

Optimization of Waste Banks in Schools: Education-Based Solutions to Overcome Environmental Pollution

Dewi Indah Pratiwi¹ Asramid Yasin²

¹ Akademi Maritim Djadajat, Jakarta, Indonesia; dewiindah@gmail.com

² Universitas Halu Oleo, Kendari, Indonesia; asramidyasin@uho.ac.id

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ABSTRACT

Education, especially character education, is related to the development of human morality and spirituality from an environmental perspective. This understanding of waste management is related to the character of caring for the environment based on various existing character values. One way of managing waste in schools is by establishing a waste bank. Therefore, this study aims to explain the optimization of waste banks in schools as an effort to overcome environmental pollution through education. This study took the research location at the Adiwiyata school in the Subang Regency. This research uses a qualitative approach. The researchers used observations, documentation, and interviews with students, teachers, employees, and school residents. Data analysis and research results are presented descriptively using the Miles & Huberman model. The study results show that education-based solutions in overcoming pollution and protecting the environment through optimizing the waste bank at Adiwiyata elementary school run effectively and can be one of the means of environmental care education. This is evidenced by the active participation of all relevant parties in the school in implementing the waste bank program, which includes students, teachers, employees, and other school residents.

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Corresponding Author:

Dewi Indah Pratiwi

Akademi Maritim Djadajat, Jakarta, Indonesia; dewiindah@gmail.com

1. INTRODUCTION

Environmental problems are global issues that concern various sectors, one of which is the education sector. The education sector is a formal institution that provides environmental education to the community (Wiyono, 2012). Through traditional institutions or schools, environmental education is one way to instill environmental awareness in students (Nurulloh, 2019). This is because various environmental cases are caused mainly by irresponsible human behavior towards the environment. As a result of environmental damage, there will be multiple natural disasters such as smog, floods, landslides, etc. These disasters are caused mainly by human activities that damage environmental ecosystems (Kamil

et al., 2020). In addition to improving technically, of course, awareness efforts need to be made so that humans have an excellent environmental care attitude. This condition requires all components and related institutions to provide alternative solutions, not least for the school education sector as an institution that is considered adequate, especially in delivering competence in knowledge, attitudes, and skills towards environmental problems (Roqib, 2009).

According to Widaningsih (2010), environmental education is a rational alternative to incorporating environmental education into the curriculum. Education about the environment in schools is one of the essential factors in success in environmental management and is also an essential tool in producing human resources that can carry out sustainable development. According to Nurjhani and Widodo (2009), environmental education is needed and must be given to children from an early age to understand and not damage the environment. This includes several aspects, including Cognitive aspects. Environmental education has the function of increasing understanding of environmental problems. It is also able to improve memory, application, analysis, and evaluation; Affective aspects, the environment, increasing acceptance, assessment, organization, and personality characteristics in managing life in harmony with nature; and Psychomotor aspects, environmental education plays a role in imitating, manipulating in interacting with the surrounding environment to increase a culture of loving the environment. 4. Aspects of interest, environmental education increases interest in children.

The establishment of an Adiwiyata School is one of the solutions offered by the educational sector. School districts across the country have come together to support a new educational model that emphasizes environmental ethics and a strong emphasis on acquiring knowledge and skills while also instilling a strong sense of morality and values (Rahmawati & Suwanda, 2015). In this way, the school reflects its role and responsibility as a place where students can acquire knowledge, skills, and an appreciation for preserving the natural world. Environmental education aims to change people's minds and actions to care more about the environment (Landriany, 2014). The ultimate goal is to make schools better places to learn and to raise the consciousness of students and faculty about the importance of environmental preservation and sustainable development within the school community. The primary goal of the Adiwiyata School is to establish schools in Indonesia that value environmental stewardship and environmental education (Bahrudin, 2017).

One program that can realize school institutions that care about the environment to realize Adiwiyata schools is processing waste in schools by implementing waste banks (Syaikhudin, 2016). According to the Regulation of the Minister of the Environment of the Republic of Indonesia Number 13 of 2012 Article 1 concerning Guidelines for the Implementation of Reduce, Reuse, and Recycle through a Waste Bank, which reads: "A Waste Bank is a place for sorting and collecting waste that can be exchanged for money and reused which has a value economy." Waste management in schools will be more effective through the Waste Bank system. Through these waste management activities, the school, at the same time, instills character in students, including religious and disciplined characters. In line with Asih's research (2018), namely with the existence of waste management in schools, students have an awareness of discipline, especially students can dispose of waste according to the classification of the type of waste.

One of the elementary schools located in the Kasomalang sub-district has implemented a waste bank program as one of the schools that received the Adiwiyata school award in the Subang district. Students are expected to care about the surrounding environment through Waste Bank activities with the Waste Bank program. In this activity, students, in coordination with the homeroom teacher, collect waste by classifying it according to the type of waste, which is then saved to the Waste Bank, students are taught to make innovations and make crafts using used goods, and schools implement policies to reduce the use of plastic waste by bringing tumblers and cutlery from home. If the waste is managed correctly, the surrounding environment will be clean and comfortable in the teaching and learning process. Based on the activities carried out by students in the Waste Bank program, students will have an awareness of the surrounding environment.

