

Education on the Use of Maggots to Foster Environmental Awareness Among Residents of Kedaung Village

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Abstract

This community service project aims to enhance the environmental awareness of Kedaung residents by promoting maggot utilization as an eco-friendly organic waste decomposer. The main issue addressed is the large amount of household organic waste that remains poorly managed. The project employed the Asset-Based Community Development (ABCD) and Participatory Action Research (PAR) methods, which included stages of socialization, educational material delivery, hands-on practice, and participatory evaluation. The results revealed an improvement in the participants' understanding and skills in small-scale maggot cultivation, as well as the emergence of local initiatives to separate organic waste and develop maggot-based microenterprises. The activity not only contributed to a cleaner and healthier environment but also created economic opportunities through maggot sales and compost utilization. Therefore, maggot utilization education proved effective in fostering environmental awareness and empowering the community toward ecological and economic sustainability.

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INTRODUCTION

Environmental issues are becoming increasingly urgent in various regions, including in Kedaung Village. One of the main challenges faced is the suboptimal management of organic waste, which can pollute the environment and damage ecosystems. If not managed properly, organic waste can cause health problems, reduce water quality, and have other negative impacts on the community (Taufiq, 2015). On the other hand, the Kedaung community has great potential to increase awareness and active participation in maintaining environmental cleanliness and sustainability through appropriate educational approaches. One solution that can be implemented is the use of maggots as agents for decomposing organic waste. Maggots, the larvae of black soldier flies (BSF), have been proven effective in decomposing organic waste, such as food scraps, leaves, and other household

waste. This process not only reduces the volume of waste, but also produces compost that can be used to improve soil fertility (Kasya, Putri, & Siregar, 2023).

Some communities in Kedaung Village have been cultivating maggots to produce animal feed, reduce organic waste in the neighborhood, and generate income. However, even though one of the heads of RT.01/RW.01 has been cultivating maggots, many other residents are still unaware of how to use them effectively. Therefore, education on the use of maggots in organic waste management is needed to foster environmental awareness and concern among residents of Kedaung Village. Through this educational activity, it is hoped that the community can utilize this simple technology to reduce waste, improve environmental quality, and create a healthier and more sustainable environment.

The objective of this project is to utilize maggots to reduce organic waste in the Kedaung community, so that the community will become more prudent in managing organic waste using maggots. This activity involves the community around the Kedaung State Elementary School Technical Implementation Unit (UPTD) and can have a positive impact on the wider community.

The use of maggots in waste management also has the potential to create economic opportunities for residents, especially with the development of maggot farming businesses that can be used as a source of additional income (Anwar & Nurnaeti, 2021). Therefore, education about maggots is expected to be an effective solution to increase environmental awareness while promoting community economic empowerment. This not only encourages the formation of a community that is more concerned about the environment, but also provides them with the tools and skills to face increasingly complex environmental challenges. With higher awareness and community participation, Kedaung Village is expected to become a positive example in terms of waste management and environmental sustainability at the local level.

METHODE

The methods used in this community service activity are Asset-Based Community Development (ABCD) and Participatory Action Research (PAR). These two methods were chosen because they are relevant to the characteristics of the target area (Machrus, Mufidah, & Parwati, 2022) (ZA, et al., 2025), namely the community in Kedaung Village, which has great potential in organic waste management but still needs assistance and education to optimize this potential.

The ABCD approach is used because it focuses on exploring the assets, strengths, and potential of the community to achieve independence in environmental management (Green & Haines, 2016). Through this approach, the community is not positioned as a passive object, but rather as the main subject in social change (Setyawan, et al., 2018). The assets utilized in this activity include: Human resources (community members, students, and environmental leaders such as neighborhood association leaders); Local natural resources (abundant household organic waste); Educational resources and public facilities (Kedaung Public Elementary School and surrounding environment); and Social networks that have been established in the local community. By tapping into this potential, it is hoped that the community will be able to independently manage organic waste through maggot cultivation and develop sustainable activities that have both economic and ecological impacts.

The PAR method is applied to increase active community participation in every stage of the activity (Adji, 2021). This approach places the community as the main actor in the process of problem identification, implementation, evaluation, and follow-up. Students act as facilitators and assistants, not as sole instructors. The stages of implementing the PAR method in this activity include: Identification of problems and environmental potential through observation and discussion with the neighborhood association (RT) leader and residents; Socialization and education, namely the delivery of material on the benefits of maggots and simple techniques for their cultivation; Training and hands-on practice, where the community demonstrates how to make maggot breeding containers using composting buckets and practices feeding them with household organic waste; Joint evaluation and reflection to assess the effectiveness of the activity and the readiness of residents to

continue breeding independently; Follow-up plan, in the form of developing household-scale maggot breeding carried out together with the local neighborhood association (RT) leader.

