

OPTIMIZING ENVIRONMENTAL AWARENESS THROUGH SOCIALIZATION OF INORGANIC WASTE SORTING AND UTILIZATION OF USED COOKING OIL WASTE: A CASE STUDY IN BESOLE VILLAGE

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Abstract - KKN research in Besole Village, Tulungagung, focused on improving waste management and waste utilization. Initially, serious problems related to waste management, such as flooding caused by river blockage by garbage, stood in the way because only a small percentage of residents were willing to participate with the environmental agency. Through research methods that include observation, interviews, socialization, and waste utilization practices, a significant increase in public awareness was achieved, especially in terms of sorting organic and inorganic waste. In addition, the practice of utilizing used cooking oil waste into aromatherapy candles provides concrete examples of how to manage waste by generating tangible economic benefits. These steps are expected to be the foundation for the improvement of the waste management system and encourage greater creativity and concern from the community in managing waste in the future.

Keywords: Aromatherapy Candles, Used Cooking Oil, Waste Management, Waste Utilization, Socialization

1. INTRODUCTION

Real Work Lecture (KKN) is an activity undertaken by every student to apply the knowledge that has been gained during lectures. This service activity has a social nature, and its work program is designed by involving community participation in efforts to achieve certain goals and build close relationships with the community. The basic foundation for this KKN activity became the basis for the group located in Besole Village, Besuki District, Tulungagung Regency. The main focus of this activity is to improve the quality of religious education and empower the community.

Besole Village is one of many villages in Besuki District, Tulungagung Regency, which is rich in natural potential and its people. This village has a variety of natural resources such as marble mountains, plantations, rice fields, lakes, and beaches, which makes the level of productivity quite high. This productivity comes not only from households and micro-enterprises, but also from large industrial sectors, both of which contribute to generating waste. The surge in the amount of waste occurs along with population growth and increased human productivity.

Waste is the result of a production process, whether it is sourced from domestic (household) or industrial activities. Problems related to waste are serious problems that continue to be faced by the community from year to year (Latifatul et al., 2018). In Law No. 18 of 2008 concerning Waste Management, it is explained that waste is the result of human daily activities or natural processes in solid or semi-solid form, consisting of organic or inorganic substances that can be decomposed or not decomposed, and are considered useless so that they are disposed of into the environment. Waste can create serious problems if not managed properly, as it can negatively impact public health, social stability, and environmental sustainability (Kusumaningsari, 2017).

The classic unresolved problem is the garbage problem. In fact, unmanaged waste can have a negative impact not only on humans, but also pollute existing natural ecosystems (Elamin et al., 2018). Something similar happens in Besole Village every time the rainy season arrives. Heavy rainfall often causes flooding experienced by Besole residents every year. The situation is further exacerbated as river flows are often clogged with piles of diverse garbage, including plastic waste, paper, vegetables, wood, bamboo, and even animal carcasses. This is the main problem that causes Besole village to always be flooded when the rainy season arrives, with additional waste problems carried away by the flood.

The impact caused by this waste problem stems from the absence of an adequate waste management system in Besole Village. Although village officials, such as village heads and RT leaders, have tried to allocate waste to landfills, cooperation with the Tulungagung Environmental Office has been put forward to manage existing waste. However, there are still many residents who are reluctant to pay the garbage collection fee set by the environmental agency of twenty-five thousand rupiah. Of the total residents of Besole Village who produce waste, only 5% are willing to work together to have their waste transported by the environmental agency to landfill. As many as 10% choose to burn or hoard garbage

in their respective yards. While the rest prefer to throw garbage into the river, because of the lack of land to burn and hoard garbage and reluctance to pay the dues.

The vast area of Besole Village is one of the main factors that complicates efforts to raise public awareness regarding the waste problem. The absence of landfills also has an impact on the weakness of existing waste management systems, making waste management more difficult. This is due to the location of the landfill which is about 50 km from Besole Village, so that waste allocation becomes less effective. As a result, most residents prefer to burn garbage in their respective yards. In fact, there are also those who throw garbage on the side of the road, considering it a temporary dumping ground. This practice results in air pollution, disrupts air circulation, and creates unpleasant scenes.

