



Community Empowerment Model Based on Nonformal Education Through Waste Bank Program to Improve Environmental Management Competencies

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ABSTRACT

Purpose of the study: This study aims to describe an education-based community empowerment model through the Ramli Ceseri Waste Bank Program, a Pertamina CSR program, to improve community environmental management competency.

Methodology: The study used a qualitative approach and was conducted at the Ramli Ceseri Waste Bank in Sungai Kunjang District, Samarinda. Data collection techniques included observation, interviews, and document studies. The data obtained were analyzed using data reduction, data presentation, and conclusion drawing techniques.

Main Findings: The waste bank community empowerment model operates through three stages. First, awareness-raising uses outreach, group discussions, and social media to improve understanding of waste management. Second, capacity transformation provides training and mentoring on waste sorting, processing, and weighing to develop essential practical skills. Third, capacity building enables the community to manage waste independently, create economically valuable products from recycled materials, and sustain the program over the long term.

Novelty/Originality of this study: This study examines a non-formal education-based community empowerment model implemented through the Ramli Ceseri Waste Bank Program, focusing on the empowerment stages of awareness raising, capacity building, and empowerment. The study provides an empirical understanding of how these stages contribute to improving environmental management competencies and fostering community independence.

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1. INTRODUCTION

Environmental issues have become an increasingly pressing topic in various parts of the world. One prominent environmental problem is waste management [1]. Waste is essentially a material discarded or thrown away from a source resulting from human activities or natural processes. It has no economic value, and can even

have negative economic value because its handling, whether for disposal or cleaning, requires significant costs [2]. Waste is any material that is unused to meet community needs.

Waste is unused material or items left over from human activities. Waste has negative impacts that can pollute the environment and affect health. Waste is a major factor in environmental pollution, thus easily affecting public health [3]. Based on the above study, waste can disrupt public health and become a source of disease. This waste problem requires serious management to reduce the negative impact on health that causes disease in the community.

Waste has negative impacts that require urgent management to mitigate these negative impacts. Waste management can be seen, among other things, by examining the factors that cause it. The waste discussed above is caused by human activities [4]. Examples include communities that are not environmentally friendly, such as littering in waterways. This demonstrates a lack of public awareness regarding waste management. The presence of waste must be balanced with awareness and proper management within the community [5].

One way to increase public awareness regarding waste management is through community education. Education plays a crucial role in developing mindsets and raising public awareness [6], [7]. One effective approach to addressing the waste problem is through education. Education is both a solution and a catalyst for changing public awareness regarding waste management. Education is one way to raise public awareness regarding waste management. Education itself is divided into three categories: formal, non-formal, and informal. One form of education that is suitable for the general public is non-formal education. Non-formal education is aimed at all levels of society who need education [8], [9]. The explanation above demonstrates the importance of non-formal education for all levels of society, as it can increase public awareness regarding waste management.

In the context of non-formal education, one concrete implementation that can be done to raise public awareness of waste management is through the waste bank program. Waste banks not only function as a means of community-based waste management but also as a non-formal educational medium that encourages public awareness of the importance of waste management [10]. Waste banks are an effective form of non-formal education to raise public awareness of waste management. Therefore, waste banks serve as a means of community empowerment because they encourage residents to be directly involved in waste management and experience the benefits of these activities.

Community empowerment through waste banks is carried out to make them more independent, creative, and able to earn income from the waste bank program [11]. Community empowerment is closely related to active community participation. The community not only plays a role as activity implementer but also participates in the planning, decision-making, and evaluation stages of the program. Good cooperation between communities is created through active participation and community involvement, which can advance the region [12].

In Samarinda, a community empowerment program based on non-formal education is being implemented through the Pertamina CSR Ramli Waste Bank. The Pertamina CSR Ramli Waste Bank program is an effort to raise public awareness and is being continuously developed to encourage community participation and improve community competency in environmental management.

