



BUILDING A WASTE-AWARE COMMUNITY THROUGH EDUCATIONAL SIGNS

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Abstract:

The proliferation of products sold in single-use packaging has contributed to the increase in waste volume in Sidorejo, Kotaanyar District, Probolinggo Village Regency. Many residents are unaware that waste such as plastic, beverage bottles, sachets, cans, and glass can take decades to hundreds of years to decompose. Through the Community Service Program, students from Zainul Hasan Genggong Islamic University (UGI) created educational signs explaining the types of packaging waste and their biodegradation times. The signs were installed at strategic locations for easy reading and understanding by residents. Using simple language and clear information, this activity aims to raise awareness that even small amounts of waste, if disposed of carelessly, can have long-term environmental impacts. This program received a positive response and marked the first step in building a shared commitment to the cleanliness and environmental sustainability of Sidorejo, Kotaanyar District, Probolinggo Village Regency.

Keywords: Public Awareness, Waste, Educational Signs service.

INTRODUCTION

Waste management remains a crucial environmental issue, both in urban and rural areas. Population growth coupled with changes in consumption patterns have led to an increase in the volume of waste generated daily. Lack of adequate management systems has the potential to cause various ecological impacts, such as water, soil, and air pollution, as well as risks to public health. Therefore, waste management cannot be viewed solely as a technical issue, but rather as a multidimensional issue encompassing social, environmental, and behavioral aspects.

In Sidorejo Village, Kotaanyar District, Probolinggo Regency, the waste problem is also an issue that requires collective attention. As community activity and household consumption increase, the volume of waste generated also increases. However, awareness among some residents about the importance of disposing of waste properly, sorting waste, and maintaining environmental cleanliness remains unequal. This is evident in the persistent trash found on roadsides, gutters, vacant lots, and around public facilities.

Normatively, Law Number 18 of 2008 concerning Waste Management affirms that every individual has the right and obligation to manage the waste they produce. However, implementation at the community level demonstrates a low level of public awareness and participation. The practice of littering, burning waste without proper procedures, and the lack of a culture of sorting waste by type demonstrate that the

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waste problem is closely related to behavioral patterns and the level of environmental literacy in the community.(Nababan, 2024).

Waste can be defined as the remains of human activities or natural processes in solid or semi-solid form, consisting of organic and inorganic materials, both biodegradable and difficult to decompose naturally, and no longer have any use value for their owners. In an environmental context, waste has become an increasingly worrying problem in Indonesia, including in Siderejo Village. Population growth accompanied by changes in consumption patterns and lifestyles are the dominant factors driving the increase in waste generation.(Bagi & Ut, 2024)

Waste accumulation that is not optimally managed has the potential to cause various negative impacts, such as air, water, and soil pollution. Besides degrading environmental quality, this condition can also trigger various diseases and disrupt the aesthetics and comfort of residential areas.

The current waste problem requires comprehensive and collaborative efforts from various parties. The challenge becomes even more complex when dealing with inorganic waste that is difficult to decompose, such as plastic, cans, and Styrofoam, which take a very long time to undergo natural degradation. Therefore, sustainable management strategies and increased public awareness are needed to reduce and manage waste responsibly.

Lack of understanding of the long-term impacts of waste, particularly inorganic waste like plastic, cans, and Styrofoam, which take a long time to decompose, presents a particular challenge in rural areas. Information about the long-term degradation process of waste has not been optimally disseminated. Yet, various studies have shown that educational approaches based on visual and contextual media are more effective in building ecological awareness than solely delivering information verbally.

Environmental education plays a strategic role in encouraging increased public participation in waste management. When communities are provided with a comprehensive understanding and actively involved in the planning and implementation of activities, a sense of collective responsibility for environmental sustainability is fostered.(Amanda et al., 2025)Community empowerment approaches, such as the Asset-Based Community Development (ABCD) model, emphasize optimizing local potential and assets as the foundation for sustainable social change, so that communities are not only objects, but also subjects in the environmental development process.

One effective and accessible form of education is through the installation of educational signs at strategic points in the village. Educational signs serve as reminders, invitations, and reinforcement of messages about the importance of maintaining a clean environment, disposing of waste properly, and developing healthy living habits. With concise, clear, and engaging messages, educational signs are expected to foster collective awareness and gradually change community behavior.

A number of previous studies have shown that visual media-based educational approaches, such as installing educational signs or information boards, can increase public knowledge and awareness regarding waste management.(Sivanni et al., 2024)Although behavioral change requires time and is a continuous process, structured educational interventions have been shown to have a positive impact on increasing community participation in maintaining environmental cleanliness.

Based on these conditions, the "Building a Waste-Aware Community Through Educational Signs in Sidorejo Village, Kotaanyar District, Probolinggo Regency"

activity is crucial as a concrete effort to increase environmental awareness. This activity aims not only to improve physical cleanliness but also to build awareness, responsibility, and a culture of clean living in the Sidorejo Village community, Kotaanyar District, Probolinggo Regency, in a sustainable manner.

