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UTILIZATION OF PLASTIC WASTE INTO ECONOMICALLY VALUABLE HANDICRAFTS

T.Edyansyah[1], Rico Nur Ilham[2], Amru Usman[3], Khairil Anwar[4], Em Yusuf Iis[5]
[1,2,3,4,5]Universitas Malikussaleh, Indonesia.
Corressponding Author: riconurilham@unimal.ac.id

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Abstract

This training activity on utilizing plastic waste into economically valuable handicraft products is a science and technology application program that can provide solutions to the main problems faced by Partners. Waste that is managed properly will improve the quality of the environment and public health. Recycling plastic waste itself helps the government in managing waste, especially if the management is carried out professionally and commercially, so that it becomes a profitable business. The use of plastic in various types of products is unstoppable. This certainly has an impact on polluting the environment because plastic waste will take a very long time to naturally replenish. In order to reduce plastic waste, we took the initiative to process plastic bottle waste into functional and aesthetic lamp tables. Experimental methods are applied to training programs and trials to make various derivative products made from plastic waste. The solutions offered to the problems faced include providing training in managing used plastic bottle waste into imitation flowers, and providing motivation to Partners that their products will be marketed by considering aspects such as shape, size, function, and color. The results of the program are recognized that plastic waste combined with pipes, sponges, and boxes, by paying attention to design aspects, becomes a selling point for various functional products. The product is expected to be sold so that it can increase the productivity and financial independence of Partners and can reduce the burden of TPA in accommodating plastic waste. The real and practical sustainability of our activities is expected to strengthen the ties between the world of educational institutions and the community.

Keywords: ***plastic waste, of course, product added value, increasing community welfare***

INTRODUCTION

In general, waste is divided into two types, namely organic waste and inorganic waste. Organic waste is waste that is easily decomposed and in general organic waste is processed into compost. Waste is an item that is considered useless which comes from human activities in the form of organic or inorganic materials that can be decomposed or cannot be decomposed which are in our environment (Kristanto, Prasetyawati, and Purwadi, 2013) Inorganic waste is waste that is not easily decomposed, especially waste that comes from plastic. Alrashid and Kahdar (2013) classify plastic into two groups, namely thermoplastic and thermosetting. Thermoplast is a type of plastic that is easily softened at high temperatures, while thermosetting does not soften at high temperatures and this type of plastic is difficult to recycle. Anindia, Setiawan, Asri, and Sari (2017) explain that plastic waste if managed properly can be recycled into products that have sales value in the form of crafts in the form of brooches and headpieces.

Properly managed waste will improve the quality of the environment and public health, and in this context waste is a resource (Putra & Yuriandala, 2023). Ariani and Awang (2013) explained that plastic waste that is not managed properly will pollute the environment. Plastic bottle waste from mineral water bottles is classified as thermoplast plastic, and this waste will be the basic material for recycling into imitation flowers that have more selling value. Sidarto and Oesman (2013) explained that recycling plastic waste itself helps the government in managing waste, especially if the management is carried out professionally and commercially, so that it becomes a profitable business. These plastic bottles are usually collected by scavengers and sold to plastic waste collection stalls. In this activity, the used bottles will be recycled into imitation flowers that can be used to increase income. The imitation flowers made can be in the form of table decorations or bouquets for congratulations for newly

inaugurated graduates. Imitation flowers as congratulations for graduates are currently booming, and usually traders who sell imitation flowers come from outside. European Union countries manage used plastic waste in three ways, including recycling 30%, converting plastic into energy 40%, and the rest is buried (landfill) around 30%. Where 7% of all used plastic waste is PET bottles or equivalent to 3.7 million tons in 2018. (Karl- H. Foerster, 2018). In Japan, the processing of plastic bottle waste, the recycling process has the largest portion, namely 85%. Utilization methods other than re-forming into beverage bottles, there are several other methods used, namely monomerization, gasification, liquefaction and conversion into energy. (Plastic Waste Management Institute, 2009).

In 2016, 1.3 million tons were collected, of which 20% or around 0.26 million tons were exported to China and Hong Kong to be recycled into bottles again. The rest of the collected PET bottle waste is processed into tools with other functions such as film sheets, gardening equipment, buckets and automotive spare parts. (American Chemistry Council, 2017). Based on analysis data from 2017-2023, it was revealed that the potential demand for PE in Indonesia increased by 4.4%. The amount of used PET bottle waste as one of the PE products will also increase every year. (PT. Chandra Asri Petrochemical, 2017). Another way of the PET degradation process is by heating, but this method has a dangerous impact where the process produces toxic gases such as carbon monoxide and dioxin. In addition, burned plastic will also release heavy metals such as cadmium and lead. (Sharon & Sharon, 2012).

A. Formulation of the problem

The problem faced is not having the skills to manage used plastic mineral water bottles, even though the waste is already available after an activity is completed.

