

Utilizing Plastic Waste as a Source of Creativity in Ecobrick Training in Purana Village

Afita Cahyaning Suci ^{a,1*}, Arief Syaefudin ^{b,2}, Dewi Ainia Mufiatun Nafisah ^{c,3}, Lutfiah Hanifah ^{d,4}, Naili Mufrodah ^{e,5}, Nalim ^{f,6}

a, b, c, d, e, f UIN K.H. Abdurrahman Wahid, Pekalongan, Indonesia

¹ afitacahyaningsuci@mhs.uingusdur.ac.id *; ² ariefsyaefudin@mhs.uingusdur.ac.id; ³ dewiainiamufiatunnafisah@mhs.uingusdur.ac.id

⁴ lutfiahhanifah@mhs.uingusdur.ac.id; ⁵ nailimufrodah@mhs.uingusdur.ac.id; ⁶ nalim@uingusdur.ac.id

* Corresponding author

ARTICLE INFO

Article history

Received: September 26, 2024

Revised: November 26, 2024

Accepted: December 29, 2024

Keywords

Plastic waste

Creativity

Ecobricks

ABSTRACT

The current situation regarding plastic waste production presents a formidable challenge that society grapples with daily. The pervasive use of plastic has become nearly inescapable, infiltrating every aspect of our lives, from packaging to consumer goods. This escalating reliance on plastic exacerbates environmental pollution and significantly threatens the ecological balance. The longevity of plastic waste is alarming; it can take hundreds of years to decompose naturally, accumulating vast amounts of waste in landfills and natural habitats. Furthermore, the polymers in plastic are porous, contributing to the gradual increase in air temperatures as they trap heat, further intensifying the global climate change crisis. In response to this pressing issue, the KKN Team Batch 56 Group 33 from UIN K.H. Abdurrahman Wahid Pekalongan initiated a proactive approach by organizing ecobrick training sessions to transform plastic waste into a medium for creativity within Purana Village. This innovative program employed a multifaceted methodology, including socialization to raise awareness, interactive question-and-answer sessions to engage the community, and hands-on training to equip participants with the necessary skills to create eco-bricks. These eco-bricks serve as a practical solution for repurposing plastic waste and as a means to foster community spirit and environmental consciousness. The culmination of this initiative resulted in heightened awareness among community members regarding the significance of creatively utilizing plastic waste. The project's tangible outcome was installing eco-bricks in Kampung Baru Hamlet, transforming them into decorative elements that enhance the streetscape while simultaneously serving as a poignant reminder of the potential for waste to be repurposed. This initiative addresses the immediate concerns surrounding plastic waste and inspires a broader movement towards sustainable practices within the community, ultimately contributing to a cleaner and more environmentally responsible future.



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1. Introduction

To address the serious environmental issues caused by plastic waste, KKN 56 Group 33 introduced an innovative solution: Ecobrick Based on Plastic Recycling. Plastic waste pollution has escalated into a global crisis, as the material is difficult to decompose. The introduction of ecobrick training serves as a practical solution and an educational initiative to foster environmental awareness among community members (Sunandar, 2020: 116). This training was conducted at the Purana Village Hall, located in the Bantarbolang District of Pemalang Regency, a region that, like many others, grapples with the challenges posed by plastic waste.

An eco brick is essentially a plastic bottle that is densely packed with non-biodegradable waste, transforming it into reusable building blocks, which are also referred to as bottle bricks or ecoladrillos (Husna, 2019: 100). The term "eco brick" has emerged from a global community movement that seeks

to repurpose plastic waste creatively. This innovative approach addresses the pressing waste management issue and encourages community participation and environmental stewardship. The eco-brick training organized by UIN Gusdur Pekalongan KKN students was structured into three distinct phases: the first phase involved an introduction and explanation of eco-bricks; the second phase focused on collecting waste and forming eco-bricks; and the third phase centred on assembling the eco-bricks into a cohesive structure.

The initial phase, which took place on Wednesday, July 12, 2023, began with an engaging socialization session designed to raise awareness about the dangers of plastic waste. During this session, the residents of Purana Village displayed remarkable enthusiasm, actively participating and expressing their concerns about the environmental impact of plastic pollution. The enthusiasm was palpable as community members gathered at the village hall, eager to learn about sustainable practices that could mitigate the effects of plastic waste in their surroundings. This initial engagement was crucial, as it laid the foundation for the subsequent phases of the training.