RESEARCH METHODS

This program was implemented in Sidorejo Village, Kotaanyar District, Probolinggo Regency during the KKN period of students from Zainul Hasan Genggong Islamic University on January 7 to February 5, 2026. The main subjects in this activity were residents of Sidorejo Village, Kotaanyar District, Probolinggo Regency, with a special focus on housewives and teenagers who are active in daily consumption activities. The approach used is Asset-Based Community Development (ABCD), which works by appreciating and optimizing local potential that already exists in the village. (Ink & Year, 2024)

The first step begins with the Discovery phase, where we take a family-like approach to discovering village assets. We don't come with a list of problems, but instead engage residents in a relaxed discussion about their shopping habits and the types of market-branded packaging waste they generate most. Next, we move on to the Dream phase, where we encourage residents to imagine the future of Sidorejo Village, Kotaanyar District, Probolinggo Regency, if their environment remains clean and healthy. Here, we incorporate education that awareness must begin now to prevent plastic waste from accumulating for hundreds of years to come. In the Design phase, we, along with community representatives, designed a communicative educational sign. The information displayed focuses on the decomposition time of waste they frequently encounter in the market, such as plastic bottles, beverage cans, and Styrofoam. This visual sign was chosen because it effectively serves as a reminder or visual "notification" for residents when passing through public areas. The next phase is Define, which involves the concrete action of creating the waste education sign. Residents are actively involved in this process, from preparing materials to determining the installation location. Direct community involvement is crucial to fostering a sense of ownership in the program. Finally, the Destiny phase concludes with the installation of signs at designated locations. We hope that these educational signs will not only educate the residents of Sidorejo, Kotaanyar District, Probolinggo Regency, but also inspire them to become more informed and sustainable in their waste management.

RESULTS AND DISCUSSION

The program, held in S Sidorejo Village, Kotaanyar District, Probolinggo Regency, is designed to make positive contributions across multiple dimensions, including economic aspects, local policies, and changes in community social behavior. The program aims to provide added value through an educational approach focused on increasing community environmental awareness.

One concrete implementation of this activity was the creation and installation of educational signs about waste decomposition times. This program aimed to increase public understanding of the long-term impacts of littering. The implementation demonstrated a positive response from residents, particularly in terms of increased knowledge about waste types and the length of time it takes for them to decompose in the environment.



Figure 1 Educational Sign Making and Installation Process

Inorganic waste is waste derived from non-biological materials, such as metal, plastic, rubber, cans, and glass. The main characteristic of this type of waste is that it is difficult to decompose naturally because it cannot be decomposed quickly by microorganisms. However, some types of inorganic waste still have economic value because they can be recycled or reused, such as plastic bottles, Styrofoam, newspaper, and cans. However, in general, inorganic waste takes a very long time to decompose, potentially causing long-term ecological impacts if not managed properly and sustainably.

The initial phase began with a step of discovery and dreaming, a process in which students shed formal academic attributes to become one with the pulse of the daily lives of the residents. The students realized that the greatest asset of Sidorejo Village, Kotaanyar District, Probolinggo Regency, is the village market, which serves as an economic center. However, on the other hand, the high market activity is also a major source of plastic waste. Through warm dialogues on residents' porches and casual chats in coffee shops, we heard the community's longing for a beautiful village free from the unpleasant odors caused by unmanaged waste.

However, a psychological obstacle encountered in the field is that residents often lack a compass or visual reminders that can instantly alert them when they want to throw away trash in public areas. In line with this thinking, one of the root causes of poor cleanliness is the lack of instructions or visual reminders (notifications) at strategic points. Therefore, our planning focused on designing educational media that is non-judgmental, but rather informative. We involved community leaders and village youth in discussions to determine the most touching language diction and installation locations so that this program does not feel like an external intervention, but rather a movement born from the womb of Sidorejo Village, Kotaanyar District, Probolinggo Regency.

During the implementation (define) phase, students and the community collaboratively installed visual educational signs at strategic locations that serve as hubs of community activity. Educational media placement focused on areas with high mobility, ensuring the message reached a broad and sustainable audience. The materials displayed specifically highlighted products commonly consumed and traded in the market, ensuring the information was directly relevant to residents' daily lives.

The information contained on the signs includes data on the types of daily consumer waste and estimated decomposition times in the environment. Some of the types of waste that are of primary concern include:(Khoirunnisa et al., 2026)

1. Used plastic beverage bottles, which is the most dominant type of waste found in Sidorejo Village, Kotaanyar District, Probolinggo Regency. This material is estimated to take approximately 450 years to decompose naturally, potentially causing long-term impacts across generations if not managed properly.
2. Aluminum beverage cans, which is widely used in trade and consumer activities. This type of waste takes a long time to decompose, between 80 and 200 years.
3. Styrofoam, commonly used as disposable food containers. This material is very difficult to decompose naturally and tends to persist for very long periods in the environment, potentially contributing to the ongoing accumulation of waste.

