
TRAINING ON BENGAWAN SOLO WATER FILTRATION TECHNIQUES IN GAMPANG SEJATI VILLAGE, LAREN SUBDISTRICT, LAMONGAN REGENCY

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Abstract

Access to clean water is an essential aspect of a healthy society, as physical and mental well-being cannot be achieved without it. Despite its importance, many water sources are contaminated by household, industrial, and agricultural waste. To address the issue of clean water availability in the region, this community service program aimed to educate and empower residents of Gampang Sejati Village through the implementation of a simple water filtration method using Bengawan Solo River water. The program involved training, socialization, practical application, and evaluation. The primary objective was to equip the community with the knowledge and skills to create and use basic filtration systems that meet health and hygiene standards. A total of 25 community representatives participated in the training sessions, which included technical demonstrations, material introductions, and hands-on practice. Evaluation methods included post-training assessments to measure the effectiveness of knowledge transfer and community feedback. To ensure sustainability, the program proposed forming community groups to oversee the maintenance and improvement of the filtration systems. This initiative aims to provide a long-term solution to water contamination while fostering community responsibility for clean water management. This structured approach not only addressed immediate water filtration needs but also emphasized the importance of continuous education and local engagement for sustainable impacts.

INTRODUCTION

Access to clean water is a widely recognized determinant of a healthy society. Without it, achieving physical and mental well-being is impossible. While the importance of clean water is universally acknowledged, many water sources are contaminated by domestic, industrial, or agricultural waste. A simple approach to obtaining clean water is essential to ensure accessibility for all; however, simplicity should not compromise health standards. Contaminated water can pose severe health risks, leading to diseases such as typhoid, diarrhea, dysentery, ringworm, scabies, or other waterborne illnesses. Long-term exposure to chemically contaminated water may also result in chronic conditions like kidney damage, dental fluorosis, or anemia.

In the Bengawan Solo region, microbial contamination is a critical issue. Pathogenic microorganisms (including bacteria, viruses, and spores) pose significant health threats, while non-pathogenic contaminants may affect water's taste and odor. Addressing these challenges requires an appropriate, cost-effective, and user-friendly filtration technology that leverages locally available materials. The proposed simple filtration system incorporates activated carbon, sand, and gravel layers, which efficiently remove both pathogenic and non-pathogenic contaminants, ensuring compliance with health standards.

This community service initiative aims to assist local residents by introducing a technically feasible and affordable water filtration solution specifically tailored to the contamination challenges in the Bengawan Solo area. Furthermore, it builds upon existing methods by emphasizing sustainability, ease of implementation, and community empowerment.

METHOD

The community service program consisted of training, socialization, hands-on practice in basic water filtration using Bengawan Solo water, and evaluation. The residents of Gampang Sejati Village were provided with training and socialization sessions at the Gampang Sejati Village Hall. These sessions aimed to introduce them to simple filtration techniques to treat Bengawan Solo water, making it suitable for daily use. The program actively involved the village head and government officials to ensure community-wide engagement.

Led by lecturer Marsha Savira Agatha Putri, S.ST, M.Sc., and supported by students, the training sessions included both theoretical lectures and practical workshops. Participants were trained and guided in building simple water filtration devices using locally accessible materials, such as plastic bottles, sponges, fine sand, gravel, cotton, dacron cloth, and sponges. The

filtration device was designed for simplicity and effectiveness: cutting a plastic bottle, layering it with sponge, gravel, dacron cloth, and sand, and assembling it to filter water.



Figure 1
Filtration Manufacturing Training

Evaluation Methodology

A structured evaluation framework was implemented to measure the program's effectiveness. The evaluation included pre-tests and post-tests to assess participants' knowledge and skills before and after the training. Direct observation and product assessment were conducted to evaluate the functionality and quality of the filtration devices created by participants. Additionally, satisfaction surveys were distributed to gather feedback on the training process.

Sustainability and Follow-Up Plans

To ensure the program's sustainability, a community working group was established to monitor and promote the continued use of filtration devices. Periodic follow-ups were planned to provide technical support and address challenges faced by the participants in implementing the filtration techniques. These measures aimed to embed the use of filtration systems into the daily lives of the community and foster long-term benefits from the initiative.

Through these comprehensive steps, the program not only equipped the residents with practical skills but also encouraged a culture of clean water utilization in Gampang Sejati Village.

RESULTS AND DISCUSSION

The basic water filtration training using Bengawan Solo water was a part of a community service program conducted in Gampang Sejati Village, Laren Subdistrict, Lamongan Regency. This initiative began with an orientation phase and preliminary observations to assess the community's baseline understanding of water filtration benefits. The training targeted key community figures and involved obtaining necessary permissions and support from the village head and local authorities.

The program invited 25 village representatives, including the village head and government officials, to participate. The training sessions introduced the materials and techniques for constructing simple filtration devices using locally available resources. Led by lecturers and supported by students, the participants engaged in hands-on workshops to assemble filtration devices. These devices effectively transformed murky water into clean water, demonstrating the ease and efficiency of the technique.



Figure 2
Filtration Manufacturing Practice

The evaluation process revealed that participants were generally able to replicate the filtration construction techniques at home. The simplicity of the materials contributed to their ability to execute the process independently. However, the filtration process itself required extended time to purify murky water into potable water. Despite this, the participants demonstrated adequate understanding and practical skills in implementing the filtration system.

A qualitative assessment of participant comprehension was conducted via post-training surveys and direct observation. Most participants could articulate the principles behind water filtration and effectively construct devices that produced satisfactory results. However, further analysis indicated variability in filtration quality, with some participants requiring additional guidance to achieve optimal results. This underscores the need for supplementary follow-ups to ensure consistent application.

While participant attendance was limited due to work commitments, additional challenges emerged during the program. These included difficulties in sourcing filtration materials for some participants and a lack of initial technical knowledge, which prolonged the learning curve for certain individuals. Addressing these barriers in future programs, such as by providing starter kits or additional support sessions, could enhance participation and outcomes.

CONCLUSION

the community service program conducted in Gampang Sejati Village successfully introduced a simple and cost-effective water filtration technique using Bengawan Solo water. Through a structured process of training, hands-on workshops, and evaluation, participants gained practical knowledge and the ability to construct filtration devices independently. The program addressed the community's immediate need for clean water while promoting sustainable practices.

However, challenges such as limited participant availability, variability in filtration outcomes, and initial material sourcing issues highlight areas for improvement. These findings emphasize the necessity of follow-up sessions, consistent community engagement, and the establishment of a local task force to ensure the long-term sustainability of the program.

Future initiatives should focus on scaling up participation, refining the filtration techniques, and incorporating monitoring mechanisms to evaluate water quality and user satisfaction over time. By addressing these aspects, such programs can significantly enhance public health and environmental outcomes while fostering community resilience.

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