

Disaster Prevention from the Use of Plastic Waste with Ecobrick Project in Buluh Nipis Village

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Abstract

Purpose: This study aims to investigate the effectiveness of ecobricks in mitigating plastic waste pollution and to assess the impact of community socialization activities on promoting ecobrick usage in Buluh Nipis Village. It seeks to contribute to sustainable waste management practices and environmental conservation efforts.

Method: Utilizing a participatory research approach, the study conducts socialization activities titled "Reusing Plastic Waste into Ecobricks that are Environmentally Friendly." Data collection methods include lectures, discussions, and practical demonstrations. Qualitative analysis is employed to understand community perceptions and attitudes towards ecobricks.

Practical Applications: By raising awareness and providing practical skills on ecobrick production, the study empowers residents to actively participate in plastic waste reduction efforts. The adoption of ecobricks serves as a model for sustainable recycling practices and promotes environmental stewardship within the community.

Conclusion: This research underscores the importance of community engagement in addressing plastic waste pollution. By promoting ecobricks through targeted socialization activities, it contributes to sustainable waste management and environmental conservation initiatives at the local level.



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Introduction

Disaster is an event or series of events that threaten and worsen the condition of society that occurs due to several factors, be it natural factors, non-natural factors or by human factors, disasters can cause human casualties, environmental damage, loss of property prices and psychological disturbance. Article 1 paragraph 6 of the 2008 Government Regulation concerning the Implementation of Disaster Management, disaster mitigation is a series of ways with the aim of reducing the risk of disaster threats, by means of physical development, awareness and increasing the ability to deal with disaster situations that occur (Nursyabani et al., 2020).

Disaster mitigation is a series of treatments made to prevent the impact of disasters, both natural disasters and disasters made by humans that harm property and environmental conditions. Disaster mitigation aims to reduce disaster risk in an effective and efficient way. Disaster mitigation is a long-term way that requires the help of ongoing commitment from governments, communities, and everything else that deals with it. With proper disaster mitigation, it can help reduce and prevent losses that will be felt by humans and the environment when disasters occur.

One of the causes of disasters is garbage. Waste can be sourced from various things, such as waste from households such as product packaging, and food waste in addition. In addition, there is also waste from industries such as production waste, and medical waste from hospitals. This service focuses on ways to reduce product packaging waste from households by using ecobricks.

Garbage is a material that has no useful value and is no longer used. In general, waste can be divided into organic waste and inorganic waste. Organic waste is waste that is easily decomposed, usually this waste comes from living things. Inorganic waste is waste that is very difficult and cannot even decompose (Surya et al., 2019). Waste has a negative impact on life both on society and the environment, waste is a problem experienced by Indonesia even to the world, waste can cause environmental pollution that damages water and soil and provides health problems. Waste must be managed properly to prevent disasters, because if waste is not managed properly, it will cause various types of disasters. Disasters often occur due to waste that cannot be decomposed quickly, such as plastic waste and resulting in the accumulation of waste that can cause ecosystem damage, pollution, health problems, and flood problems (Axmalia & Mulasari, 2020).

With the development of the world, waste can now be reused, one of which is by making ecobricks. Ecobricks are ways that can be done by recycling to reduce waste, especially plastic waste (Kusuma et al., 2023). Ecobricks are plastic bottles that have been filled with cleaned and dried plastic waste that must be filled in the bottle and compact the contents of the waste, ecobricks are a way to recycle plastic waste at little cost and use a variety of uses (Ishak et al., 2023). Ecobricking is an innovation by producing products that successfully reduce plastic pollution, by utilizing inorganic waste to create blocks that can be used for purposes (Fauzi et al., 2020).

Ecobricks are a type of plastic brick that consists of compacted plastic waste and can be shaped and useful like bricks. With ecobricks, reducing environmental pollution caused by plastic waste that is difficult to decompose can be something new. The use of ecobricks can turn plastic waste into tables, chairs, shelves, and many more useful items that can be made using ecobricks.

In this dedication, socialization was carried out to tell the importance of ecobricks in today's life. Socialization is a process of giving or practicing values and rules from one generation to another for community groups, in the process of socialization given knowledge about something that must be carried out by everyone. Socialization is the process of notification of ideas that help people in need to learn and align themselves related to thinking and play an active role in the scope of society. Socialization is an effort in connecting with others about acting, thinking, and feeling in order to produce effective and efficient social participation (Ilmiyah et al., 2022; Sekarningrum et al., 2020).

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With this socialization, it is hoped that people will be able to make ecobricks to reduce waste, especially household waste in the form of plastic. Therefore, community skills must be developed and instill awareness about the dangers of waste in life. In addition, this socialization can improve the quality of life of the community, because it can prevent environmental or public health problems. That way, ecobrick socialization can help future challenges related to waste problems and can help improve the quality of people in rural areas.