The presentation of this information aims to increase public awareness regarding the ecological consequences of everyday consumer waste, as well as encourage behavioral changes towards more responsible and sustainable waste management practices.



Figure 2 Waste Awareness Educational Signs at Several Locations

The presence of this sign in an open space serves as both an informational medium and an effective form of education. Passersby pause, stunned by the numbers, and begin to realize that the fleeting comforts of commercial products come at a high cost to nature. The sign's installation also becomes a gathering place, with residents volunteering to provide tools and labor, demonstrating that the seeds of concern are being planted.

As a final step, an evaluation was conducted to assess the effectiveness of the signs as a form of visual notification in influencing people's daily behavior. The evaluation results showed significant changes, marked by discussions among housewives about the importance of bringing their own shopping bags to reduce the use of single-use plastic bags. Educational signs about waste decomposition times proved effective in increasing residents' knowledge because they functioned as passive reminders that were constantly present in the midst of their activities.

Furthermore, the evaluation results showed a significant increase in community participation. Resident involvement from the planning stage to implementation fostered a strong sense of belonging to the program. This was reflected in a shared commitment to maintaining and caring for the signboard independently. In the final

stage of the ABCD approach, namely destiny (sustainability), the program management baton was handed over to the Karang Taruna (Youth Organization) of Sidorejo Village, Kotaanyar District, Probolinggo Regency, to strengthen local capacity and ensure program sustainability.

These findings demonstrate that education delivered visually, honestly, and with a humanistic approach can foster independent and sustainable environmental awareness. The changes observed are not only evident in the physical cleanliness of the village, but also in the transformation of the community's mindset regarding environmental preservation for future generations.

This educational signage program is designed as an intervention to increase public awareness regarding the long-term impacts of littering behavior.(Dan et al., 2024)The low level of public understanding of the importance of proper waste management, coupled with limited human resources and supporting facilities, are major challenges in building an effective waste management system. These conditions indicate the need for an educational approach that is not only informative but also capable of encouraging sustainable behavior change.

As a follow-up, one alternative solution that can be developed is processing waste into products with utility and economic value. This approach has the potential to reduce waste volume while opening up opportunities to improve community welfare through the reuse of materials previously considered worthless.

On the other hand, a program to install educational signs on waste sorting in Sidorejo Village, Kotaanyar District, Probolinggo Regency, East Java, has shown a positive impact in fostering environmental awareness. The signs were installed at strategic points, such as the area around the village hall, which is frequently passed by residents, and around schools in Sidorejo Village. This helped increase public understanding of the types of waste and the length of the decomposition process for each type. This demonstrates that visual media-based education can encourage active community participation and shift the public's mindset from a passive attitude to a more concerned attitude towards environmental sustainability.

Furthermore, using signs as a medium for disseminating information has the potential for broader educational reach because they are accessible to a wide range of age groups, from children to the elderly. Visual media placed in public spaces allows environmental messages to be conveyed sustainably and easily understood by the public without relying on face-to-face outreach activities.

Visually conveying information in open spaces has proven effective in increasing public understanding of environmental issues. The use of symbols, icons, and communicative visual messages in public areas can encourage changes in attitudes and behaviors toward maintaining environmental cleanliness and sustainability. Consequently, people are beginning to demonstrate more concrete behavioral changes, such as reducing the use of single-use plastics and paying greater attention to waste management in their daily lives.

CONCLUSION

The implementation of a community service program in Sidorejo Village, Kotaanyar District, Probolinggo Regency, shows that a visual media-based environmental education approach through the installation of waste decomposition time information signs has made a significant contribution to increasing public awareness and participation in waste management. The main problems found, such

as low environmental literacy, the habit of littering, and suboptimal waste sorting practices, can be responded to through communicative, contextual, and sustainable intervention strategies.

The implementation of the Asset-Based Community Development (ABCD) approach has proven effective in encouraging active community involvement from the planning stage through program implementation. This participation fosters a strong sense of ownership in the program, ensuring its sustainability depends not only on the initiator but also on the community's collective commitment. The presence of signs as a permanent educational tool in public spaces serves as a consistent visual reminder, reinforcing the internalization of environmental values in everyday life.

The evaluation results indicate changes in public mindsets and behavior, including increased awareness of reducing single-use plastic use and greater attention to household waste management. These findings confirm that successful waste management is not solely determined by the availability of infrastructure, but also by the effectiveness of educational strategies that encourage active participation and behavioral transformation.

For further development, this program has the potential to be expanded by integrating waste processing and recycling activities with economic value. Future research could focus on measuring the long-term impact on community behavior change and replicating the visual education model in other rural contexts.

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