

# Education of Waste Cooking Oil Processing into Aromatherapy Candles for 2 Junior High School Karanganyar Students

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## Abstract

*Waste is a complex problem and an important challenge for the sustainable development of a circular economy and can have social, environmental and economic impacts. This service aims to provide education to students so that students can have high knowledge and awareness of waste processing and can utilize used cooking oil waste to make aromatherapy candles. This service was carried out at 2 Junior High School Karanganyar on Thursday, June 20 2024. The service method was socialization and direct practice in making aromatherapy candles. Students have the skills and are successful in making aromatherapy candles according to the material presented by the speaker. This activity succeeded in increasing students' awareness and knowledge regarding household waste management. Students showed high enthusiasm in following the process of processing used cooking oil waste into useful products such as aromatherapy candles, while also expressing their creativity in this process. Positive support from teachers also contributed to the successful implementation of this waste treatment.*

**Keywords:** aromatherapy wax, cooking oil waste, education

## 1. INTRODUCTION

Waste is a complex issue and an important challenge for the development of a sustainable circular economy. Waste can have interrelated social, environmental and economic impacts (Parsa, 2024). Waste management is a national and international priority due to the high cost and impact of waste management. Waste management is included in Sustainable Development Goals (SDGs) Target 12.3 which aims to halve food waste at the retail and consumer level and to reduce food loss along the agri-food supply chain by 2030 (UNEP, 2021). One of the main contributors to the increasing waste problem is the lack of proper handling of the waste generated. Population growth is a factor in the increase of waste, while the capacity of landfills is limited ([Handayati and Widyanata, 2024](#)). Therefore, although waste prevention is very important, there is an important need for well-planned waste management, especially in terms of waste utilization because waste can be used wisely to make it more valuable.

Used cooking oil that is not managed properly will have a negative impact on soil and water, decreasing soil fertility and affecting the mineral content in clean water ([Damayanti and Supriyatin, 2021](#)). According to the Ministry of Health (2022), the maximum use of cooking oil is 2 times usage. This is because the use of cooking oil more than 2 times will result in changes in the viscosity of cooking oil which will have an impact on health. Used cooking oil that is no longer used is referred to as used cooking oil and is included in waste. Direct disposal of used cooking oil into the sewer will cause blockage because the oil cannot be mixed with water and will solidify on the pipe walls so that it can cause blockage. One way to recycle household waste in the form of used cooking oil is processing it into aromatherapy candles.

Aromatherapy candles are candles that contain essential oils or fragrances that can be used to reduce stress, anxiety, reduce headaches, make the body more refreshed and relaxed. The benefits of essential oils can calm the mind and have a refreshing aroma ([Shofi, 2019](#)). The utilization of used cooking oil into aromatherapy candles is one of the treatments that can be done at the home level because it can reduce the amount of waste generated by households

and can be utilized as something of value. In addition, by utilizing used cooking oil, the waste will be well managed and the family will be healthier because they do not use oil more than twice. Aromatherapy candles also have a high use value and can be sold so that it can be a source of household income.

Awareness of the importance of waste treatment must start early so that the negative impact of waste can be minimized in the future. Small actions from each community and household member will have a big impact. In this case, if one person has knowledge about waste management and is aware of the importance of waste management, it will have a big impact. Students are agents of change in future environmental conditions with the hope that the awareness instilled in students can be implemented in positive activities to prevent increased environmental pollution. Increasing students' awareness of the importance of waste treatment is very important to instill from a young age because of the role of schools as institutions in student character education so that students have concern for the environment. Waste treatment training can increase students' awareness and concern in preserving the environment ([Purwanti et al., 2022](#)). Therefore, this service aims to provide education to students so that students can have high knowledge and awareness of waste management and can utilize used cooking oil waste into aromatherapy candles.

## 2. METHODOLOGY

The method of this service is socialization related to waste handling and training in making aromatherapy candles from used cooking oil. Socialization is carried out by delivering material to students including: understanding waste, sources of waste generation, types of waste, the impact of waste that is not managed properly, and waste management. The training of making aromatherapy candles from used cooking oil was carried out by delivering the procedures for making and students practicing directly. Students were divided into 6 groups and each group used the tools and materials that had been prepared. The tools and materials used for making aromatherapy candles include:

- a. Stove, pot, portable gas
- b. Candle mold
- c. Small container
- d. Wooden stirrer
- e. Essential oil
- f. Used cooking oil that has been soaked with charcoal for 24 hours and has been filtered
- g. Stearic acid / stearin acid
- h. Oil colorant
- i. Wick wax

The location of the service activity is at 2 Junior High School Karanganyar which is located on Jl. Lawu No. 203, Tegalgede, Kec. Karanganyar, Kab. Karanganyar. This activity was held on Thursday, June 20, 2024 with the participation of 26 8th grade students. The success of this service is measured by the skills of each student in making aromatherapy candles from used cooking oil. The whole event was designed to increase students' awareness and ability to utilize household waste effectively.

## 3. RESULT AND DISCUSSION

This service activity was carried out at 2 Junior High School Karanganyar, namely grade 8 with 29 students. Of the 29 students, 22 students (61%) were 14 years old and there were 7 students (39%) who were 15 years old. 52% of students are male and 48% are female. This is shown in Figure 1.