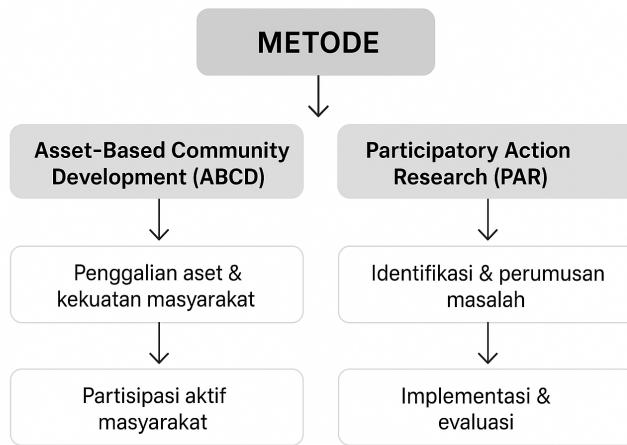


Figure 1. Flowchart of the ABCD and PAR Methods

RESULTS AND DISCUSSION

This community service activity was carried out through several planned stages. These stages included: socialization and coordination; delivery of educational material; practice; and evaluation of activities.



Figure 2. Stages of Community Service Activities

The first stage was socialization and coordination with the head of RT 02/RW 07, who was the main partner in the activity. At this stage, students introduced the basic concepts of maggot cultivation, its benefits to the environment, and the plan to educate residents. The community response was quite positive, marked by the support of RT officials and the willingness of residents to actively participate in the activities designed for three meetings.



Figure 3. Socialization and Coordination of Maggot Cultivation Implementation

The second stage involved delivering educational material on the use of maggots. The material covered an introduction to Black Soldier Fly (BSF) larvae, their life cycle, the types of organic waste that can be used as maggot feed, and the ecological and economic benefits of this cultivation. The community is taught that maggots can decompose organic waste 60-70% faster than natural processes, while also producing compost and livestock feed that has economic value. This activity is presented in simple language and accompanied by visual media to make it easy to understand.



Figure 4. Presentation of educational material on the use of maggots.

Next, the third stage involves hands-on practice in household-scale maggot cultivation. At this stage, students assist the community in making simple composters from plastic buckets, then demonstrate how to feed the maggots with household food waste. Participants are encouraged to try managing the organic waste produced in their own kitchens. This activity is an important moment because residents not only receive theoretical knowledge, but also gain practical skills that can be applied in their daily lives.



Figure 5. Maggot cultivation practices.

The implementation of this field practice showed a high level of enthusiasm and participation from the community. Residents actively asked questions, discussed the possibility of applying the practice at home, and even began collecting food scraps to use as test materials. This activity shows that a participatory approach can build a sense of belonging and responsibility towards the environment. The community, which previously paid little attention to waste management, is now beginning to realize that they have great potential to change the environment to be cleaner and more productive.

The evaluation results show a significant increase in public understanding of organic waste management and the benefits of maggots. Most participants stated that they gained new practical knowledge and intended to continue practicing maggot cultivation at home. In addition to increasing knowledge, this activity also created new economic opportunities for residents, such as selling maggots as fish or chicken feed, and using compost from decomposition for ornamental plants and household vegetables (Ahmad & Sulistiyowati, 2021).



Figure 6. Documentation after evaluation of maggot cultivation outreach activities.

The social impact of this activity is also quite significant. Residents who previously had no environmental awareness are now taking the initiative to separate organic and non-organic waste at home. The local neighborhood association chairman also plans to form a small group of residents to continue sustainable maggot farming. The collaboration between the community, students, and the environmental government has created positive synergy that is expected to become a model for community-based environmental management in other areas.

Overall, this activity proves that a participatory education approach based on local potential can increase environmental awareness while empowering the community. By combining the ABCD and PAR methods, the residents of Kedaung Village successfully identified environmental problems, explored local potential, and found sustainable independent solutions. Empowerment through maggot cultivation not only contributes to the reduction of organic waste, but also opens up creative economic opportunities that support community welfare and environmental sustainability (Sulaiman, Karim, Maharani, Anisa, & Gultom, 2023).

This type of maggot farming has a significant positive impact on the environment, especially in the management of household organic waste (Fauzi & Sari, 2018). Black Soldier Fly maggots or larvae can break down organic waste such as food scraps, vegetables, and fruit very quickly, reducing the volume of waste sent to landfills by more than half (Ridwan, Widayati, & Idris, 2021). This process helps reduce unpleasant odors, suppress the growth of houseflies that are a source of disease, and prevent water and soil pollution caused by the accumulation of organic waste. Thus, maggot farming serves as an ecological solution that supports the creation of a clean, healthy, and sustainable environment. In addition to providing environmental benefits, maggot farming also has an economic impact on the community. The maggot harvest can be used as high-nutrient feed for fish, chickens, and birds, thereby reducing dependence on expensive commercial feed (Ali, Mandra, Yusuf, Jumadin, & Suryana, 2024). In addition, the remaining maggot cultivation media can be processed into organic compost fertilizer that has commercial value and is beneficial for household farming. With simple skills and relatively small capital, this activity can become a productive business opportunity that increases community income while fostering awareness of the importance of an environmentally-based circular economy.

CONCLUSION

From the implementation of this activity, it can be concluded that this educational activity was able to increase residents' understanding of the importance of organic waste management using maggots as an environmentally friendly and sustainable solution. The community showed active involvement throughout the activity, both in the material presentation session, interactive discussions, and direct practice of maggot cultivation. In addition to environmental aspects, this activity also broadened the community's knowledge about the economic opportunities of maggot cultivation, such as the production of animal feed and compost fertilizer.

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