2. RESEARCH METHOD

This research was conducted at Bank Ramli Ceseri, located on Jl. Cendana, Gg. 11, Sungai Kunjang District. This research is entitled “Community Empowerment Model Based on Nonformal Education Through Waste Bank Program to Improve Environmental Management Competencies.” This study adopts an interpretive (constructivist) paradigm, which views social reality as being actively constructed by the participants involved. Based on this, this research approach is a qualitative study with the aim of delving deeper into how the education-based community empowerment model through the waste bank program works.

Data collection in this study was conducted in accordance with a qualitative research approach, namely by using observation, interviews, and document study methods. The observation method used was open observation, with this method the researcher obtained approval from the parties being observed and the research process could be conducted transparently. The interview technique in this study, the researcher carried out data collection through questions and answers to obtain information from the informants. The document study technique was carried out by reviewing documents available at Bank Ramli Ceseri.

The results of data collection consist of raw data that must be reviewed or analyzed, thus this research includes data analysis. This study employed data reduction as a data analysis technique to examine the data. Data reduction was used by researchers to sort the data obtained from interviews and then adjust it to focus on the research. In this data presentation, the data is described in narrative form for better understanding.

3. RESULTS AND DISCUSSION

Community empowerment is an effort to build potential and increase community capacity. The goal of this empowerment is to enable communities to independently develop their potential in social, economic, religious, and cultural aspects [13]. This empowerment helps and facilitates community access to resources and involvement in social activities [14]. Through these efforts, empowerment serves not only as a driving force but also as a foundation for community independence. The Waste Bank Program is a form of community empowerment through a community-based waste management system implemented by Bank Ramli Ceseri. Bank Ramli Ceseri serves as a platform for public education and also assists communities in resolving waste issues in their communities [15]. Through this program, the community is expected to actively participate and improve their competency in environmental management. In the waste bank program at Bank Ramli Ceseri, the community empowerment process is implemented through three stages. The first stage is awareness-raising, the second is capacity transformation, and the third is capacity building [13]. With these three stages, it is hoped that community empowerment through the waste bank program will run smoothly and resolve existing problems.

3.1 Awareness Raising Stage

Community empowerment is a program aimed at improving the quality of life of the community so that they can solve existing problems. The problems faced by the communities assisted by Bank Ramli Ceseri are environmental, therefore, it is necessary to increase public awareness of these issues. Raising awareness of community empowerment through the waste bank program is the initial stage in program implementation. The awareness-raising stage is a crucial step in providing initial understanding to the community, thus encouraging them to participate in program implementation [16], [17]. The awareness-raising process is the initial step in encouraging community involvement in the program [18]. At this stage, Bank Ramli Ceseri held direct discussions with the community. Discussions were very beneficial in increasing community insight, encouraging active participation in forums, and enabling them to resolve community problems [19]. The study results showed that initial awareness of the Bank Ramli Ceseri community regarding waste management was still low, with a significant amount of household waste being disposed of carelessly.

Bank Ramli Ceseri has undertaken several efforts to raise public awareness, including through outreach. These outreach programs convey program objectives, provide direct education, and provide training on program implementation mechanisms [20]. From a community empowerment perspective, outreach is a step to ensure the community has sufficient insight and is actively involved in a program [21] [22]. Public awareness efforts are carried out through approaches or outreach [23]. Outreach is one way to increase public insight and awareness.

The awareness-raising process is carried out through community meetings, community group discussions, and the dissemination of information through social media. Social media not only disseminates information but also shapes community norms, identities, and behavioral patterns [24]. Social media is crucial and is used as a communication medium for change, impacting the success of the community empowerment process [25]. The use of social media can play a significant role in community empowerment by increasing awareness, participation, and involvement [26] [27]. Social media also plays a crucial role in building public awareness. Social media functions not only as a channel for information dissemination but also as an effective tool for fostering environmental awareness among community members. Through continuous exposure to information related to waste management and environmental issues, community members gradually developed a greater understanding of the importance of proper waste management practices [28]. This increased awareness became an important foundation for encouraging participation in waste bank activities and supporting the subsequent stages of the community empowerment process.