The second phase, conducted on July 31, 2023, involved the practical aspect of the ecobrick initiative: collecting waste to be processed into ecobricks. Participants were instructed on identifying and gathering suitable non-biodegradable materials, such as plastic wrappers, bottles, and other types of waste that typically contribute to environmental degradation. This hands-on experience reinforced the theoretical knowledge gained in the first phase and fostered a sense of community as residents collaborated to gather materials. Collecting waste became a communal effort, highlighting the importance of teamwork in addressing environmental issues.

The third phase, held on August 14, 2023, focused on assembling the eco-bricks. Participants learned how to properly pack the collected waste into plastic bottles, ensuring they were tightly filled to create sturdy building blocks. This phase was particularly rewarding, as it allowed residents to witness the tangible results of their waste collection and processing efforts. Based on a mutual agreement, the students and residents arranged the eco brick bottles into the word "PURANA," strategically placed near the entrance arch of Dusun Kampung Baru in Purana Village. This beautified the area and served as a permanent reminder of the community's commitment to environmental sustainability.

The ecobrick initiative aims to positively impact the residents of Purana Village by significantly reducing pollution caused by non-organic waste. Non-organic waste is notoriously difficult to decompose, often leading residents to resort to burning such waste as a means of disposal. This practice poses serious health risks and contributes to air pollution. In contrast, used plastic bottles, such as those from drinking water or other beverages, are typically collected and sold to recyclers in nearby Kedungampel hamlet. However, this recycling practice is not common in Purana Timur and Purana hamlets, exacerbating the waste problem in these areas. The ecobrick training conducted by UIN Gusdur Pekalongan KKN students is thus expected to catalyze positive change, encouraging residents to adopt more sustainable waste management practices.

The ecobrick process and its material requirements foster creativity and collaboration among residents. By engaging in this initiative, community members are empowered to manage waste effectively, reducing pollution caused by burning non-organic materials. Additionally, the ecobrick project raises awareness about the importance of reducing plastic usage and protecting the environment (Suidarma & Antini, 2023: 160). This multifaceted approach not only addresses the immediate issue of waste management but also instils a sense of responsibility towards environmental conservation among the participants.

The stages of the ecobrick workshop were meticulously planned to ensure that they aligned with the ecobrick-making process. The first stage involved a comprehensive introduction to eco-bricks, covering what they are, the materials needed, and how the process works. This foundational knowledge was crucial, as it equipped residents with the necessary understanding to engage actively in the subsequent stages. The emphasis on theory ensured that participants were well-prepared and motivated to contribute effectively to the practical aspects of the initiative.

During the second stage, participants were allowed to engage in hands-on practice to process the collected waste into eco-bricks following the instructions shared in the first stage. This experiential learning component was vital, providing residents with the skills and confidence to replicate the process independently. The excitement in the room was palpable as residents took turns packing the bottles, sharing tips and techniques, and celebrating their collective progress.

Finally, the third stage involved assembling the processed waste into a single unit arranged in plastic bottles according to the desired form. This stage was about creating a visually appealing structure and reinforcing the sense of community that had developed throughout the training. The collaborative effort to arrange the eco brick bottles into the word "PURANA" symbolized the unity and commitment of the residents towards a common goal: environmental sustainability.

Ecobricks can be utilized to create a variety of functional and decorative items, including furniture, garden spaces, and even full-scale structures (Yusiyaka & Yanti, 2021: 72). The versatility of ecobricks underscores their potential as a sustainable building material, offering an innovative solution to the challenges posed by plastic waste. The culmination of this workshop, marked by the creation of the word "PURANA," beautified the welcome arch of Purana Village and demonstrated the transformative potential of effective waste management practices.

In conclusion, the ecobrick initiative introduced by KKN 56 Group 33 is a powerful example of how community engagement and education can address pressing environmental issues. Through the structured training phases, Purana Village residents were empowered to take action against plastic waste pollution, fostering a sense of responsibility towards their environment. The project's collaborative nature reinforced community bonds and instilled a lasting awareness of the importance of sustainable practices. As communities worldwide grapple with plastic waste challenges, initiatives like the ecobrick training in Purana Village offer valuable insights into effective waste management and the potential for positive change. By transforming waste into valuable resources, communities can pave the way for a more sustainable future, one ecobrick at a time.

2. Method

The socialization and eco brick-making activities at the Purana Village Hall in Bantarbolang District, Pemalang Regency, represented a significant community engagement initiative to promote environmental sustainability through practical action. The target audience for this event was comprehensive, encompassing all village residents, including children, teenagers, and adults, thus ensuring that the message of environmental stewardship reached a broad demographic. The methods employed in these activities—socialization, interactive question-and-answer sessions, and hands-on training—were strategically chosen to maximize engagement and retention of information among participants.

