 42,29 | 90,57 |

*Source: research data*

Community service activities (PkM) were carried out on April 26, 2024, with the target of all students in grades I-VI SD YBPK Semampir Kota Kediri as many as 70 students. PkM activities are carried out using the Participatory Action Research (PAR) method. This PkM activity was carried out to provide education about organic and inorganic waste, sorting organic and inorganic waste, and applying the 3Rs by recycling used gallons of mineral water into trash cans. The activity was divided into 2 sessions. In the first session, participants were asked to fill out a questionnaire about the types of waste, as shown in Figure 1.

**WASTE SORTING QUESTIONNAIRE**

Instructions: Please put a checkmark (√) in the column that corresponds to the type of waste

| No. | Waste | Categories of waste | | No. | Waste | Categories of waste | |
|---|---|---|---|---|---|---|---|
| | | Organic | Inorganic | | Organic | Organik | Anorganik |
| 1 | candy wrappers  | | | 6 | used plastic bags  | | |
| 2 | dried leaves  | | | 7 | wood or tree branches  | | |
| 3 | plastic snacks  | | | 8 | food waste container stereoform  | | |
| 4 | beverage cups  | | | 9 | water bottles  | | |
| 5 | food waste  | | | 10 | food skewers (sempol, milor, dll)  | | |

**Figure 1.** Waste Sorting Questionnaire

After the participants finished filling out the questionnaire, then in the first session the participants were given education about sorting organic and inorganic waste. Education was delivered using the lecture method and power point media to make it easier for participants to understand the material presented.


**Figure 2.** Slide of Educational Material for Sorting Organic and Inorganic Waste

**Figure 3.** First session of Organic and Inorganic Waste Education

In the first session, participants were enthusiastic to participate in waste sorting education. Participants also actively participated by coming forward to show examples of organic and inorganic waste to other participants. The first session ended with questions and answer session with the participants.

In the second session, students were invited to make trash cans from used mineral water gallons. Making a trash can starts with cutting the top of the trash can into two parts. Next, the gallon of mineral water was colored using paint. The colors used are green for organic waste bins and yellow for inorganic waste bins. After the paint is dry, the gallon of mineral water is ready to be used as a trash can. Next, students are invited to collect garbage scattered in the school environment. After that, students were invited to show their performance by sorting waste based on its characteristics, namely organic waste and inorganic waste. In this session, they started by preparing a trash can by utilizing used gallons of mineral water and giving different colors to the two gallons. After that, determining the color of the used gallons, namely green gallons for organic waste and yellow gallons for inorganic waste. Then, students collected waste scattered in the school environment, then sorted it based on the characteristics of the waste. In this session, students were able to sort organic and inorganic waste correctly.

**Figure 4.** Sorting Process of Organic and Inorganic Waste

At the end of session 2 after the students finished sorting the waste and putting it into the used gallon according to the correct color, the activity ended with the administration of the final questionnaire. This questionnaire was given to determine the improvement of students' understanding in distinguishing between organic and inorganic waste. The average results of students' pretest and post-test were 42.29 and 90.57. Based on the average results of the pretest and post-test, there is an increase in students' understanding in classifying organic and inorganic waste. Increased student knowledge about waste and its impact is expected to increase awareness to dispose of waste in its place and keep the school environment clean. A clean school environment can make students comfortable learning and playing in the school environment, and minimize the emergence of diseases caused by waste, such as diarrhea, so that students become healthy and not easily sick.

Waste that accumulates will become a nesting place for germs. In organic waste there will be a process of decay by microbes. This decomposition process will produce an unpleasant odor that pollutes the surrounding air and invites flies to land on the garbage. Flies are one of the animals that spread diseases, including: diarrhea, dysentery, and typhoid. These diseases can occur due to an unclean environment or consuming food that is polluted by bacteria. Food contamination can be caused by flies that land on food.

Besides causing diarrhea, dysentery, or typhoid. Environmental pollution due to garbage piles can also potentially cause Dengue Fever. Inorganic waste such as plastic bottles, plastic cups, and so on that are difficult to decompose by bacteria have the potential to collect water. Stagnant water will become a breeding ground for mosquitoes, one of which is the Aydes Aegipty mosquito that spreads Dengue Fever through its bite.

The importance of awareness of making waste in its place will help in proper waste management. Proper waste management will reduce the potential for environmental pollution that can have an impact on human health. In students, increasing awareness by getting used to throwing garbage in the right place will instill the character of environmental care from an early age. This can increase efforts to preserve the environment, especially the school environment. Achieving a clean school environment will increase the comfort of students learning at school. In addition, a clean school environment will make a healthy soul and not easily get sick.