3.2 Ability Transformation Stage

Community awareness and understanding that had been developed through the empowerment process became an important foundation for the emergence of new competencies among community members. The research findings indicate that increased awareness was accompanied by greater participation in waste management activities and a stronger capacity to apply environmental management practices. This condition reflects the capability transformation stage, in which community members began to translate their understanding into practical skills and actions. The transformation was evident in their ability to sort waste, manage waste bank activities, and contribute to environmental improvement efforts within the community.

Community members demonstrated not only an understanding of the importance of waste management but also the ability to independently carry out waste sorting, processing, and weighing activities. The findings indicate that the knowledge acquired through the empowerment process was translated into practical competencies, reflecting a shift from conceptual understanding to the application of waste management practices in everyday life. The development of these competencies was closely associated with the training activities conducted through the waste bank program. Training served as an important mechanism for enhancing community capacity by providing participants with both theoretical knowledge and practical experience related to waste management [28] [29]. Through hands-on learning activities, community members gained a better

understanding of waste sorting procedures, waste processing techniques, and waste weighing systems [30] [31]. The findings suggest that training contributed to strengthening participants' skills and confidence in managing waste-related activities, thereby supporting the capability transformation process. In the context of community empowerment, training functions not only as a means of knowledge transfer but also as a strategy for fostering self-reliance and increasing community participation in environmental management initiatives. Training is an empowerment activity and is crucial for communities. Training aims to improve community skills to improve them and provide an opportunity to open up employment opportunities [32]. Training is a short-term activity that includes theory and practice on life skills to equip communities with knowledge and skills. In the context of non-formal education, training is also part of education that outlines the stages in mastering and implementing educational competencies, aiming to hone skills in a short time [33]. Training in community empowerment aims to provide understanding and skills tailored to community needs [34] [35]. This stage encourages communities to acquire basic skills and ensures their understanding becomes concrete actions. In the context of non-formal education and community empowerment, training aims to provide understanding and hone skills tailored to community needs in a short time.

The training provided to the community is conducted in stages, starting with an introduction to waste types, sorting, weighing, recording, and waste bank management. Before engaging in hands-on practice, the community is first provided with theoretical material to ensure the program's target community understands each stage. The material is presented through discussions with the community about the stages of the hands-on practice, after which the community implements the previously presented material. The purpose of delivering theory and practice is to enable the community to apply the training process. The hands-on method provides access to the community to implement the results of the previously presented material and enhances the community's necessary skills [36], [37]. This sequential process ensures that the community can complete the entire waste bank training process. During the training process, Bank Ramli Ceseri also provides mentoring to the community to ensure optimal training. Mentoring goes beyond continuous guidance, but also ensures that the community is empowered to become more independent [38]. This demonstrates that Bank Ramli Ceseri goes beyond providing understanding and empowering the community to achieve independence.

Mentoring in waste bank activities is carried out routinely, with managers acting as facilitators, providing input and assistance to communities experiencing difficulties. Mentoring is a process aimed at helping find solutions, providing support, and providing access to social services [39] [40]. Continuous mentoring significantly impacts the learning success of the target group [23]. Program mentoring for community education activities is essential. Program mentoring activities will increase knowledge and skills, enabling the community to be more empowered. Implementing the knowledge taught [41] [42]. The mentoring provided by managers to communities assisted by the waste bank program is a form of support and assistance in finding solutions for those facing difficulties. Mentoring plays a crucial role in supporting the capability transformation process within community empowerment initiatives. Continuous assistance not only helps community members overcome challenges encountered during waste management activities but also reinforces the knowledge and skills acquired through training and practical experience. The presence of managers as facilitators encourages sustained participation and strengthens community confidence in implementing waste management practices independently. Therefore, mentoring serves as an important component in ensuring that competency development is maintained and translated into long-term behavioral change and community self-reliance.

3.3 Capacity Building Stage

Continuing the process from the previous stage, the community now has a sufficient skills base. The skills transformation stage still requires ongoing refinement to ensure the community's skills remain present and consistent. After completing the training, armed with the knowledge and skills gained from the entire process of the waste bank program, the community is now able to put it into practice. This implementation is evidenced by the community's success in transforming the collected waste into craft products with economic value. In addition to improving the community's economy, this program also raises public awareness of waste management for a cleaner environment [43] [44]. Thus, the waste bank program is not only a solution to environmental problems but also a driver of community economic empowerment.

