

Turning Waste into Profit: Plastic Waste Recycling Workshop into Crafts for Cipta Wacana Students at Bank Sampah Malang

Novie Ary Priyanti^{1*}, Arinda Eka Lisdianita¹, Novan Habiburrahman¹, Retno Palupi¹, M. Zainul Muttaqin¹, Agung Hariadi¹

¹Cipta Wacana University of Malang, Malang, Indonesia

Article history

Received: 25 May 2025

Revised: 10 June 2025

Accepted: 21 June 2025

Keywords

plastic waste, recycling workshop, environmental awareness, circular economy, student empowerment, waste bank, community-based education

Abstract

Plastic waste is one of Indonesia's most critical environmental challenges, comprising approximately 17% of the nation's 64 million tons of annual waste. This study explores the impact of a recycling workshop that transformed plastic waste into handicrafts, conducted at the Malang Waste Bank and involving students from Universitas Kristen Cipta Wacana Malang. Using an activity-based participatory approach, the workshop aimed to enhance students' environmental awareness, practical recycling skills, and understanding of circular economy principles. Data were collected through observations, interviews, questionnaires, and documentation. The results showed a significant increase in students' knowledge of the 3R concept (Reduce, Reuse, Recycle), along with improved technical skills in sorting, melting, and crafting recycled products such as bags, hats, and wallets. The workshop also encouraged environmental entrepreneurship by demonstrating that waste can be transformed into valuable and marketable items. This initiative exemplifies how community-based, hands-on learning experiences can foster sustainability values in higher education and support the Merdeka Belajar Kampus Merdeka (MBKM) policy framework.

1. Introduction

Plastic waste is a serious environmental problem in Indonesia, with around 17% of the 64 million tons of annual waste being plastic. This material is difficult to decompose and contributes greatly to environmental pollution, especially in big cities like Malang. Universities as centers of knowledge have an important role in forming agents of change who care about the environment. Through community service activities, students can be empowered to not only understand environmental problems, but also contribute to finding innovative solutions. The plastic waste recycling workshop into souvenirs held at Bank Sampah Malang with students of Universitas Kristen Cipta Wacana Malang is a real manifestation of academic and community collaboration. Bank Sampah Malang was chosen because of its experience in community-based waste processing and its success in turning waste into creative products with economic value.

This activity aims to provide practical insight into plastic waste processing while instilling circular economic values. Students not only learn recycling techniques such as printing and coloring, but also understand the entrepreneurial potential of recycled products. In addition, souvenirs from the workshop can be used as campus merchandise in the future, so they have educational and economic value. Through this activity, it is hoped that students will be able to integrate knowledge, skills, and environmental concerns into real, sustainable actions and contribute to reducing plastic waste in society.

*Corresponding author, email: novieary@cwcu.ac.id

doi: <https://doi.org/10.71131>

© 2025 The Authors

This work is licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-sa/4.0/)

2. Literature Review

A. Plastic Waste Problem

Plastic waste is a pressing environmental issue globally. According to Jambeck et al. (2015). Plastic waste has become one of the most critical environmental issues in the 21st century. Plastic is widely used because it is lightweight, flexible, durable, and inexpensive. However, these advantages become a problem when plastic ends up as waste because its durability causes a very slow degradation process, which can take hundreds of years in the open environment (Geyer, Jambeck, & Law, 2017). Indonesia is in a plastic waste emergency. According to a study by Jambeck et al. (2015), Indonesia is the second largest contributor of plastic waste to the sea after China, with an estimated 1.29 million tons per year. National plastic production continues to increase, along with economic growth and changes in people's lifestyles. Data from the Ministry of Environment and Forestry (KLHK, 2022) noted that around 17% of the total national waste is plastic waste, and only a small portion is recycled.

Locally, Malang City also faces significant challenges in plastic waste management. Low community participation in sorting waste from the source, limited recycling support facilities, and lack of education about the long-term impacts of plastic waste are major obstacles (Pratiwi, 2022). The dominant landfill-based waste management system also worsens the situation, as most plastic ends up being illegally dumped or burned, which poses health risks and air pollution. In addition, plastics that pollute the terrestrial environment are often carried by rivers to the sea, exacerbating pollution of aquatic ecosystems. Gallo et al. (2018) stated that marine plastic waste not only impacts aesthetics and tourism, but also disrupts the food chain and carries hazardous chemicals into marine organisms. The long-term effects have the potential to threaten food security and human health.