To begin with, the socialization aspect of the event served as the foundation for the entire initiative. Residents were introduced to eco-bricks, plastic bottles packed with non-biodegradable waste, transforming them into sustainable building materials. This introduction was not merely theoretical; it included a detailed explanation of what constitutes an ecobrick, its environmental significance, and its myriad applications. For example, eco-bricks can be used in construction as garden planters or furniture, thus showcasing their versatility. By framing eco-bricks within the context of local environmental challenges—such as plastic pollution—the facilitators effectively captured the villagers' attention and underscored the importance of their participation ("Ecobricks as A Sustainable Solution: Designing an Eco-Friendly Reading Garden to Reduce Plastic Waste," 2024).

Following this foundational knowledge, the villagers were encouraged to actively participate by collecting dry plastic waste, which served as the raw material for the eco-bricks. This step was crucial as it tangibly engaged the community and fostered a sense of ownership over the initiative. Collecting plastic waste transformed the villagers from passive listeners into active participants in the environmental movement. It also initiated discussions among families about waste management practices, making the issue of plastic pollution a topic of daily conversation (Li, 2022).

A few days later, the students from KKN 56 of UIN K.H. Abdurrahman Wahid Pekalongan Group 33 took the initiative further by demonstrating the eco brick-making process in collaboration with the villagers. This hands-on training was pivotal in reinforcing the knowledge gained during the initial socialization phase. The students provided invaluable support and encouragement by guiding the villagers through the practical steps of creating eco-bricks—such as selecting appropriate waste, filling bottles, and ensuring the materials were compacted correctly. This interaction not only built skills within the community but also established a sense of camaraderie and teamwork as villagers worked side by side with the students.

The culmination of these efforts was the installation of the completed eco-bricks in Kampung Baru Hamlet, where they were used as decorative elements along pathways. This outcome served multiple

purposes: beautifying the village, showcasing the community's commitment to sustainability, and providing a lasting reminder of the residents' collective effort. The visual impact of the eco-bricks, combined with their functional use, helped to solidify the villagers' understanding of the benefits of recycling and waste reduction (Akbar et al., 2023).

In conclusion, the eco brick-making activities at Purana Village Hall exemplified a comprehensive approach to community engagement in environmental sustainability. Through a blend of education, active participation, and practical application, the initiative addressed the pressing issue of plastic pollution. It fostered a sense of community and shared responsibility among the residents. The successful installation of the eco-bricks as road decorations is a testament to the power of collaboration and innovation in tackling environmental challenges at the grassroots level. This initiative serves as a model for similar programs in other communities, highlighting the potential for local actions to contribute to global sustainability goals (Putra et al., 2024).

3. Results and Discussion

Socialization and ecobrick training activities were conducted to educate the community about the benefits of reducing the environmental impact of plastic waste. The event consisted of three phases: the first phase was the socialization or introduction of eco-bricks to the community; the second phase involved making eco-bricks, and the third phase focused on shaping them into desired forms. Participants from various age groups and backgrounds attended the activity (Yani et al., 2024).

On Wednesday, July 12, 2023, the program began with a socialization session at the village hall. The speaker shared insights about the harmful effects of plastic waste on ecosystems and explained how eco-bricks can be a simple yet effective solution. Participants were introduced to the basic principles of making eco-bricks, including the selection and processing of plastic waste.

The socialization session served as a crucial starting point for the initiative, laying the groundwork for understanding the broader implications of plastic pollution. The speaker, a knowledgeable environmental advocate, presented compelling statistics regarding plastic waste. For instance, it was highlighted that approximately 300 million tons of plastic are produced globally each year, with a significant portion ending up in oceans and landfills. The visual impact of images depicting marine life affected by plastic debris resonated deeply with the audience, evoking a sense of urgency and responsibility (Plastics Europe, 2022).



Figure 1. Socialization

The second meeting on July 31, 2023, and the third on August 14, 2023, were dedicated to practical training sessions. Participants were divided into small groups to gain hands-on experience designing and creating eco-bricks. The KKN team guided effectively compacting plastic into bottles to produce high-quality ecobricks. Additionally, participants were given information on creative designs for eco-bricks so they could be utilized for various construction purposes.

The practical training sessions were designed to be interactive and engaging, allowing participants to apply what they had learned during the socialization phase. Each group was equipped with the necessary materials, including various types of plastic waste, empty bottles, and tools for compacting the waste. The KKN team demonstrated the process of making eco-bricks step-by-step, emphasizing the importance of thorough compaction to ensure the durability and effectiveness of the final product.

