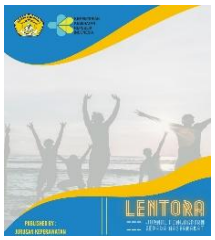

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Empowerment of Cleaning Service Staff through Organic Waste Composting at the Palu Ministry of Health Polytechnic

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ABSTRACT

Organic waste management remains a challenge in institutional environments, including higher education settings. At the Palu Ministry of Health Polytechnic, organic waste such as grass clippings and leaf litter is typically discarded or burned, despite its potential to be converted into value-added compost. This community service program aimed to improve the technical skills and entrepreneurial motivation of cleaning service staff in processing organic waste into compost.

The program was conducted on November 26, 2025, involving six cleaning service staff and two students. A participatory training approach was implemented through preparation, instructional delivery, hands-on composting practice, and evaluation. A one-group pre-test–post-test design was used to assess effectiveness.

The results showed an increase in the average score from 56.25 to 85.00, indicating a 51.1% improvement. All participants were able to independently perform composting, and 75% expressed interest in developing compost-based business activities. The program also contributed to reducing organic waste on campus.

In conclusion, the integration of technical training and entrepreneurship effectively enhanced participants' skills and motivation. Continuous mentoring and institutional support are recommended to ensure sustainability.

INTRODUCTION

Waste remains a major problem in developing countries and is one of the causes of environmental damage (Agatha et al., 2020). The traditional "collect-transport-dispose" management pattern means that organic waste is often not handled properly, causing pollution, unpleasant odors, and becoming a medium for the spread of disease vectors (Lingga et al., 2024).

The issue of organic waste, particularly grass clippings and leaves, is often overlooked. At the Palu Ministry of Health Polytechnic, cleaning service staff are primarily responsible for maintaining campus cleanliness, including the management of organic waste. However, current practices largely involve disposal or open burning, reflecting an underutilization of available resources. This situation highlights an opportunity to integrate waste management practices with income-generating activities.

Simply put, compost is a modified material used to fertilize and improve soil (Iswadi et al., 2023). Compost is essential in agriculture, plantations, and reforestation because it can improve soil structure, increase fertility, and support natural plant growth

(Nabillah, 2024). By utilizing existing organic waste, the Cleaning Service can actually turn worthless waste into useful and economically valuable products.

Most existing community service programs focus on household composting, with limited attention to institutional contexts and workforce empowerment. Moreover, integrated programs that combine technical composting skills with entrepreneurship training for non-academic staff remain scarce. This study therefore seeks to address this gap by strengthening both composting competencies and entrepreneurial capacity among cleaning service personnel.

The business opportunity of processing organic waste into compost is highly relevant for the Cleaning Service of the Palu Ministry of Health Polytechnic. This program aims to motivate and increase the enthusiasm of cleaning service staff in performing their duties, foster innovation, and create opportunities to generate additional income through compost-based entrepreneurship from organic waste. Through this community service activity, the Cleaning Service not only contributes to maintaining the cleanliness of the campus environment, but also acquires valuable economic skills in composting

METHOD

This community service program employed a participatory training-based intervention design aimed at enhancing both technical competencies and entrepreneurial capacity among participants. The approach integrates experiential learning principles, emphasizing active involvement and hands-on practice to facilitate effective knowledge transfer and skill acquisition.

A participatory approach was adopted to actively engage participants throughout the program. This approach is widely used in community empowerment initiatives, as it encourages collaboration, increases ownership, and enhances learning outcomes. The intervention was structured as a training-based program, combining theoretical instruction with practical application. In addition, an experiential learning model was applied, where participants learned through direct experience, reflection, and practice.

The community service activity was held on November 26, 2025, at the Environmental Health Department Workshop of the Palu Ministry of Health Polytechnic. The target participants consisted of 6 cleaning service personnel and 2 students.

A pre-test and post-test design was used to assess the effectiveness of the intervention. This design allows measurement of learning improvement by comparing participants' knowledge before and after the training..

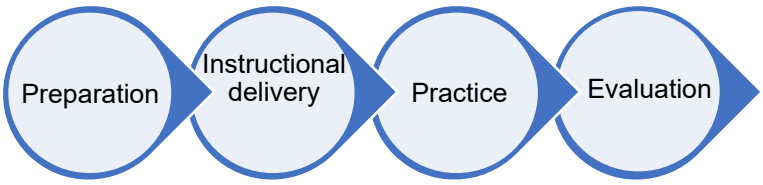

Figure 1. PKM Activity Flowchart

The program was implemented in four sequential stages:

1. Preparation
   This stage involved the collection of organic materials such as dry leaves, grass clippings, and goat manure, as well as the preparation of tools and instructional materials.
2. Instructional Delivery
   Participants received theoretical input through lectures and interactive discussions covering composting techniques, business opportunities, and basic

entrepreneurship principles.

3. Hands-on Composting Practice
   Participants engaged directly in compost production activities, including material shredding, mixing of organic components, moisture regulation, and compost pile management.
4. Evaluation
   The evaluation process involved both observational assessment and a structured knowledge test.