Efforts to handle plastic waste are not sufficient with just a technical and regulatory approach, but require an educational and participatory approach, especially from academics and the younger generation. The role of universities in developing recycling technology innovations and establishing an environmental literacy ecosystem is crucial in creating a society that is more responsible for plastic consumption (Wulandari, Sari, & Hidayat, 2020). Given the complexity of this problem, community-based management models such as waste banks are a promising alternative solution. Waste banks not only reduce waste piles but also bring environmental issues closer to the community through a microeconomic approach.

Processing plastic into creative products with utility is a form of transformation from the paradigm of waste as a burden to an economic opportunity (Susanti & Nugroho, 2020).

B. Circular Economy Approach

The problem of plastic waste not only has an impact on ecological aspects, but also social and economic aspects. In urban environments, the accumulation of plastic waste creates serious problems in the drainage system which leads to flooding, as well as disrupting the aesthetics and comfort of public spaces. According to Lestari and Trihadiningrum (2019), most of the plastic in landfills in Indonesian cities comes from household and commercial waste, but the level of waste sorting from the source is still low. This is exacerbated by the limited integrated waste management system and the lack of community involvement in efforts to reduce and reuse plastic waste. In this context, it is important for intervention from various parties, especially educational institutions, local communities, and business actors to strengthen literacy and sustainable waste management practices.

In line with this, an approach based on community empowerment and environmental education is considered more effective in overcoming structural problems of plastic waste management. A study by Suwartha and Diah (2020) showed that involving students in campus waste management programs can increase their capacity to apply the *reduce–reuse–recycle* (3R) concept in a wider social environment. Furthermore, recycling practices combined with creative entrepreneurship training such as making souvenirs from plastic waste not only contribute to reducing the volume of waste but also raise awareness that waste can have economic value. In other words, the transformation of the behavior of the younger generation in managing waste will be much more effective if built through direct, collaborative, and sustainability-based experiences.

C. The Role of Higher Education in Environmental Management

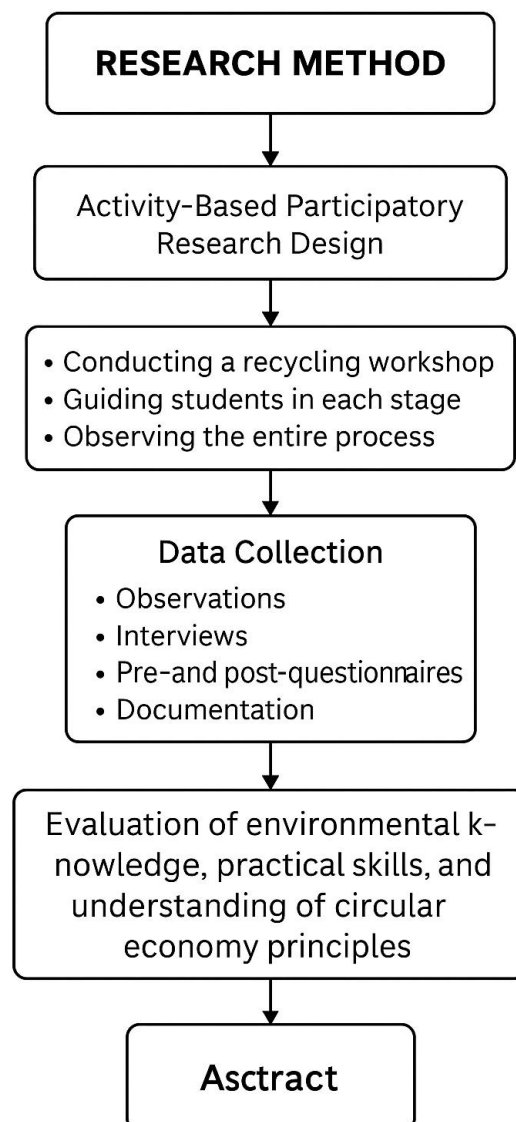
Universities have a moral and academic responsibility to be pioneers in environmental and sustainability education. Tilbury (2011) emphasized the importance of higher education's role in building students' critical awareness of environmental issues and active involvement in real solutions. Students as agents of change can be involved in practical activities such as recycling workshops to strengthen environmental literacy while developing soft skills of social entrepreneurship. Collaboration with external institutions such as waste banks expands the scope of learning from theory to real practice that has a direct impact on society.