Method

The Real Work Lecture Program (Kukerta) is community service as a learning by a group of students with the aim of advancing the welfare of the target community and educating the lives of the community and nation. The kukrit program is one way for universities to try to build communities, especially to areas in need. With this program, it can help students develop social skills, build leadership and much more for the student's life. At Universitas Riau University, this Real Work Lecture program is named the Real Work Lecture to Build a Village in 2023. This real Work Lecture program must be carried out by all students, this is because it is one of the graduation requirements (Laia, 2022).

Community service activities by socialization are carried out using lectures, questions and answers, and the application of how to make ecobricks. The initial stage that can be done is preparation, preparing what problems exist in the village, then finding solutions to these problems. Then conduct socialization related to ecobricks to PKK mothers of Buluh Nipis Village, then continued with giving examples of how to make the right ecobricks with the aim of reducing waste, especially household waste in the form of plastic.

Ecobrick socialization activity entitled "Reusing Plastic Waste into Ecobricks" was carried out in Buluh Nipis Village, Kampar Regency. The target partner of this activity is the PKK mother in the village. The target partner of Ibu PKK is to be able to provide and continue ecobricking activities and can provide the making to all communities in the village. This activity also involved Kukerta University of Riau students; Riau University students provided counseling to the community on the importance of waste utilization by using ecobricks to overcome waste problems in the community. The method of implementing the activities carried out is used to provide appropriate and efficient solutions to the problems of target partners.

The first step taken before socializing is preparation. In this case, there are four steps that must be taken. First, it is to conduct a survey in advance about the condition of the village and what potential is found in the village. After knowing the condition and potential of the village, then determine how to overcome the problems that exist in the village appropriately and can be received by the community. The right way to overcome the waste problem in the village is with an ecobrick project and then prepare waste that can be used as a filling in ecobricks, the waste is obtained from around the market, existing stalls and around people's homes. After the waste has been obtained, it will immediately make ecobricks with the waste that has been collected in the village environment.

After the initial steps have been carried out, the next step is the implementation stage. Conducting a socialization process for PKK mothers in the village. Ecobrick socialization that is carried out explains about waste and talks about what ecobricks are, followed by ways of making ecobricks and the benefits of ecobricks. When the socialization process provides examples of how to make good and correct ecobricks, this is in the hope that the village community can do it and apply it in life.

Providing socialization and demonstrating how to make ecobricks in Buluh Nipis Village, Siak Hulu District, Kampar Regency, Riau Province is needed with the aim of providing better knowledge about how to recycle waste that has useful value, socialization participants can see how plastic waste that originally had no use value can be utilized using ecobricks which has usability value. Therefore, this socialization is given with the hope that participants can be more aware about the use of waste and can be useful if done in the right way.

With community service activities, it is expected to be able to improve people's skills and understanding of waste that can be recycled in a more useful way. This activity can also

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provide opportunities for the community to be creative and develop skills in utilizing waste. With this activity, it will provide options in utilizing household waste.

With ecobricks, it is hoped that people will no longer throw away garbage carelessly because it will cause disasters. In addition, people will also not burn waste anymore because burning waste also has a bad impact on the environment and health. With ecobricks, it is expected to be able to increase the quality of the village for the better in the field of environment and public health.

Result

Socialization about reusing plastic waste into ecobricks that are environmentally friendly was given to PKK mothers in Buluh Nipis Village. The socialization was carried out in the office hall of Buluh Nipis Village, attended by PKK mothers, Government Head and Kukrit students. This socialization was delivered by one of the Kukerta students who did understand the field. After the completion of the material delivery, a question-and-answer session will then be given to mothers who may not understand or want to know more about ecobricks. This socialization has the result of increasing the knowledge of mothers on how to recycle plastic waste and improving the skills of PKK mothers in making ecobricks. The effectiveness of socialization can be seen from the understanding and ability of PKK mothers in making ecobricks that have been conveyed during the socialization process.

Figure 1. Ecobrick socialization by kukrit students



During the socialization process, it begins with providing material about waste, providing knowledge about the types of waste and how to recycle waste again. After the participants found out about the waste, it was then explained what ecobricks were, an explanation of ecobricks This is necessary to provide understanding to participants. This is done so that participants can understand one by one about how to use waste properly and usefully so that they can create usable items.

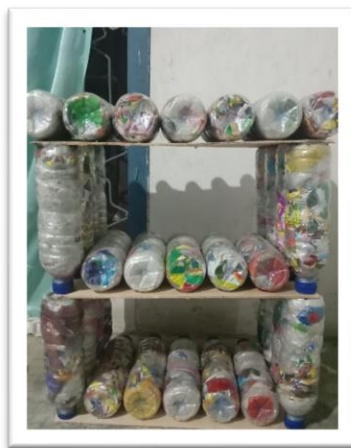
Figure 2. The garbage collected comes from the market and the environment around the village.