Solution-based education is very effective in understanding students' importance of protecting the environment. Such as research conducted by Wuryastuti & Ni'mah (2013) explains how to process cow

dung that is widely scattered in the Kasemen village environment into biogas stoves so that it becomes a solution to overcoming environmental pollution and it can become one of the life skills for students. Furthermore, Hasanah et al. (2018) explained that the implementation of the waste has been proven to make students and other school residents concerned about cleanliness in the school environment and succeeded in making schools greener.

Based on the description above, the question arises whether solution-based education with the application of waste banks in schools effectively understands students the importance of protecting the environment and reducing the environment. Therefore, researchers are interested in researching optimizing waste banks in schools: education-based solutions to overcome environmental pollution. With this research, it is expected that students are expected to have concern for the surrounding environment and are reference materials for the development of the following solution-based education in love for the environment.

2. METHODS

This research takes a descriptive qualitative approach. On the other hand, qualitative descriptive research aims to describe what exists about a variable in the field. Qualitative research is founded on the postpositivist philosophy and is used to examine the state of natural objects (Sugiyono, 2009). Qualitative research is inventive because it is conducted in natural settings. The researcher is the primary instrument in qualitative research. As a result, researchers must possess a breadth of theoretical and insightful knowledge to formulate more straightforward questions, analyze, and construct the object under study (Gunawan, 2013). They are collecting data using observation, interviews, and questionnaires. The subjects in this study involved 36 students of class VI, 1 principal, 1 teacher for class VI, and 1 school guard. Observations were carried out directly for five weeks, from November 8, 2021, until December 11, 2021. The observation instruments used were interview sheets, observation sheets, document notes, and camera aids to take pictures and videos related to research. Data collection was carried out by direct observation of the research object, namely activities regarding waste management in schools. Then interviews were conducted with one school principal, 1 class VI teacher, and 1 school guard using a list of questions prepared in advance. One time for 30 minutes. Moreover the last is the documentation process by taking documentation in photos, pictures, and videos related to this research.

3. FINDINGS AND DISCUSSION

Results of interviews with respondents

Furthermore, in knowing the effectiveness of the waste bank as an education-based solution to reduce environmental pollution in schools, an interview was conducted where the authors asked whether the school had provided the school principal with the physical building needs of the waste bank:

"Those who prepare the building come from the school, the funds used are also from the school, the funds use the boss's funds, or other funds from the government as well," but yes, the school still provides the funds (Interview with the principal)."

From the interview above, it is known that in terms of providing physical buildings to the school waste bank, it comes from the school through BOS funds so that the school provides it independently without any outside assistance. Furthermore, to determine the smooth implementation of routine functions, namely to determine the success of implementing waste banks in schools and the absence of problems faced. From the interviews conducted by researchers with informants, ask, "Have you done Marketing on Waste Bank Reproductive Products?" To find out the answer from the school through the class VI teacher, he answered:

"From 2012-2015 there was still marketing such as compost, key chains from recycled paper, making newspaper woven fabrics, which were used as sandals and pencil cases, and plate mats.

However, from 2017 until now, it has not worked. What is still running is only separate garbage that is still being sold" (Results of the VI-grade teacher interview)."

Finally, in determining whether or not the optimization of the waste bank is effective, it can be seen from the results of the performance of the waste bank itself. To find out the performance and impact, the researcher asked the informants, "Do you think the performance of this waste bank has been running according to the standards set? to the sixth grade teacher who is in charge of the school waste bank, and he answered

"If the standards set by our main waste bank have been implemented, the evidence can be seen from the Waste Bank Savings Book, the MOU. If it is confirmed regarding the pick-up, the collection will immediately pick up" (interview with a Class VI teacher)."

To find out its performance and impact, the author again asked the informant about, "What is the role of students in participating in the School Waste Bank?" and the school caretaker replied:

"The active role is quite good because the students want to bring garbage from home to save it. Even students collect garbage on the road and then take it to school for savings (interviews with school guards)".

From the results of the interviews above, we can see that waste management, especially in school waste banks, has been going well because from interviews conducted by researchers with informants, it can be seen that so far, the school has cooperated with the parent waste bank well so that the waste bank program in schools This can be a solution-based educational media in overcoming environmental pollution, especially in schools.

The environmentally cultured school (Adiwiyata) is one of the programs run by the State Ministry of the Environment to encourage the development of knowledge and awareness among school residents about the importance of environmental preservation. With the help of this program, it is hoped that every student will participate in school activities that promote a healthy environment and help avoid negative environmental consequences (Afriyeni, 2018).