D. Waste Bank as a Community Solution

Waste banks are social innovations that combine waste management and community economic empowerment. According to Susanti and Nugroho (2020), waste banks can reduce waste generation by up to 30% in intervention areas. In the context of Malang City, Malang Waste Bank is an example of good practice that connects environmental education, creativity, and microeconomics. Through training and waste processing, the community, including students, can see waste as a resource, not just consumption waste.

3. Method

The research was conducted at Bank Sampah Malang, which has facilities and experience in plastic waste processing training.



A. Location and Subjects

The research was conducted at Bank Sampah Malang, which has facilities and experience in plastic waste processing training. The subjects of the research were students of Cipta Wacana Christian University Malang from various study programs who were selected purposively because they were interested in environmental issues and creativity.

B. Data Collection Techniques

1. Direct observation: Researchers observed the activity process, participant involvement, and group dynamics during the workshop.
2. Semi-structured interviews: Conducted with several students and Waste Bank facilitators to explore their experiences and perceptions.
3. Pre- and post-activity questionnaires: Used to measure changes in knowledge and attitudes.
4. Visual documentation: Includes photos and videos during the activity as evidence of the process and results.

C. Data Analysis Techniques

Data were analyzed descriptively qualitatively. The questionnaire results were analyzed by comparing the answers before and after the workshop. Interviews and observations were reduced to find patterns, then presented narratively. Visual documentation was used to complement the interpretation of the results.

4. Result and Discussion

The results of the study showed that the plastic waste recycling workshop had a positive impact on participants in three main aspects: environmental knowledge, practical skills, and understanding of the value of a circular economy. From the pre- and post-activity questionnaires, there was a significant increase in the understanding of the 3R concept (*Reduce, Reuse, Recycle*) and the circular economy. Before the workshop, only 35% of participants knew how a simple plastic printing machine worked and only 25% understood the business potential of plastic waste. After the workshop, these figures increased to 90% and 85% respectively. This shows that the hands-on method is able to bridge the gap between theory and experience.

From the observation, it was seen that the participants showed high enthusiasm in the process of making souvenirs from plastic waste, starting from sorting, heating, printing, to coloring. The results of their production in the form of handicrafts such as recycled clothes, bags, hats and wallets received appreciation from the Bank Sampah facilitator.



Interviews with participants revealed that this experience opened their eyes to the fact that waste management is not just a moral responsibility, but also a sustainable social business opportunity. Some participants even expressed their intention to develop micro recycling businesses in their neighborhoods.

Overall, this activity proves that the integration of environmental education, creativity, and hands-on practice can create a profound learning experience. Collaboration between campuses and communities such as Bank Sampah strengthens the transformative approach in higher education, which not only fosters awareness, but also real action based on sustainability values. The results of the workshop showed a positive transformation in students in three main aspects, namely environmental knowledge, practical skills, and understanding of the value of a circular economy.

1. Increasing Environmental Knowledge

Before the activity, most participants had limited understanding of waste management based on the 3R concept. After the workshop, more than 90% of participants were able to explain the principles of *Reduce, Reuse, and Recycle* and relate them to individual responsibility towards the environment. This knowledge is important because according to Wulandari et al. (2020), environmental education based on direct experience can significantly increase students' ecological awareness. This is also reinforced by a study by Iqbal & Prasetyo (2022) which states that active participation in ecology-based activities forms a sustainable mindset.

2. Practical Skills Mastery

The workshop provides participants with hands-on experience in processing used plastic into souvenirs. They are involved in the process of sorting waste, heating, printing, and coloring products. This activity improves participants' technical and problem-solving skills. According to Saputra et al. (2021), a field practice-based approach improves students' technical capacity better than lectures alone, especially in the context of developing green skills.

3. Understanding Economic Value

Through this activity, students not only see waste as waste, but also as a business potential. The products produced have the potential to be sold as campus merchandise, opening up opportunities for social entrepreneurship. A study by Setiawan & Dewi (2019) shows that environmental-based entrepreneurship training can foster business motivation among the younger generation. This is where the importance of integration between entrepreneurship and ecological education lies in creating sustainable solutions. Overall, this activity proves that an educational approach based on real action can create changes in students' attitudes and competencies. By involving local communities such as Bank Sampah Malang, this collaborative model can be an example of the implementation of the Merdeka Belajar curriculum which encourages students to actively solve real problems in society.