A. Objectives and Benefits of Research

1. Research purposes

To develop or manage waste into crafts that can be sold.

2. Benefits of research

The benefits obtained from this research are as follows:

1. Reducing pollution from waste, saving energy, and preserving natural resources.
2. Prevent the emergence of diseases around us.
3. Increase knowledge and hone creativity.
4. Save expenses.
5. Increase income.

LITERATURE REVIEW

A. Theoretical Study

Waste Management Law of the Republic of Indonesia No. 18 of 2008 concerning Waste Management. The law explains that waste management is a systematic, comprehensive, and continuous activity that includes waste reduction and handling. Waste management is carried out based on the principles of responsibility, sustainability, benefits, justice, awareness, togetherness, safety, security, and economic value. Waste management aims to improve public health and environmental quality and make waste a resource (in Putra, 2017). In general, waste management in urban areas is carried out through 3 stages of activities, namely: collection, transportation and final disposal. According to Aboejoewono, 1985 (in Alfiandra, 2009) describes in simple terms the stages of the process of activities in waste management as follows:

Collection is defined as the management of waste from its place of origin to a temporary disposal site before proceeding to the next stage. At this stage, assistance facilities are used in the form of trash cans, trash bins, trash containers, and temporary disposal sites (TPS/Dipo). To carry out collection, it generally involves a number of workers who collect waste every certain period of time.

Collection can be interpreted as waste management from its place of origin to a temporary disposal site before moving on to the next stage. At this stage, assistance facilities are used in the form of trash cans, trash bins, trash containers, push carts or temporary disposal sites (TPS/Dipo). To carry out collection, it generally involves a number of workers who collect waste every certain period of time. The transportation stage is carried out using assistance facilities in the form of certain transportation equipment to the final disposal/processing site. This stage also involves workers who at a certain time period transport waste from the temporary disposal site to the final

disposal site (TPA). At the final disposal/processing stage, waste will undergo processing both physically, chemically and biologically so that the entire process is complete. Waste management, especially in urban areas, is currently faced with various quite complex problems. These problems include the high rate of waste generation, public awareness (human behavior) which is still very low and problems with final waste disposal activities (final disposal) which always cause their own problems.

METHOD

In this activity, it was explained about plastic bottle waste if not recycled and the benefits obtained if used plastic mineral water bottles are recycled. In addition, in this activity, a demonstration was also carried out by showing participants the results of recycling used plastic mineral water bottles with the aim of motivating Partners so that they have the same desire to reduce plastic bottle waste. Furthermore, this activity is carried out directly with materials that have been prepared to be used by each participant in producing new products that can be sold. Then, mentoring is carried out continuously until Partners are able to produce products that will be marketed in the form of flowers and other artistic ornaments. The implementation of this activity will later be evaluated.

RESULT AND DISCUSSION

A. Case Description

There are many interesting things that they did not know before that they have been using plastic waste and how to reuse it. As one form of effort to reduce plastic waste, we held a training on making vertical gardens from bottle waste. Simple vertical gardens from used bottles can be hung anywhere by arranging them from top to bottom then for simple vertical garden plants from used plastic bottles do not need to use expensive names but can use plants from around the area near the house. Plastic bottles are usually used as containers for various drinks, I often see photos of used drink bottles thrown away while these photos can still be used and cannot be broken down in a short time. By holding this activity, the community can utilize used goods, namely plastic bottles, to be made into creative activities. These vertical plants can be done in the home environment or according to the land or place in each environment according to the conditions of the surrounding community. In accordance with one of the objectives of the vertical garden is to overcome land limitations, especially in cities, in addition, vertical garden plants are a means of green space that has functions and uses, for example the environment has aesthetics.

A. Case Analysis

1. People are more skilled in making trash bins from plastic bottle caps and are more creative in utilizing used goods.
2. The community can develop their creativity from waste that can be tested so that it can increase the entrepreneurial spirit.
3. People are aware of environmental cleanliness so they can minimize the negative impacts of environmental pollution.
4. The community can use this training as a means to increase sales value and creativity.

Tools and Materials for Handicrafts from Plastic Waste

Process of Making Flowers from Plastic Waste

A. Conclusion

In the processing of organic and inorganic waste has experienced an increase in both its implementation and the results obtained. Types of plastic at certain times are very difficult to obtain in large quantities and have difficulty when they are recycled. The exercise from this class is that there are still many used goods around us that can be utilized so that they become useful and economically valuable items. By holding this creative training, the community is able to develop their creativity and utilize that creativity to support the community to want to become entrepreneurs. Community service activities in counseling and utilizing plastic bottles to be used as vertical garden plants, namely being able to utilize plastic bottle waste to be processed into vertical plant media that are rich in benefits and can be used as green open spaces.

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