

Electronic Waste Utilization In Charger and Powerbank Station Innovations

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ABSTRACT

In the era of globalization, various electronic objects are a vital need that must be fulfilled as means of communication and information. Because of this function, the need for electronic devices continues to increase from year to year and unknowingly has an impact on increasing electronic waste (e-waste). The lack of awareness of the importance of e-waste management is also an obstacle in itself. Therefore, this activity aims to increase awareness of the importance of utilizing or recycling electronic waste into a new innovation that has high value and can be used in the long term. One of them is a charger product innovation from electronic waste recycling created by Casbarkuy in the form of a Charger Station from the Power Supply component on a DVD-Player and a Powerbank Station from a Laptop Battery from Casbarkuy. The method used in this activity is Participation Action Research (PAR) which consists of several stages including the planning stage, the implementation stage to the evaluation stage. The result of this activity is that people are starting to be aware of the importance of managing electronic waste and knowing the right solutions to overcome existing problems. And most importantly, researchers can introduce Casbarkuy to the public as one of the innovative products that utilize electronic waste.

Keywords: Laptop Battery, Charger, DVD-Player, Electronic Waste (e-waste), and Power bank.



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INTRODUCTION

In the era of globalization, various electronic products are a vital need that must be fulfilled as means of communication and information. Even to fulfill this, electronics industry manufacturers are able to spend hundreds of thousands for one type of electronic product (Arthaya et al., 2018). Not only that, but they also continue to improve product specifications so that people are more consumptive and the range of product changes is so fast that it has an impact on increasing electronic waste (e-

waste). Electronic waste (e-waste) is electronic goods that have been disposed of for a good reason because they are damaged, and are no longer used until they are not liked or replaced with new ones (Fadhullah et al., 2022). Most electronic waste comes from several components of mobile devices such as smartphones, and laptops, especially the battery components, and even household electronic equipment such as DVD players and so on.

Reporting from *Katadata. co. id* Sourced from the Ministry of Environment and Forestry (KLHK) noted that electronic waste stockpiles in Indonesia in October 2021 reached 2 million tons (Setiawan, 2021). In fact, it is predicted that by 2040 the increase in electronic waste in Indonesia will reach 3,200 kilotons, which is determined based on data on imports of electronic goods and production of electronic equipment for the past 30 years (Puspa, 2022). To overcome these problems, appropriate solutions are needed to reduce the increase in electronic waste. One of them is by sorting electronic waste to extend its useful life by repairing it (Fuada, 2014). utilize, manage, or recycle electronic waste optimally so that it can be handled properly. However, Rosa Vivien Ratnawati, Director General of Waste and B3 Waste Management (PLSB3) of the Ministry of Environment and Forestry (KLHK) admits that the management of electronic waste in Indonesia is still not optimal or qualified (Setiawan, 2021).

The main factor that causes electronic waste management to be still not optimal is the lack of public awareness of the importance of electronic waste management, where it can be said that almost 50% of people think that storing and leaving electronic waste is safe (Kumaladewi, 2020). Even as we know, according to PP RI No. 101 of 2014 Article 1, this electronic waste is categorized as B3 waste (Toxic Hazardous Materials). Because it contains lead, mercury, chromium, and PCB in CRT waste (Yoga et al., 2020). These contents directly or indirectly will certainly have a negative impact on the environment which can pollute or damage the environment. This also has an impact on living things, especially on the health and survival of humans and other living things (Adi & Trihadiningrum, 2020). Some people still dispose of waste, especially electronic waste, indiscriminately, making it difficult for waste management in each region (Svari & Utama, 2022).

To increase this awareness, researchers are trying to carry out outreach activities in Talang Semut District and also in one of the PTS in Palembang City, namely Universitas Bina Darma. Where this activity aims to increase awareness of the importance of electronic waste management, find out solutions to reduce the increase in electronic waste, to introduce the Casbarkuy product which is one of the solutions to reduce the increase in electronic waste, by using as a raw material in producing charging products on electronic devices. smartphones in the form of innovative Charger Stations from DVD Players and Powerbank Stations from Laptop Batteries. These two innovations from Casbarkuy can also be said as one of the efforts to extend the useful life of the two electronic wastes, especially for Laptop Batteries, whose number will certainly continue to increase along with technological developments from year to year. Thus through this activity, it is hoped that it can reduce the increase in electronic waste in Indonesia, especially in the city of Palembang, and also increase awareness of the importance of optimal electronic waste management.