The impact of garbage pollution also damages the surrounding environment, especially in the Niyama River which serves as the estuary of two flood prevention rivers from Trenggalek Regency and Tulungagung Regency. This river looks like a landfill due to piles of garbage such as pieces of wood and plastic (David Yohanes, 2023). A small amount of garbage washed up at the mouth of the Niyama River, while most of the garbage washed into the sea. Beach visitors often feel disappointed because the beaches they visit are filled with garbage. A similar situation also occurs in Coro Beach, where thousands of tons of garbage inundate the beach estuary and disturb the beauty of the tourist spot. Coro Beach tourism management manager, Mr. Supardi, revealed that the problem of garbage in the sea and around beach attractions is a serious problem (Anang Basso, 2018). This has a bad impact on the beaches in Tulungagung and harms local residents and tourists who visit.

The accumulation of unmanaged waste somewhere can trigger negative impacts that damage the surrounding environment (Kurniaty et al., 2016). Various types of waste require processing and utilization that vary, depending on the needs and types of waste that exist. One of the efforts to overcome the waste problem and reduce its negative impact is to optimize community waste management. One approach used is the sorting of waste into components that can be reprocessed or reused. Sorting inorganic waste is an important step in reducing the amount of waste that pollutes the environment.

Therefore, against the background of the waste problem in Besole Village, the procurement of socialization and utilization of waste is considered as the first step to increase public awareness of the importance of waste management, especially those felt by villagers directly. This socialization aims to increase awareness of the dangers of littering by sorting between organic and inorganic waste (Naina Rizki Kenarni, 2022). One of the methods applied is the utilization of inorganic waste such as used oil or used cooking oil. The work program designed by the Besole KKN group seeks to offer solutions regarding waste utilization, one of which is to produce aromatherapy candles from used cooking oil waste. Therefore, this article seeks to explain the sorting of organic and inorganic waste and their use into aromatherapy candles to increase the creativity of residents.

2. METHOD

The implementation of community service in Besole Village in the environmental sector involves several clear stages, the methods applied, the number of participants, instruments or tools, and materials used:

Phase 1: Environmental Observation and Survey

- a. Method: Survey observation is used to collect environmental information in Besole Village.
- b. Number of Participants: Community service implementation team.
- c. Instruments/Tools: Environmental measuring devices such as thermometers, humidity gauges, cameras for documentation, and air quality measuring devices if needed.
- d. Ingredients: No special materials are used at this stage.

Phase 2: Interview with the Head of the Hamlet

- a. Methods: Interviews are used to identify problems and determine target audiences in socialization activities.
- b. Number of Participants: Community service implementation team and head of Besole Village hamlet.
- c. Instruments/Tools: Notebooks, cameras for documentation.
- d. Materials: List of interview questions, environmental related documents.

Phase 3: Socialization Preparation

- a. Method: Preparation involves coordinating with Besole residents to determine the time, place, and audience that Besole mothers will attend.
- b. Number of Participants: Community service implementation team and mothers of Besole Village residents with around 20 people.
- c. Instruments/Tools: Communication, schedule planning, meeting place.
- d. Ingredients: No special materials are used at this stage.

Phase 4: Socialization Implementation

- a. Method: Interactive lectures are used to provide explanations on the sorting of organic and inorganic waste.
- b. Number of Participants: Community service implementation team and audience (Besole residents range 20 people).
- c. Instruments/Tools: Projectors (if needed for presentations), socialization materials, informative brochures or pamphlets.
- d. Materials: Presentation materials, brochures, samples of organic and inorganic waste.

Phase 5: Implementation of Waste Utilization

- a. Method: Making aromatherapy candles from used cooking oil waste.
- b. Number of Participants: The community service implementation team and audience participating in the training.

- c. Instruments/Tools: Stove, gas, pot, stirrer, small glass as candle container, as well as used cooking oil, *stearin*, *paraffin*, essential oil (*aromatherapy*), *charcoal*, *candle wick*, and *crayoon*.
- d. Ingredients: Ingredients such as used cooking oil, *stearin*, *paraffin*, *essential oil*, *charcoal*, *wax wick*, and *crayon*.

The methods applied in this activity are adapted to field conditions and aim to increase awareness of the Besole community about sorting organic and inorganic waste, as well as open insights on waste management and utilization such as recycling used cooking oil into aromatherapy candles. In addition, this activity also aims to increase the creativity and enthusiasm of residents related to the use of waste in a wider environmental context (Astuti, Linarti, and Indah Budiarti, 2021).

3. RESULTS AND DISCUSSION

In the implementation of socialization and practice of making candles from used cooking oil, there are several important stages that need to be followed. The initial stage is planning, which involves surveys, observations, and interviews with residents and the head of the hamlet of Besole Village. The purpose of this stage is to collect information about waste disposal and management systems, as well as identify problems faced by Besole residents.