5. Conclusion

This study shows that the plastic waste recycling workshop activities into crafts at Bank Sampah Malang have a positive and transformative impact on students of Universitas Kristen

Cipta Wacana Malang. Through a participatory and hands-on practice-based approach, students not only gain increased knowledge about environmental issues, but also develop technical skills in waste processing and an understanding of the economic potential of plastic waste. The increase in participants' understanding of the 3R concept and circular economy can be seen from the results of the questionnaire and interviews, which showed that students began to view waste not only as a problem, but also as a resource that has economic value if managed creatively and sustainably. This activity also succeeded in fostering a spirit of social entrepreneurship among students, with several participants expressing a desire to continue similar initiatives in their respective environments.

By combining educational, practical, and economic aspects, this workshop proves the effectiveness of collaboration between universities and local communities in creating meaningful and impactful learning experiences. Therefore, this type of activity model can be recommended as part of a community service program or strengthening the Merdeka Belajar Kampus Merdeka (MBKM) curriculum in various other educational institutions.

References

- Gallo, F., Fossi, M. C., Weber, R., Santillo, D., Sousa, J., Ingram, I., ... & Rios, L. M. (2018). Marine litter plastics and microplastics and their toxic chemicals components: the need for urgent preventive measures. *Environmental Sciences Europe*, 30(1), 13. <https://doi.org/10.1186/s12302-018-0139-z>
- Geyer, R., Jambeck, J. R., & Law, K. L. (2017). Production, use, and fate of all plastics ever made. *Science Advances*, 3(7), e1700782. <https://doi.org/10.1126/sciadv.1700782>
- Iqbal, M., & Prasetyo, Z. K. (2022). The effectiveness of environmental project-based learning in improving student ecological literacy. *Jurnal Pendidikan IPA Indonesia*, 11(2), 265–272. <https://doi.org/10.15294/jpii.v11i2.31259>
- Jambeck, J. R., et al. (2015). Plastic waste inputs from land into the ocean. *Science*, 347(6223), 768–771. <https://doi.org/10.1126/science.1260352>
- KLHK. (2022). Statistik Pengelolaan Sampah Nasional Tahun 2022. Kementerian Lingkungan Hidup dan Kehutanan RI.
- Lestari, P., & Trihadiningrum, Y. (2019). The impact of improper solid waste management to marine pollution in Indonesia. *Journal of Environmental Science and Sustainable Development*, 2(1), 51–61. <https://doi.org/10.7454/jessd.v2i1.35>
- Pratiwi, N. L. (2022). Penguatan Peran Mahasiswa dalam Program Bank Sampah sebagai Upaya Pengurangan Sampah Plastik di Masyarakat. *Jurnal Pengabdian Kepada Masyarakat*, 4(1), 77–84.
- Saputra, H. A., Susanto, H., & Fitriana, E. (2021). Enhancing green skills through field-based waste recycling programs. *Journal of Environmental Education and Development*, 5(1), 45–53. <https://doi.org/10.21009/jeed.2021.0501.05>

- Setiawan, B., & Dewi, R. (2019). Environmental entrepreneurship: Exploring youth potential through waste recycling training. *International Journal of Environmental & Science Education*, 14(6), 321–331. <https://doi.org/10.12973/ijese.2019.417a>
- Suwartha, N., & Diah, D. N. (2020). University students' involvement in waste reduction through campus greening and zero waste initiatives. *International Journal of Sustainability in Higher Education*, 21(2), 219–237. <https://doi.org/10.1108/IJSHE-04-2019-0140>
- Susanti, N., & Nugroho, S. P. (2020). Efektivitas Bank Sampah dalam Pengurangan Timbulan Sampah Rumah Tangga. *Jurnal Ilmu Lingkungan*, 18(1), 45–54.
- Tilbury, D. (2011). *Education for Sustainable Development: An Expert Review of Processes and Learning*. Paris: UNESCO. <https://unesdoc.unesco.org/ark:/48223/pf0000210072>
- Wulandari, D., Sari, M. P., & Hidayat, R. (2020). Strengthening environmental awareness among university students through project-based learning. *Journal of Green Education*, 3(1), 20–29.