



JPM

Jurnal Pengabdian Mandiri

Volume 3 Issue 1, 2026 (1-6)

ISSN (online) : 3089-3070

Homepage : <https://jurnalunived.com/index.php/MANDIRI>

Doi : <https://doi.org/10.37676/mandiri>

KKN-T Program: Environmental Education Through the Creation of Road Signs and Handicrafts from Recycled Materials for the Community of Pintu Batu

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Received [30 April 2026]

Revised [01 Juni 2026]

Accepted [03 Juni 2026]

Abstract. Pintu Batu Village faces challenges regarding the completeness of environmental information infrastructure in the form of street signs and the management of inorganic waste, which has not been utilized creatively. This community service activity aims to improve environmental order and resident creativity through mutual cooperation, the installation of street signs in RT 02, and handicraft training using recycled materials. Furthermore, early childhood education regarding the importance of proper waste disposal was provided to the children of TK Cerdik Pintu Batu through engaging approaches such as morning exercises and collective coloring activities. The method employed is a participatory-educational approach involving coordination with local officials and direct hands-on practice with the residents. The results of the activity indicate an increase in citizen participation in mutual cooperation and the creation of recycled products such as flower pots from plastic bottle and beverage baskets from plastic cup waste. The existence of new street signs facilitates easier navigation within the neighborhood, while the educational activities at the kindergarten level strengthen the foundation of environmental awareness from an early age.

Keywords: *Mutual Cooperation, Street Signs, Handicrafts, Recycled Materials, Pintu Batu Village.*

INTRODUCTION

Environmental cleanliness and orderliness are essential prerequisites for improving the quality of life of communities. These aspects are closely associated with the implementation of Clean and Healthy Living Behavior (Perilaku Hidup Bersih dan Sehat / PHBS) as well as the availability of adequate environmental information infrastructure. PHBS is defined as health-related behavior carried out consciously, enabling individuals and families to maintain their own well-being and actively participate in community activities, including creative waste management and the maintenance of environmental order (Ministry of Health of the Republic of Indonesia, 2016).

From an environmental health perspective, improperly managed inorganic waste can lead to environmental pollution and pose significant health risks (WHO, 2025). Conversely, inorganic waste such as plastic holds considerable economic potential when managed through creative approaches. However, in many residential areas, such waste has not been optimally utilized. In addition to waste-related issues, environmental navigation elements, such as the availability of road signage, constitute an important part of environmental information infrastructure that supports orderliness and regional accessibility.

In Indonesia, waste management is supported by a strong legal framework through Law Number 18 of 2008, which emphasizes that waste management must be conducted

systematically, encompassing both waste reduction and waste handling (Republic of Indonesia, 2008). This policy is further reinforced by Presidential Regulation Number 97 of 2017 (Jakstranas), which promotes waste reduction at the source through active community involvement. Therefore, strengthening community creativity in recycling inorganic waste into value-added products represents a concrete form of grassroots-level implementation of these regulations.

Pintu Batu Subdistrict is one of the areas facing challenges related to the adequacy of environmental information infrastructure and waste management. Specifically, in RT 01 and RT 02, sufficient road signage is not yet available to facilitate effective navigation. In addition, the area possesses a substantial amount of inorganic waste that has not been creatively utilized by local residents. This gap between waste availability and residents' capacity to process it productively indicates the need for intervention through community service activities.

The success of environmental management at the level closest to waste sources (RT/RW) is highly dependent on community participation through a culture of gotong royong (mutual cooperation). Such participation extends beyond routine cleaning activities to include the strengthening of local identity through the provision of physical facilities and creativity-based empowerment. Educational activities combined with hands-on practice in producing handicrafts from recycled materials can serve as an effective means of transforming community perceptions toward plastic waste (Notoatmodjo, 2014).