The final stage is the capacity-building stage, also known as the independence stage. At this stage, communities are in the process of building their independence. Independence is a milestone that communities must achieve to improve their own capabilities for a better quality of life [45] [46]. Therefore, the pinnacle of community empowerment is independence, where communities are no longer dependent on external assistance and are able to manage programs independently and maintain their sustainability.

Regular meetings held by the Ramli Ceseri Bank management are an effort to maintain community independence. The communities assisted by Ramli Ceseri Bank are seen to be starting to manage waste independently without waiting for direction from the management. The assisted communities are also starting to care about the surrounding environment and are able to manage the program sustainably. The independence stage is implemented by empowering the target community to become independent [18] [47]. In community

independence empowerment, the community is asked to learn to develop skills independently, meaning that the program implementer empowers the community to continue empowerment efforts with the skills they possess. In community empowerment, independence means progress that is the goal of the community so that they can develop and maintain their abilities for the future of the community [48]. The formation of community independence is a progress and provision for future life.

Regular meetings conducted by the Ramli Ceseri Waste Bank management serve as an important mechanism for strengthening community independence. The assisted communities have begun to manage waste activities independently without relying on continuous direction from program managers. In addition, community members demonstrate greater concern for environmental conditions and are able to sustain waste management activities within their respective neighborhoods. These conditions reflect the achievement of the independence stage, where community members are capable of utilizing the knowledge and skills they have acquired to continue empowerment efforts autonomously [49] [50]. Community independence is not only reflected in the ability to carry out activities independently but also in the capacity to maintain and develop these abilities sustainably. Therefore, the emergence of community independence represents an important outcome of the empowerment process and serves as a foundation for the long-term sustainability of environmental management initiatives.

4. CONCLUSION

Based on the research results, it can be concluded that the Bank Ramli Ceseri program is a form of community empowerment based on non-formal education that is effective in improving community capacity in environmental management. Community empowerment is implemented through several stages: awareness-raising, capacity transformation, and capacity improvement. In the capacity improvement stage, Awareness: The community is given a basic understanding of waste management through outreach, discussions, and the dissemination of educational information. This stage has successfully increased public awareness of waste and environmental management. The second stage is the capacity transformation stage, where the community is provided with knowledge and skills through training related to sorting, processing, and weighing, accompanied by ongoing mentoring by the Ramli Ceseri Bank management. At this stage, the assisted community is able to implement the practices in the training. Next, the capacity building or independence stage, where the assisted community begins to be able to carry out waste management activities independently. This indicates that the level of independence that the assisted community has is improving and is able to maintain the sustainability of the program. For further studies, it is suggested that future researchers investigate the long-term economic impacts of this empowerment model on community livelihoods, or examine the applicability of replicating this model in communities with different socio-cultural backgrounds.

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AUTHOR CONTRIBUTIONS

P.M.W. was responsible for conceptualization, methodology development, investigation, data collection, formal analysis, data curation, visualization, project administration, and preparation of the original draft manuscript. J.P., H., and H.T.W. contributed to the conceptualization of the study, validation of research findings, supervision of the research process, and critical review and editing of the manuscript. All authors contributed to the discussion of the results, provided intellectual input to improve the manuscript, and approved the final version of the article for publication.

CONFLICTS OF INTEREST

The author(s) declare no conflict of interest.

INFORMED CONSENT STATEMENT

Prior to participation, each subject was provided with a detailed explanation of the study's objectives, procedures, potential risks, and benefits. All participants voluntarily agreed to participate and signed a written informed consent form. All images in this article have been authorized and are the property of the authors.

USE OF ARTIFICIAL INTELLIGENCE (AI)-ASSISTED TECHNOLOGY

The authors declare that no artificial intelligence (AI) tools were used in the generation, analysis, or writing of this manuscript. All aspects of the research, including data collection, interpretation, and manuscript preparation, were carried out entirely by the authors without the assistance of AI-based technologies.

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