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During the socialization process, the mothers seemed very enthusiastic about listening to the explanation given. After the explanation has been completed, the mothers give questions related to the explanation that has been given. After the socialization event was over, the mothers immediately approached ecobricks to view shapes ecobricks up close. These ecobricks are very easy to make and come from plastic waste so they don't cost anything. This ecobrick can be a table, shelf, chair, and many others. With this socialization, it can create skills for mothers in utilizing waste.

Figure 3. Ecobricks in the form of racks



Discussion

Based on the data analysis, it is known that the knowledge of the community at the Socialization given to PKK mothers in Buluh Nipis Village, Kampar District, Riau Province. The PKK group is a collection of mothers who work as housewives, who have activities with social activities such as recitations, social gatherings and participating in special PKK programs in the village area. PKK is a forum for women in Indonesia that emphasizes gender equality and empowering women, the PKK group usually consists of mothers who are not productive in the economy, so this PKK will help in the process of productivity of these mothers. There are 10 main PKK programs, namely the appreciation and practice of Pancasila, cooperation, food, clothing, housing and household governance, education and skills, health, development of cooperative life, environmental sustainability, and healthy planning (Budiantoro et al., 2019; Megawaty et al., 2022).

The reason why Kukerta University of Riau students chose the target target for socialization of reusing plastic waste into environmentally friendly ecobricks is Mrs. PKK, because it can help develop the creativity of these mothers. In addition to increasing creativity, this socialization is expected that PKK mothers can understand and care more about the environment around them, because it is undeniable that mothers are the ones who have the most contact with the environment around them. With the socialization and application of ecobricks, it is hoped that mothers can make their own ecobricks from household waste in the form of plastic. This in addition to making it more productive can also keep the environment cleaner and healthier without plastic waste.

It is undeniable that waste is inseparable from life. Therefore, there needs to be the right way of innovation to be able to overcome these problems. Then it was discovered that one of the right and useful ways to overcome the waste problem is with ecobrick media. Ecobricks are one way to use waste that is environmentally friendly and more interestingly without any cost, the existence of ecobricks can foster ecological awareness because small waste that is thrown away can damage the environment and putting waste into ecobrick bottles can prevent toxic gases that produce methane gas (Anik et al., 2022).

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To provide knowledge about ecobricks, socialization is carried out. Socialization is a way to influence others, socialization activities can be carried out with the aim of providing knowledge by providing understanding well and easily understood by socialization participants. Therefore, socialization about ecobricks can provide additional understanding to the public about the latest innovations in how to recycle waste with ecobricks (Haryadi et al., 2022).

The waste problem in the village can be overcome by exposing how dangerous waste is and telling about the innovation of waste recycling with ecobricks. This is because, the use of ecobricks can reduce waste and make ecobricks very easy and without any cost. The positive impact of using ecobricks for the community is to reduce plastic waste found in the community and become an opportunity as a livelihood (Widiyasari et al., 2021). Based on the positive impact of turning plastic waste into ecobricks is a clean environment and reduced unpleasant odors due to waste (Aji et al., 2023). In addition, the positive impact of using ecobricks is that waste can be more useful by turning the waste into ecobricks to produce items that can be used, by reducing waste into ecobricks can make rivers or streams not polluted by waste, with ecobricks can make the environment healthier because waste begins to decrease.

The steps to make ecobricks carried out by Kukerta University of Riau students are as follows:

1. Collect waste in markets, stalls, and village environments.

Figure 4. Garbage collection process



2. Clean up dirty plastic waste and dry it.
3. Putting plastic into an ecobrick bottle can be directly inserted intact or can cut plastic waste to make it easier to put waste into the bottle.

Figure 5. The process of putting garbage into bottles



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4. Compacting the garbage that has been put into the bottle. This is used to strengthen the bottle when overwritten with another bottle or other object.
5. After that close the bottle, and the ecobrick is ready for use.

Figure 6. Ecobricks ready for use



Manufacture ecobricks which is very easy and at no cost is expected to provide awareness to the community to be able to assist in waste management to achieve a healthy living environment and avoid disasters that can be caused by waste in the surrounding environment.

Conclusion

With the holding of socialization about ecobricks with the title "Reusing Plastic Waste into Ecobricks that are Environmentally Friendly" can add insight and skills to PKK mothers in Buluh Nipis Village. This socialization provides new knowledge to PKK mothers from those who do not know about how to recycle waste by ecobricks. The expected result of the socialization that has been carried out is that PKK mothers can make ecobricks which is correct, as well as keeping the waste in the household for recycling again. In the presence of ecobricks Can protect the environment and avoid waste, especially plastic waste.

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