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BIOWASH AZAMA: INNOVATIVE ORGANIC WASTE REDUCING PRODUCT TO SUPPORT SCIENCE LEARNING IN CLASS V PRIMARY SCHOOL

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ABSTRACT

Waste is one of the big problems in Indonesia which must immediately receive special attention in its handling. If it is not organized properly it will cause negative impacts such as environmental pollution which can damage the ecosystem. The increasing number of Indonesian people causes waste generation to also increase. So efforts are needed to process waste through prevention, reduction, recycling and reuse. The largest waste generation was recorded as 80% originating from organic waste (Oktavia & Rosariawari, 2020).

Based on this background, the objectives of the Biowash Azama activity are: 1) increase students' understanding of processing waste, especially organic waste; 2) explain the process of making Biowash Azama so that it can speed up the process of decomposing organic waste; 3) invite students to practice directly processing organic waste; 4) invite students to be role models for the surrounding environment.

The method the author uses is a qualitative descriptive method which is useful for exploring the perceptions and understanding of students and teachers regarding the Biowash Azama product as a science learning medium. In this method, interviews or observations can be conducted to collect data about how students receive learning with this product, as well as the impact they feel in terms of understanding environmental concepts and the decomposition of organic waste.

The results achieved from this activity are that students better understand the concept of decomposing organic waste and the importance of environmentally friendly waste management, students know the steps for processing organic waste in a short time, students can practice directly processing organic waste, and students can become role models in their families each.

Keywords: Biowash; Decomposers ; Organic Waste

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INTRODUCTION

The increase in the amount of waste, especially organic waste, is one of the pressing environmental problems in Indonesia. Based on data from the Ministry of Environment and Forestry (KLHK), waste production in Indonesia reached 67.8 million tons in 2020, of which more than 60% was organic waste (KLHK, 2020). Organic waste that is not managed properly can cause various negative impacts on the environment, such as soil, water and air pollution due to the decay process which produces methane gas. On the other hand, organic waste has great potential to be processed into compost, which is useful as a natural fertilizer for plants (Astuti et al., 2021).

In an effort to increase awareness of the younger generation regarding the importance of waste management, environmental education from an early age is very important. Natural and Social Sciences (IPAS) subjects in elementary schools are the right medium to introduce basic concepts of waste management to students. Through practice-based learning, students can be directly involved in waste processing activities, so that their understanding of environmental and sustainability concepts becomes stronger (Raharjo & Susanti, 2019).

SD Islam Al Azhar 25 Semarang is located in an area adjacent to Pasar Bulu. At the Bulu Market you can find a lot of organic waste such as vegetables and fruit that are not suitable for sale and are simply thrown away. These vegetables and fruit can be used as ingredients for making Azama Biowash. In future, Biowash Azama can be used to help the process of decomposing organic waste more quickly and without causing odors.

Apart from being close to Pasar Bulu, near the school there are also fruit salad sellers and honey pineapple sellers. Waste from fruit salad sellers and honey pineapple sellers can be used as material for making Biowash Azama for free. Sellers will be happy because they don't have to throw away the fruit peels they sell so they can reduce the amount of waste at the Jatibarang Semarang TPA (Final Disposal Site).

Based on the problem of handling waste that has not been well organized, especially processing organic waste, SD Islam Al Azhar 25 (AZAMA) is trying to develop a product, namely Biowash Azama which uses fruit peel as a basic ingredient which is often found around schools. This is also integrated with science learning material on the decomposer section of the food chain. This Azama Biowash will be able to help the process of decomposing organic waste more quickly, does not cause odors, and can be used directly as a planting medium or as compost. Azama Biowash will later be packaged and marketed as a superior product.

Biowash Azama is an innovative organic waste decomposing product designed to facilitate the decomposition process effectively and efficiently. This product contains active microorganisms which can speed up the decomposition process of organic waste into compost in a relatively short time (Syahputra & Wijayanti, 2022). By utilizing Biowash Azama in science and science learning, it is hoped that fifth grade elementary school students can learn the decomposition process directly, increase their awareness about waste management, and develop an attitude of caring for the environment from an early age.

This research aims to explore the use of Biowash Azama as an innovative learning media in grade V elementary schools. It is hoped that this learning activity will not only enrich

students' learning experiences, but will also be a real effort to instill a culture of environmental care in the younger generation.

METHOD

The method the author uses is the qualitative descriptive method, a research approach that aims to describe and explain phenomena in depth based on observations and perceptions of research subjects (Sugiyono, 2017). In the context of this research, a qualitative descriptive method was used to understand how the use of Biowash Azama products in science and science learning in grade V elementary schools influences students' understanding and attitudes towards organic waste management. This approach does not focus on numerical measurements, but rather on descriptive explanations regarding the experiences, responses and views of students and teachers regarding the use of Biowash Azama as a learning medium.

The steps taken in qualitative descriptive research are:

1. Determining Research Subjects

   The research subjects consisted of fifth grade students who took part in science lessons using Biowash Azama products, as well as teachers who taught these subjects. Subject selection was carried out purposively, namely based on suitability of characteristics and research objectives.