METHODS

The dedication activity entitled "Electronic Waste Utilization In Charger and Powerbank Station Innovations" was carried out in Talang Semut District and at one of the PTS in Palembang City, namely at Universitas Bina Darma Palembang. In this activity, the method used is the Participation Action Research (PAR) method. The Participation Action Research (PAR) method is a method in research that links a research process to a process of social change (Rahmat & Mirnawati, 2020). This method can also be said to be pursued based on the specifications of the rules and principles, namely involving the aspirations of community participation (Muhtarom, 2019).

This method is composed of several stages, namely as follows;

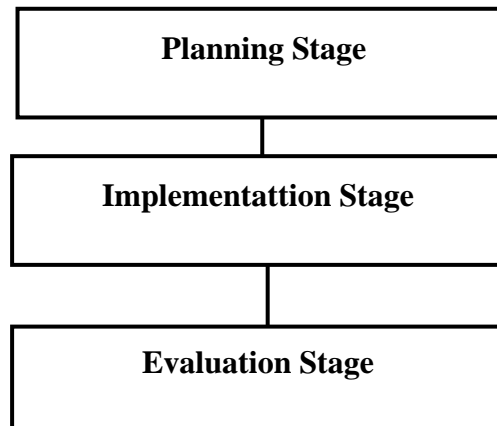


Image 1.
Participation Action Research (PAR) Method

For the planning stage, the researcher begins to determine the place or location of the activity. At this planning stage, the participation of the community is needed for the implementation of this activity. Existing problems are also important points or the main thing that needs to be solved. At the same stage, apart from researchers looking for solutions to existing problems. Researchers will also prepare anything needed in this activity until the end. Next is the implementation stage, where the researcher will carry out the activity in a predetermined place, and of course, there will be many people participating in this activity. Researchers will also try to provide a brief description of the problems and solutions and tell one of the solution efforts of this activity. And the last stage is Evaluation, at this stage, the researcher evaluates one of the solution efforts in overcoming existing problems. The development of the results of the activity will also be explained in this section.

RESULTS AND DISCUSSION

The community service activity with the title " Electronic Waste Utilization In Charger and Powerbank Station Innovations" was carried out for the Community in Talang Semut District, Palembang City and also Universitas Bina Darma Palembang students.



Image 2.
Charger and Powerbank Station Innovation from Electronic Waste

This activity was carried out as an invitation to the Talang Semut District Community to begin to realize that electronic waste continues to increase every year so it becomes a problem that needs to be solved by utilizing, managing, or recycling it into a new innovation. However, the lack of public awareness makes this solution not optimal and difficult to realize. So that from activities by

providing direct examples of the use of electronic waste, the community will also begin to understand and be aware and know one of the solutions to existing problems. For this socialization activity, the researcher opened a booth and this activity is also open to the public.



Image 3.
Socialization Activities in Talang Semut District

This activity also seeks to introduce Casbarkuy products which are an effort to utilize electronic waste as a new innovation. In this case, the researcher sorts the electronic waste used where the researcher uses Electronic waste in the form of Power Supply components from DVD Players and Laptop Batteries as the main raw material or power supply in the manufacture of charger innovation products on devices such as Smartphones. A smartphone is a cellphone that has some of the performance of a computer (Ramadani et al., 2019). For charger innovation products on the Smartphone device itself in the form of a Charger Station and a Powerbank Station. A charger is a tool that has the function to charge a battery with a constant current until it reaches a specified voltage (Pasaribu & Reza, 2021). Meanwhile, Powerbank is a portable charger that stores power with a certain capacity for charging mobile devices (Sulhi et al., 2018). These two products are really needed in the midst of the increasing use of smartphone devices along with the increasing growth of society in order to meet information and communication needs. This activity was also carried out for Universitas Bina Darma students, where in this activity the researcher also presented material according to the title of this activity. It was recorded that there were around 200 more students who participated in this activity.



Image 4.
Socialization Activities for Universitas Bina Darma Students

After the two stages have been carried out well, the last stage is an evaluation where through this activity the innovative product can still be developed again and is much better than what already exists, one of which is making wireless charger products or wireless power transfer (Ramadhina, 2022).

CONCLUSION

Awareness of electronic waste management is necessary to reduce the increase in electronic waste which continues to increase every year and has a negative impact on the environment and living things. From this activity, one of the solution efforts is Casbarkuy utilizing electronic waste such as DVD Players and Batteries as raw materials or components to create new innovations, one of which is charger products on Smartphone devices created by Casbarkuy in the form of Powerbank Stations.

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