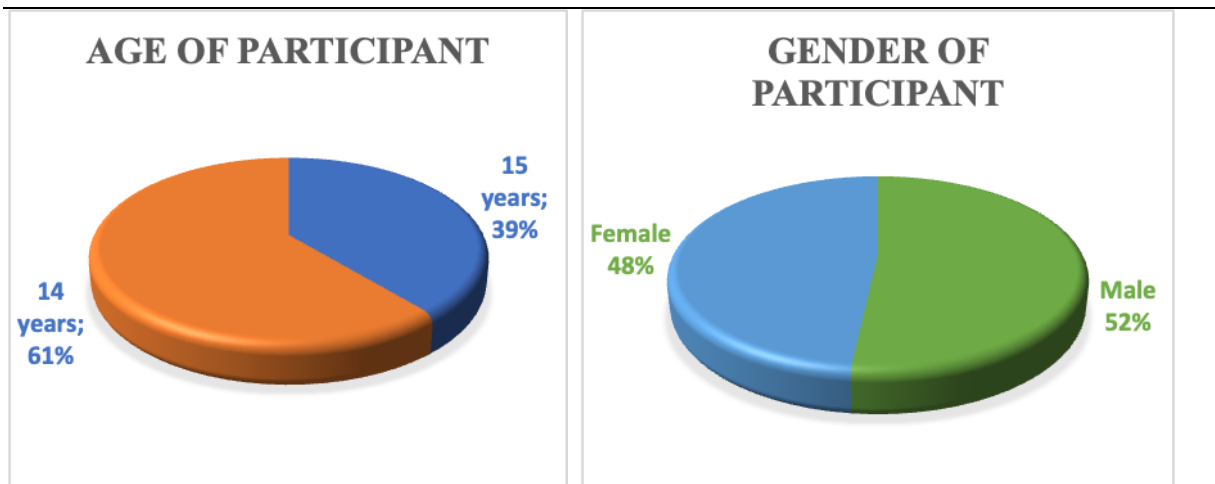


Figure 1. Participant Characteristics

Prior to the socialization, students' knowledge of waste was identified. Based on the identification results, it is known that all students (29 students) have knowledge of the definition of waste, shown in Figure 2. Some students explained that waste is the remains obtained by nature or humans or items that are no longer used. Some students also explained that waste is something that is unused and discarded either from nature or human activities, household activities, and industrial activities.



Figure 2. Student's Knowledge about Waste

Based on students' knowledge of the types of waste, as many as 79% of students already know the types of waste and as many as 21% of students do not know the types of waste, shown in Figure 3. Students' knowledge of the types of waste is important to improve so that they can manage and handle waste based on its type. Therefore, the socialization and hands-on activities of making used cooking oil in this service are an effort to increase students' knowledge and awareness. Students as agents of change in the future can have knowledge and can think critically so that environmental sustainability in the future is maintained and environmental pollution can be prevented.

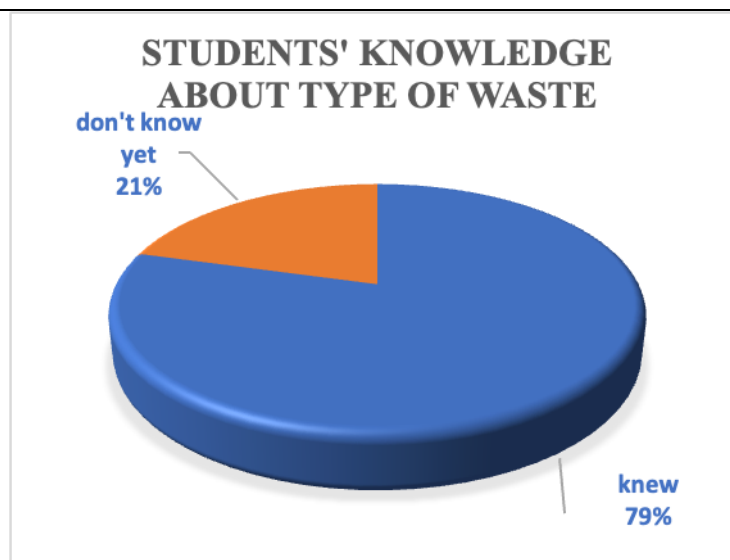


Figure 3. Students' Knowledge about Type of Waste

### Socialization

The material presented in the socialization was related to the proper and efficient handling and processing of household waste. The socialization material presented includes several important points, namely first, the definition of waste itself, including the categories of organic, inorganic, and B3 (Hazardous and Toxic Material) waste. Second, the negative impact of household waste on the environment, public health, and the aesthetics of the surrounding area. Furthermore, the steps to handle household waste as a whole, such as reducing the use of disposable products, reusing items that are still feasible, and recycling waste. This material is designed to increase students' knowledge of waste management, both in the school environment and at home, with the hope that they can implement good and responsible waste management practices in their daily lives. This socialization aims to create a younger generation that is more concerned and active in maintaining environmental cleanliness and health.