## 4. Conclusion

The PkM activities conducted at SD YBPK Semmapir, Kota Kediri, utilized the PAR method and targeted all students. The results showed a notable improvement in students' knowledge, with average pretest scores of 42.29 and post-test scores of 90.57. This significant increase indicates that students gained a better understanding of classifying organic and inorganic waste. The enthusiasm of the students was evident in their active participation, particularly in sorting waste during the activities. The increase in students' knowledge is anticipated to foster greater awareness about proper waste disposal practices. By understanding the importance of correctly disposing of organic and inorganic waste, students are more likely to use trash cans appropriately. This behavioral change is expected to lead to a cleaner school environment. Maintaining a clean environment is crucial as it directly contributes to the overall health and well-being of the school community. A clean school setting not only enhances the physical health of students by reducing exposure to harmful waste but also promotes a positive and healthy mindset. Therefore, the PkM activities have a dual benefit: improving students' knowledge and behavior regarding waste management and contributing to a healthier, cleaner school environment.

## References

Afandi, A., Nabiela Laily, Noor Wahyudi, dkk. (2022). Metodologi pengabdian masyarakat.

Agus, R. N., Oktaviyanthi, R., & Sholahudin, U. (2019). 3R: Suatu alternatif pengolahan sampah rumah tangga. Kaibon Abhinaya: Jurnal Pengabdian Masyarakat, 1(2), 72-77.

Amalia, F., & Kusuma Putri, M. (2021). Analisis pengelolaan sampah anorganik di Sukawinatan Kota Palembang. Jurnal Swarnabhumi, 6(2).

Anwar, A., Manyullei, S., Andhana, A. D., Rahim, F. A., Bahri, N. T. W., Diany, N. C., ... & Khairiyah, Z. D. (2022). Edukasi Tentang Pemilihan Sampah Organik, Sampah Anorganik, dan Sampah Plastik di Desa Laguruda. Locus Penelitian dan Abdimas, 1(2), 256-263.

Hasibuan, M. R. R. (2023). Manfaat Daur Ulang Sampah Organik dan Anorganik Untuk Kesehatan Lingkungan.

Kiraina, K. (2024). Pemanfaatan Barang Bekas Galon Menjadi Tempat Sampah di Madrasah Ibtidaiyah Ianatul Khoer. Abdima Jurnal Pengabdian Mahasiswa, 3(1), 1070-1076.

Latifatul, F. N., Afriezal, A., Auliya, A., & Nur, K. R. M. (2018). Pengaruh sosialisasi pemilahan sampah organik dan non organik serta manajemen sampah terhadap penurunan volume sampah di dusun krajan desa kemuningsari lor kecamatan panti kabupaten jember. The Indonesian Journal of Health Science, 10(1).

Prodyanatasari, A., & Fernanda, J. W. (2023a). Pemanfaatan Limbah Plastik sebagai Media Tanam dalam Upaya Penanganan Sampah Anorganik. Jurnal Pengabdian Masyarakat Bhinneka, 2(2), 26-31.

Prodyanatasari, A., & Fernanda, J. W. (2023b). *Utilization of Plastic Waste as Planting Media in Efforts to Handle Inorganic Waste*. *Room of Civil Society Development*, 2(6), 232-236.

Ratnasari, A., Asharhani, I. S., Sari, M. G., Hale, S. R., & Pratiwi, H. (2019). Edukasi pemilahan sampah sebagai upaya preventif mengatasi masalah sampah di lingkungan sekolah. Prosiding Konferensi Nasional Pengabdian Kepada Masyarakat Dan Corporate Social Responsibility (PKM-CSR), 2, 652-659.

Sabila, F. T., Setyaningsih, W., Hardati, P., & Nugraha, S. B. (2023). Literasi Lingkungan dan Pengelolaan Sampah Plastik di Kelurahan Karangjati Kecamatan Blora Kabupaten Blora. Edu Geography, 11(1), 85-92.

Santoso, S. B., Margowati, S., Dyah, K., Pujiyanti, U., Pudyawati, P. E., & Prihatiningtyas, S. (2021). Pengelolaan sampah anorganik sebagai upaya pemberdayaan nasabah bank sampah. Community Empowerment, 6(1), 18-23.

Saputro, Y. E., Kismartini, K., & Syafrudin, S. (2016). Pengelolaan sampah berbasis masyarakat melalui bank sampah. Indonesian *Journal of Conservation*, 4(1).

Taufiq, A. (2015). Sosialisasi sampah organik dan non organik serta pelatihan kreasi sampah. Asian Journal of Innovation and Entrepreneurship (AJIE), 4(01), 68-73.