RESULTS AND DISCUSSION

The program was successfully implemented and achieved its intended objectives, as evidenced by both qualitative observations and quantitative assessment. Participants demonstrated active engagement throughout the program, particularly during the practical sessions. The hands-on approach facilitated experiential learning, allowing participants to directly apply the knowledge acquired during the instructional phase.

Figure 2. Preparation of Composting Materials

The quantitative evaluation revealed a significant improvement in participants' understanding. The average pre-test score of 56.25 increased to 85.00 in the post-test, representing an improvement of 28.75 points (51.1%).The presentation of the material served to build initial awareness and align perceptions about the importance of the program, in line with the community-based development approach (Jamroni & Aviansyah, 2025).

Figure 3. Instructional Delivery

Prior to the intervention, only 25% of participants were categorized as having a high level of understanding. Following the training, this proportion increased to 87.5%, indicating a substantial enhancement in knowledge. In terms of practical competency, all participants (100%) were able to independently perform composting procedures by the end of the program. This finding underscores the effectiveness of experiential learning in skill acquisition. This hands-on activity strengthened the participants' skills in applying the techniques they had learned in their daily lives, as stated by Yusuf and Anwar (2020) in Rouf (2025), that direct involvement in the training process can increase the effectiveness of knowledge and skill transfer (Rouf et al., 2025)

Figure 4. Composting Process

Beyond technical skills, the program also contributed to increased entrepreneurial interest. A total of 75% of participants expressed their willingness to explore compost production as a potential source of additional income. This suggests that integrating entrepreneurship into environmental training can enhance program impact and sustainability.

The delivery of material combined with action-based experiential learning was effective in developing practical skills. Participants had the opportunity to hone their specific hands-on skills (Kahar et al., 2023). The implementation of these practices increased participants' awareness of the importance of organic waste management. This is in line with the community service activities by Rouf et al. (2025), which showed that composting training was proven to increase knowledge and skills in managing household waste, especially organic waste.

Effective waste management benefits individuals and communities (Saputra et al., 2025). With proper processing, organic waste can be turned into compost, which serves as an alternative to chemical fertilizers to improve soil structure and increase organic matter content in the soil (Mutaqin, 2025:Andriyani & Patricia, 2021). The use of compost can also reduce the cost of chemical fertilizers and support sustainable agriculture (Abdurrahman et al., 2025:Sahri et al., 2025). Jalalipour et al., (2024) reported that composting practices can reduce CO_2 emissions by thousands of tons per year, thus contributing significantly to climate change mitigation (Sahri et al., 2025).

In addition to increasing the selling value of waste (Anwar et al., 2019), this activity opens up economic opportunities for cleaning services through the development of green entrepreneurship. The composting business has good prospects, especially in agricultural countries (Anwar et al., 2019).

Composting is relatively easy, does not require a large space, and does not require a lot of equipment and costs (Wunarlan, 2024). The composting process

generally begins with the collection of organic materials. These materials are chopped into small pieces to speed up the decomposition process (Hunaepi et al., 2018). Next, the materials are mixed with soil and microorganism activators such as EM4 to accelerate fermentation (Zuriatni et al., 2024).

After mixing, the materials are piled up and stirred periodically for several weeks until they become mature compost that is ready to be used as fertilizer (Dharmawibawa & Karmana, 2022). Mature compost will have a clumpy texture when held in the hand. This is because the compost has shrunk in weight to 50% of its original weight. Good compost texture is moist, crumbly, but does not drip when squeezed (Nurkhasanah et al., 2021).

Market opportunities for compost can come from both domestic and foreign sources (Karmini et al., 2025). Compost marketing strategies can be implemented by combining environmentally friendly branding approaches, market segmentation, and the use of digital media to expand consumer reach. Promotion can be carried out through the use of social media, education for urban farming communities, and collaboration with schools, agricultural agencies, and local agricultural stores that need a regular supply of compost.

Through these activities, Cleaning Service not only acts as a sanitation worker but also evolves into an agent of change in waste management and environmental health. The optimization of their role is evident in their increased technical skills, courage to start small businesses, and growing awareness that their work has additional economic value. With institutional support, this group can develop into a sustainable environmental-based entrepreneurial unit and become a model of good practice in the health education environment.

CONCLUSION AND RECOMMENDATIONS

This community service program contributed to improvements in the knowledge, practical skills, and entrepreneurial motivation of cleaning service staff in processing organic waste into compost. The results indicate an increase in participants' understanding, with the average score rising from 56.25 to 85.00. In addition, all participants were able to carry out composting practices independently, while 75% expressed interest in developing compost-based business activities. The use of participatory, training-based, and experiential learning approaches was associated with improvements in technical competencies and participant engagement. The program also supported increased awareness of organic waste management and highlighted the potential for developing compost-based entrepreneurship as an additional source of income.

To support the sustainability and broader implementation of the program, several recommendations are proposed. First, continuous mentoring and monitoring are needed to assist participants in maintaining and developing their composting activities. Second, the provision of appropriate technology, such as shredding equipment, may help improve efficiency and production capacity. Third, the establishment of organized business groups is suggested to strengthen collaboration and support the development of compost-based enterprises. Finally, institutional support is needed to integrate this initiative into longer-term campus waste management and entrepreneurship programs

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