2. Data Collection

   The data in this research was collected through the following techniques:

   a. Observation: Researchers made direct observations of learning activities involving the use of Biowash Azama. This observation includes student behavior during the practice of decomposing organic waste, interactions between students and teachers, as well as student reactions to the learning process.

   b. Interviews: Semi-structured interviews were conducted with students and teachers to gain a deeper understanding of their perceptions, experiences and responses to the use of Azama Biowash products.

   c. Documentation: Additional data is collected through documentation, such as photos of activities, observation notes, and student practicum reports.

3. Data Analysis

   Data analysis was carried out through the following steps:

   a. Data reduction: The data that has been collected is selected, simplified and summarized to identify relevant information according to the research focus.

   b. Data Presentation: Data that has been filtered is then presented in descriptive form, tables or images to make it easier for researchers to understand and draw conclusions from existing data.

   c. Drawing Conclusions: Based on the results of data reduction and presentation, researchers draw conclusions regarding how the use of BIOWASH AZAMA influences students' understanding of organic waste management, as well as its impact on students' environmental care attitudes.

4. Data validation

   To increase the validity of the data, triangulation techniques were used, namely comparing data obtained from various sources, such as the results of observations, interviews and documentation. This triangulation aims to ensure that the data obtained is accurate and reliable (Creswell, 2014).

5. Reporting Research Results

   The research results are presented in the form of a descriptive narrative that describes student and teacher responses to the use of Biowash Azama. This report is equipped with direct quotes from interviews, observation documentation, and other supporting data to provide a comprehensive picture.

RESULT

The implementation of making Biowash Azama was carried out after the teacher explained the science material for class V elementary school, namely about the food chain. A food chain is a journey of eating and being eaten in a certain order between living things. Living creatures have their respective roles in the food chain, including as producers, consumers and decomposers. Producers are living things that can produce their own food, for example plants. Consumers are living creatures whose role is to consume organic materials or energy produced by producers, for example animals and humans.

Consumers are divided into several, including:

1. Level I consumers, namely living creatures that obtain energy directly from producers, for example herbivorous animals (plant eaters)
2. Level II consumers, namely living creatures that obtain food from level I consumers, for example carnivorous animals (animal eaters)
3. Level III consumers, namely living creatures that obtain food from level II consumers.
4. Level IV consumers, namely living creatures that obtain food from level III consumers.

Decomposers are living creatures that decompose substances that were originally found in the bodies of dead animals or plants. Living creatures that act as decomposers include bacteria and fungi.

The activity starts by looking for organic waste in the form of fruit peels which you can ask for from fruit salad sellers or honey pineapple sellers around the school. Apart from that, class V students were assigned to bring fruit peels from their respective homes. On the appointed day, teachers and students practice directly making Biowash Azama in the school yard. Students are formed into groups first, each group consists of around 4-5 people.

The ratio of materials used is 1:200:5000. What this means is 1 kilogram of fruit peel: 200 ml Promic (microbial probiotic): 5000 ml (5 liters) of clean water (well water, tap water, etc.). These ingredients are mixed together in a clear plastic jar measuring at least 7 liters, then covered and left in a shady place for 3 days. Students put a manufacturing date on each jar.

On the third day, students were invited to harvest Biowash Azama. They filtered the solution first, then put the Biowash Azama liquid into a 1,000 ml (1 liter) clear plastic bottle with a sticker attached. The fruit peel pulp is then blended, then put into the toilet, which can help decompose the dirt in the septic tank so that it doesn't fill up too quickly. Apart

from that, fruit peel pulp can also be placed directly in plant pots at school as liquid organic fertilizer.

Biowash Azama's innovative product is then marketed to parents, teachers, or sold online. Students will practice directly at home processing organic waste from kitchen waste by spraying it with Biowash Azama, and it can be used directly as a planting medium, without any odor.

CONCLUSION

The activity of making Biowash Azama as an innovative product that decomposes organic waste was carried out after class V students gained a basic understanding of the food chain in science learning, especially about the roles of producers, consumers and decomposers in the ecosystem. After learning that decomposers function to break down organic substances from dead living things, students are given the opportunity to apply this concept through direct practice.

The process of making Biowash Azama is carried out by collecting organic waste, such as fruit peels, which are collected by students from the surrounding environment and home. Then, the ingredients are processed in certain proportions (1 kg of fruit peel, 200 ml of microbial probiotics, and 5 liters of water) to produce Biowash Azama after a three-day fermentation process. After that, the Azama Biowash liquid is filtered and packaged, while the dregs are used as organic fertilizer or as a decomposer in school toilets.

Through this activity, students not only learn about the decomposition process in the food chain, but also gain practical skills in processing organic waste into useful and environmentally friendly products. Apart from that, this activity provides added value through the marketing of Biowash Azama products by students, both to parents, teachers and online. Thus, this activity plays a role in forming students' awareness of the importance of waste management and skills in simple entrepreneurship, while involving them in protecting the environment at school and home.

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We also thank the class V students who were enthusiastic and enthusiastic in participating in this activity. Your enthusiasm in learning about the process of decomposing waste and maintaining a clean environment is an inspiration for us all. Your active participation and cooperation in every step of making Biowash Azama shows great concern for the environment.

Hopefully this activity will not only provide additional knowledge, but also inspire us all to continue to strive to protect the environment through good organic waste management. Let's create a cleaner and healthier environment together.

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ATTACHMENT

ACTIVITY DOCUMENTATION






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