Based on this background, the community service program entitled "Enhancing Environmental Order and Community Creativity through Mutual Cooperation, Road Sign Installation, and Recycled Craft Training in Pintu Batu Subdistrict" was designed as a solution to the identified problems. This program focuses on two main aspects: the provision of navigation infrastructure in the form of road signage and training in the production of recycled goods such as flower pots and beverage baskets. Through a participatory and educational approach, the program is expected to enhance community independence in managing the environment in a sustainable, creative, and self-reliant manner.

RESEARCH METHODS

This study employed a participatory qualitative approach that emphasized active community involvement throughout the planning, implementation, and evaluation of the program. This approach was considered appropriate for capturing contextual environmental conditions, identifying community needs, and facilitating collective action related to environmental order and creative waste management in the local setting.

The community service activities were conducted in RT 02 of Pintu Batu Subdistrict as well as at TK Cerdik Pintu Batu, located in Bengkulu City. The participants consisted of local residents, neighborhood administrators (RT officials), and kindergarten students. These groups were selected based on their direct engagement with environmental practices and their relevance to the objectives of the program, particularly in terms of waste management, environmental cleanliness, and early environmental education.

Data collection was carried out using qualitative techniques, including field observation, interviews, and focus group discussions. Field observations were conducted to identify areas prone to waste accumulation and to determine strategic locations for the installation of road signage. In addition, semi-structured interviews and focus group discussions with RT administrators were used to map community needs related to environmental facilities and to reach consensus on the scheduling and organization of collective gotong royong activities.

The implementation phase consisted of a series of integrated activities designed to address both environmental and educational aspects. Collective gotong royong activities were carried out with community members to clean drainage systems and public areas within Pintu Batu Subdistrict, aiming to improve environmental cleanliness and neighborhood order. In

parallel, road name signs were designed and installed in RT 01 and RT 02 to enhance local accessibility and strengthen environmental information infrastructure. To promote creative waste utilization, handicraft workshops were conducted to train residents in producing flower pots from used plastic bottles and assembling beverage baskets from discarded plastic cups through manual processes.

In addition to community-based activities, environmental education was provided to students at TK Cerdik Pintu Batu. These activities focused on introducing proper waste disposal behavior and environmental awareness among children, and were complemented by morning exercise sessions and a coloring competition to encourage active participation and engagement in a child-friendly learning environment.

Table 1. KKN-T Group 57 Activities in RT 02, Pintu Batu

Date	Program	Description	Documentation
14 January 2026	Installation of road signs	Installation of road signs at RT.02 together with residents and the RT head	
18 January 2026	Socialization Regarding cleanliness	Joint counseling with children from the Cedik Kindergarten in the Pintu Batu neighborhood and coloring together about the importance of cleanliness and disposing of garbage in its proper place.	

Source: Primary data processed, 2026.

RESULTS AND DISCUSSION

The implementation of the program produced several interconnected outcomes related to community participation, environmental order, creative waste utilization, and environmental education. These results demonstrate the effectiveness of integrating participatory action with educational interventions at the neighborhood level.

The activities began with the strengthening of community engagement through collective gotong royong involving residents of Pintu Batu. This communal action served as an effective entry point for fostering shared responsibility and collective habits in maintaining environmental cleanliness. The involvement of the KKN-T team alongside local residents facilitated the installation of road signage at strategic points in RT 01 and RT 02. The presence of these road signs directly addressed the issue of disorganized navigation information within the area,

improved accessibility for visitors, and reinforced the spatial identity of the neighborhood. From an environmental management perspective, the provision of clear navigational infrastructure also contributed to greater territorial order and community pride.

In parallel, the program introduced innovation in handicraft production through the utilization of inorganic waste. To strengthen routine cleanliness practices, community members were trained to process plastic waste into functional products. Used plastic bottles were creatively transformed into decorative flower pots, enhancing the aesthetic quality of residential yards, while discarded plastic cups (Aqua cups) were manually assembled into functional beverage baskets. The provision of these practical skills acted as an enabling factor, allowing residents to adopt recycling behaviors consistently without financial barriers related to equipment or materials. This finding aligns with behavior change theories that emphasize the importance of skill availability and ease of implementation in sustaining pro-environmental practices.