As participants began to create their eco-bricks, the atmosphere was filled with enthusiasm and collaboration. Individuals of all ages worked together, sharing insights and techniques. For example, one participant suggested using a wooden stick to compact the plastic waste more effectively, which quickly became popular among the groups. This collaborative spirit fostered a sense of community and allowed participants to learn from one another, enhancing the overall experience.



Figure 2. Practitioner Training

The outcome of this activity was highly encouraging. Participants understood the importance of reducing plastic waste and gained practical skills in making ecobricks. Over 100 eco-bricks were successfully produced during the event. In addition to its positive environmental impact, the event also strengthened the sense of community among the village residents. As part of the activity, the village's name, "PURANA," was creatively shaped using the ecobricks, framed with metal supports standing 1.5 meters tall. This installation was erected in Dusun Kampung Baru, Desa Purana, with enthusiastic support from the local community.

The successful production of over 100 ecobricks was a testament to the participants' dedication and commitment to the cause. Each ecobrick represented a tangible solution to plastic waste and symbolized the community's collective effort toward sustainability. The village name "PURANA" installation served as a lasting reminder of the initiative and its significance. It was designed to be both functional and aesthetically pleasing, demonstrating the potential of ecobricks in construction and community projects.



Figure 3. Installation of Ecobrick Results

The socialization and ecobrick training activities in Purana Village successfully transformed the community's mindset and behaviour regarding plastic waste management. With a better understanding of how to reduce the negative impact of plastic on nature, the villagers have committed to protecting the environment and actively participating in the global movement toward sustainability (Najmia et al., 2024).

In conclusion, the ecobrick training initiative in Purana Village exemplifies the power of community engagement in addressing environmental challenges. Through education, hands-on training, and collaborative efforts, participants learned valuable skills and fostered a sense of responsibility toward their environment. The successful production of ecobricks and the installation of the village name serve as enduring symbols of the community's commitment to sustainability. This initiative contributes to

reducing plastic waste and inspires other communities to adopt similar practices, highlighting the importance of collective action in the fight against plastic pollution (Widiarni et al., 2024).

The importance of such initiatives cannot be overstated, as they represent a grassroots approach to environmental conservation. By empowering individuals with knowledge and practical skills, communities can take meaningful steps toward reducing their ecological footprint. The success of the ecobrick training in Purana Village serves as a model for other regions facing similar challenges, illustrating how local action can lead to significant environmental benefits (Putri et al., 2022).

Ultimately, the journey toward sustainability is ongoing, and the lessons learned from this initiative will continue to resonate within the community. As participants reflect on their experiences, they will likely share their newfound knowledge with others, creating a ripple effect beyond the initial training sessions. This cultural shift toward environmental stewardship is essential for fostering a sustainable future where communities protect their natural surroundings actively (Utami Parta Santi et al., 2023).

Furthermore, integrating ecobricks into community projects can inspire innovative solutions to local populations' challenges. For instance, eco-bricks can be used to build benches, gardens, or even small structures, providing practical applications for the skills learned during the training. This not only enhances the physical environment of the village but also reinforces the idea that waste can be transformed into valuable resources (EcoBricks | Project Propel, n.d.).

In summary, the ecobrick training activities in Purana Village are a powerful example of how education and community involvement can lead to tangible environmental benefits. By fostering a culture of sustainability, the initiative empowers individuals to take action against plastic pollution, paving the way for a cleaner and healthier planet. The commitment demonstrated by the villagers serves as an inspiration for others, illustrating that collective action can indeed make a difference in the fight against environmental degradation.

4. Conclusion

The literacy Socialisation activity held in several elementary schools in Cibodas Village is a strategic effort that has increased awareness and interest in reading among elementary school students. Through an interactive and participatory approach, this socialization provides an understanding of the importance of literacy and creates a pleasant learning atmosphere. Based on the results of the activity involving 196 fifth-grade students from five elementary schools in Cibodas Village, this socialization raised awareness of the importance of literacy. Although the number of active libraries in the village has decreased drastically, this socialization provides a positive alternative by bringing children closer to interactive and fun reading activities. Through three stages of implementation, namely socialization, socialization in each school, and storytelling competitions, there was an increase in students' ability to understand the contents of the reading. However, participation in the storytelling competition was still relatively low. It shows that there needs to be follow-up in the form of other programs, such as the revitalization of village libraries and literacy movements, before learning so that children's interest in reading can continue to be increased sustainably. Programs such as library revitalization and the implementation of literacy movements in schools can be concrete steps to maintain the momentum that has been created. Thus, this socialization will not only be a momentary trigger but will become a foundation for forming a strong reading culture for children at the elementary school level in Cibodas Village. This increase in reading interest will significantly contribute to the quality of education and intellectual development of the younger generation in the area.

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