Figure 4. Socialization about Waste Handling

The next activity was the delivery of material on the processing of used cooking oil waste. Used cooking oil was chosen because it is a household waste that contributes greatly to environmental damage if not managed properly. Therefore, in this study, used cooking oil is processed into raw materials for making aromatherapy candles. In addition to the urgency of



processing used cooking oil, the ease of the aromatherapy candle making process is also an important consideration in choosing this method. The selection of this method is based on the positive impacts that can be achieved as well as the simplicity of the processing process. In this way, it is hoped that used cooking oil waste can be converted into useful products, reduce environmental damage, and provide added value to the community, in this case students as the younger generation.

### Practice of Processing Used Cooking Oil into Aromatherapy Candles

The materials and tools used for processing used cooking oil into aromatherapy candles are used cooking oil that has been left with charcoal for 24 hours, essential oils, candle dyes, candle wicks, candle molds, wooden spoons, and stearin acid. While the tools needed are a stove, filter, wick clamp, and scissors. The stages of making aromatherapy candles made from used cooking oil are:

1. Heat the used cooking oil that has been filtered and has been soaked with charcoal using medium heat
2. Mix stearic acid into the heated oil, stirring until it melts and is flat.
3. Add wax colorant and essential oil
4. Prepare the mold and wick in a symmetrical position, then pour the melted wax into the prepared mold.
5. Allow the candle to solidify and ready for use.



Figure 5. Processing Aromatherapy Candles

The training participants were grouped into small teams, each accompanied by a facilitator. They were then given the opportunity to practice how to process used cooking oil. Figure 5 shows how students were actively involved in the activity. The whole activity went smoothly, and each student was able to carry out the process of making and processing used cooking oil. As a result, all students managed to complete this practice well and is shown in Figure 6.

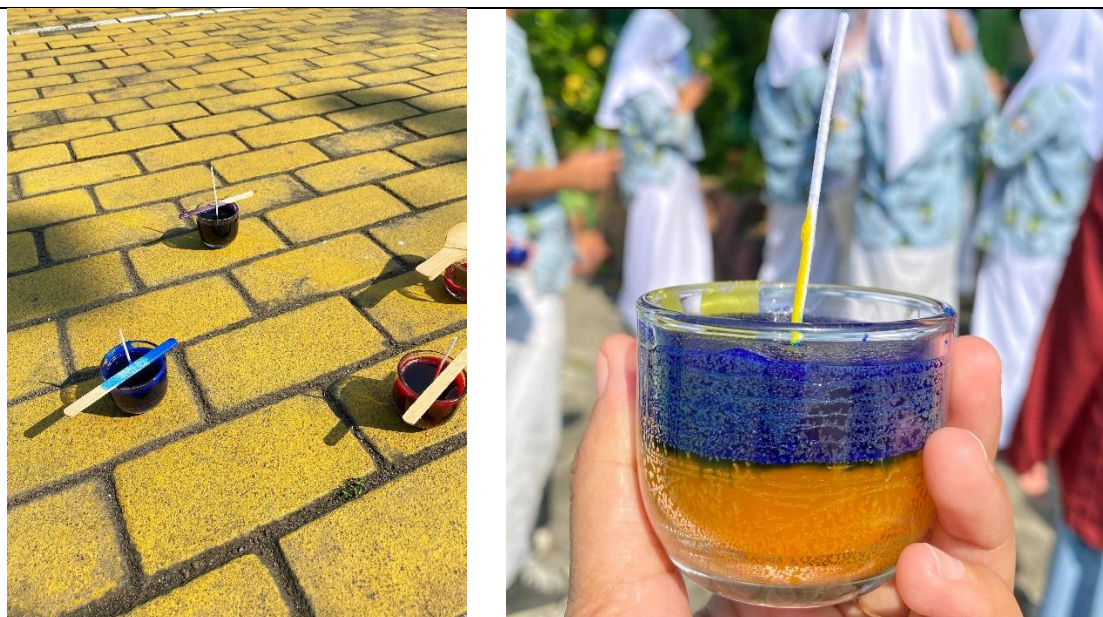


Figure 6. The Result of Aromatherapy Candles

During the event, students showed great enthusiasm in following the process of processing used cooking oil waste, which was evident from the level of creativity they showed in making aromatherapy candles. In addition, the success of this activity was also shown by the positive support from the teachers in encouraging the implementation of household waste management. Where this activity is aligned in supporting the school's vision to realize a green school.

#### 4. CONCLUSION

The conclusion of the community service journal activity on “Education on Processing Used Cooking Oil Waste into Aromatherapy Candles for Students of 2 Junior High School Karanganyar” is that this activity succeeded in increasing students' awareness and knowledge of household waste management. Students also have skills in making aromatherapy candles so they can utilize used cooking oil waste into high-value products. Students showed high enthusiasm in following the process of processing used cooking oil waste into useful products such as aromatherapy candles, while at the same time expressing their creativity in this process. Positive support from teachers also contributed to the successful implementation of this waste management. Overall, this activity not only provides practical learning about the need for effective waste management, but also fosters environmental awareness and critical thinking skills in students.

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