Environmental education was also directed toward early childhood groups to instill Clean and Healthy Living Behavior (PHBS) values from an early developmental stage. Activities conducted at TK Cerdik Pintu Batu included socialization sessions on waste management, focusing on differentiating waste bins and understanding the importance of maintaining school cleanliness. These educational sessions were complemented by morning exercise activities and environmental-themed coloring sessions. Morning exercises helped build emotional closeness between university students and children, while coloring activities served as a visual and creative medium to foster children's affection for nature and environmental awareness. Such approaches are considered effective in early childhood education, as they combine cognitive, emotional, and motor development.

An analysis of behavioral change and environmental impact indicates that the integration of educational methods and participatory physical activities successfully shifted community attitudes from passive to active engagement. Program documentation revealed high levels of enthusiasm among residents and school stakeholders throughout the implementation process. This positive response suggests that participatory and context-based interventions are more readily accepted and internalized by the community. The anticipated long-term impact of the program includes sustained community commitment to maintaining the installed infrastructure and the continued development of a recycling culture within the neighborhood. These outcomes highlight the potential of community-based environmental initiatives to generate lasting behavioral change when supported by collective action and practical skill development.

CONCLUSION

The implementation of the KKN-T program in Pintu Batu Subdistrict successfully achieved its objectives by integrating physical infrastructure development, creative economic empowerment, and early character education. The program demonstrates that environmental issues such as waste accumulation and the lack of neighborhood information infrastructure can be effectively addressed through a participatory and educational approach that involves all segments of the community, ranging from neighborhood administrators to preschool-aged children.

Overall, the program succeeded in fostering a sense of collective responsibility toward environmental cleanliness and promoting community independence in household waste management. These outcomes indicate that community-based interventions, when supported by active participation and practical skill development, can encourage sustainable behavioral change. Furthermore, the implementation of the program aligns with the legal framework of Law Number 18 of 2008 on systematic waste management and Presidential Regulation Number 97 of 2017, which emphasizes the strengthening of facilities and community involvement at the grassroots level.

To ensure sustainability and to expand the impact of the program, several recommendations can be proposed. Continuous socialization and environmental education activities should be conducted regularly to maintain public awareness and to disseminate updated information related to environmental cleanliness. The educational content may be varied through visual media, community group announcements, or simple activities such as neighborhood or block-level cleanliness competitions to sustain community interest and engagement.

In addition, the empowerment of community-based cleanliness groups should be strengthened by forming or reinforcing small groups involving RT officials, women, and youth as key drivers of environmental activities. These groups can be supported through task allocation, scheduled duties, and the provision of additional cleaning equipment to enable independent and consistent program implementation.

At the RT level, the establishment of a basic cleanliness and waste management system is also recommended. This may include routine communal work schedules, clearly designated waste disposal locations, and organized waste collection mechanisms. Where feasible, simple innovations such as waste separation, waste banks, or household organic waste processing (composting) can be introduced to reduce overall waste generation.

To enhance resource availability and program effectiveness, collaboration with various stakeholders should be encouraged. RT and RW administrations may cooperate with subdistrict or district authorities, environmental cadres, community organizations, and private sector partners or corporate social responsibility (CSR) programs to support environmental initiatives through facilities provision, training, and strengthened cleanliness campaigns.

Finally, regular monitoring and evaluation are essential to identify potential waste-related problem areas and to assess the implementation of cleanliness programs. Periodic evaluation enables the identification of emerging challenges, ensures that activities are conducted as planned, and supports the formulation of corrective actions. Through continuous monitoring and adaptive improvements, efforts to maintain environmental cleanliness can be sustained and strengthened over time.

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