The results of the interview revealed that one of the problems faced by Besole residents is the absence of an adequate waste disposal and management system in Besole Village. After the planning stage, it is continued with the maturation stage, which involves further coordination with the head of the Besole Village hamlet regarding the socialization target, the material to be delivered, the place, and time of the activity. The results of this coordination determined that the socialization implementation would be focused on housewives in Rw 01. Socialization activities will be carried out at the home of Ibu Marfu'ah, who is also the leader of the mothers who hold yasinan, and will be carried out at night. This decision is tailored to the preferences of local residents and has been approved by the parties concerned.

Public awareness that is still lacking in the importance of managing waste causes many residents to prefer to throw garbage into rivers. In addition to polluting the environment, this action can also cause flooding because it clogs the flow of river water. Information obtained shows that out of a total of 11,528 Besole residents, only 5% are willing to cooperate with the environmental agency to manage waste, 10% prefer to bury and burn garbage in their yards rather than incur costs, while the rest, or 85%, choose to throw garbage into the river due to the absence of a yard to burn garbage. In facing problems like this, the community service team plans to hold socialization on sorting organic and inorganic waste, and provide examples of using used cooking oil waste to make aromatherapy candles (Aini et al., 2020).

Community service activities in the environmental sector are divided into two stages, namely the socialization stage of sorting inorganic waste and the second stage, the utilization of used cooking oil waste. The socialization and utilization of

waste was carried out by two students from the Besole KKN team, who acted as speakers and demonstrators. The focus of this activity is to raise awareness of the dangers of littering aimed at the people of Besole Village. Not only mere awareness, but also solutions are given on how to use waste and how to sort waste based on categories.



Figure 1. Waste Sorting Socialization Organic and Inorganic

The second stage of community service activities is the practice of utilizing used cooking oil waste into aromatherapy candles. This activity is an example of the realization of waste sorting socialization by utilizing waste that has been sorted, in this case used cooking oil is taken as an example (Aini et al., 2020). This training involves several tools and materials that will be used in manufacturing practices. Participants who participated in this utilization practice were still from Besole residents with interactive methods of direct practice. There are two sessions in the practice of utilizing this commoner oil waste. This first part is done by providing education in the form of the dangers of using used cooking oil that is used more than three times, the impact caused and how to use it. The second part is the process of utilizing used cooking oil waste by recycling it into aromatherapy candles.

Several tools and materials are needed in the practice of making candles, the tools used are stoves, gas, pots, stirrers, and small cups as candle containers. The ingredients needed to make candles such as used cooking oil, stearin, paraffin, essential oil (aroma therapy), charcoal, candle wick, and crayon. There are several processes in making candles from used cooking oil. *First*, after all the ingredients are collected, first soak the used cooking oil with charcoal for 24 hours, this aims to reduce the unpleasant odor of the oil. *Second*, after 24 hours, heat used cooking oil that has been soaked with paraffin and stearin in a ratio of 1: 1, if using 200 ml of oil, the paraffin and stearin needed is 100 gr. *Third*, stir continuously until dissolved and mix crayon and essential oil (aromatherapy) as needed. *Fourth*, prepare a container for such candles in the form of a small prepared glass and a candle wick from cotton thread. *Fifth*, pour a mixture of oil, stearin, paraffin, crayon, and essential oil into a prepared container and let it sit for a day so that the wax can harden completely.



Figure 2. The Practice of Making Candles from Used Cooking Oil

In both activities, the target of socialization and waste utilization, namely Besole Village mothers, seemed enthusiastic in listening and participating in the activity. After the activity, the Besole Village mothers asked permission from the KKN team to bring home materials and results from the practice, the reaction showed high enthusiasm from the socialization participants present. One of the participants, Ibu Siti said that this activity could be useful for mothers in utilizing household waste, namely used cooking oil. Making aromatherapy candles with used cooking oil has economic value so that it has the potential to be developed as an alternative additional source of income for housewives in Besole Village (Inayati and Dhanti, 2021).



Figure 3. Results of Inorganic Waste Segregation Socialization and Used Cooking Oil Candle Making Practices

4. CONCLUSION

Socialization activities for sorting inorganic waste and utilizing used cooking oil waste in Besole Village are small steps in overcoming environmental problems of the local community. Some of the methods applied in the implementation of community service in the environmental sector are adjusted to existing field conditions. This activity aims to increase awareness among residents not to throw garbage in the river and also provide solutions on existing waste management. It is hoped that this socialization will be the first step to strengthen brotherhood and increase the potential for creativity for Besole villagers.

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