Environmentally-minded schools (adiwiyata) are distinguished by their physical appearance as green or shady schools and by the fact that they offer educational programs and activities that promote environmental awareness and wisdom. Because the educational program is packaged in a fully participatory manner and believes in the power of the group, it activates and balances Feeling, Acting, and Thinking, allowing each individual to recognize the tremendous significance of his or her initiation. Put another way, groups are urged to create a shared vision by first understanding what is meant (Definition) and then discovering and appreciating what already exists. Naturally, it is the best (Discovery) because it involves learning what should be there (Dream) and structuring what already exists (Design). Moreover, to keep it going until it becomes a reality (Destiny). The outcomes will be far superior to what was anticipated and will be highly synergistic with the realities of school life (Mukminin, 2014).

Students' knowledge in waste management must be instilled from an early age to understand that any waste they produce must be appropriately managed to increase the use value and economic value of the waste. Based on Law No. 18 of 2008 that waste management is carried out based on the principle of responsibility, the principle of sustainability, the principle of benefit, the principle of justice, the principle of awareness, the principle of togetherness, the principle of safety, the principle of security, and the principle of economic value. Waste management aims to improve public health and environmental quality and make waste a resource (Marliani, 2015).

The government's pattern of the waste management program is through a practice of waste management employing Reduce, Reuse and Recycle (3R). In everyday life, this pattern has begun to be applied in several supermarkets that apply rules to pay for plastic shopping bags; this is intended for consumers to use plastic bags to a minimum when shopping. Reducing the amount of waste, especially household plastic waste, is also carried out through socialization by the Environmental Service (Antin et al., 2019).

The Reuse management pattern is an effort to manage waste by reusing. Reuse in everyday life can be done by using materials that can become waste to be reused. Recycle waste management pattern is a waste management pattern by recycling existing waste into a more economical form. Some examples of recycling include processing plastic waste into other conditions such as buckets and other products with more economic value. Some children in elementary schools in Subang Regency are also taught how to manage waste using this recycling pattern by utilizing waste into creative items such as bags, flowers, and baskets. Children's experience of recycling waste into objects with aesthetic and economic value is expected to provide a background for students (Purnami, 2020).

Waste management implemented at the elementary school level in Subang Regency is waste management by combining knowledge, attitudes, and skills. The application pattern is based on a design of raising awareness, namely awareness about waste, types of waste, and the dangers and benefits of waste. The practice fosters the habit of thinking about waste (Thinking). This pattern is carried out by inviting children to observe the surrounding environment about the condition of the garbage in their environment, especially in the school environment. This habitual pattern of caring for the environment is grown from an early age because many adults do not care about their environment. This pattern of observing waste in the school environment will be a stimulant for students to identify existing problems. Students will be able to formulate the issues and solve problems. Inquiry-based learning patterns can also be applied in environmental learning. The school residents mainly carry out the waste management practice in elementary schools in Subang Regency. Based on an interview with the principal, waste management is carried out by the school's residents because of the limitations of the Environment Agency to manage and transport waste in schools. Waste management carried out at the school is collecting waste and burning it.

Teachers, staff, and students carry out most waste management. The involvement of waste officers is minimal in efforts to manage waste in schools. Once the role of school residents in managing school waste is so prominent, it is necessary to have an external intervention to provide provisions and internalization in school waste management for all school residents. The pattern of habits carried out by school residents shows that most students and school residents throw garbage in the schoolyard, collect garbage, and burn it. There is no waste sorting pattern at the school. This is reinforced by the observation of piles of garbage around the schoolyard. This habit pattern needs to be intervened by internalizing environmental care, especially the customary handling of waste correctly.

Optimization of Waste Banks in Schools as a Student Education Facility

The School Waste Bank is an initiative to encourage recycling activities at the school and community level, which currently can be carried out by students and supervised directly by teachers (Wikusna et al., 2018). The School Waste Bank is a student-owned business entity that aims to reduce the pile of school waste to be processed and utilized to become practical and have economic value. Based on previous studies, waste bank activities have been applied to schools to educate the next generation about the importance of waste management issues. However, waste bank activities provide students with an understanding of waste and its processing into various handicraft products; the activities of exchanging waste for money or valuables have not been carried out thoroughly by students in these schools.

Waste management through waste bank activities is expected to instill a value for students that waste is not always something useless. Still, it can be used as an artistic and economic value (making money). So that students as the nation's young generation will be educated to always respect waste by not throwing it anywhere and being willing to manage the trash properly. Good waste management will positively impact the school environment to create a clean, healthy, beautiful, and comfortable environment. So that with an environmentally friendly program through waste bank activities, a healthy environment in schools can be realized.

Every Friday, the waste management process is carried out once a week. Each classroom is given three plastic bags; this is done to separate the types of waste. If much garbage has been collected, it is

put into the trash bin provided in front of each class. Every Friday, all school residents collect garbage from the waste bank officers in the school's front yard.

Waste management refers to any action or activity carried out in a systematic, comprehensive, and long-term manner, including the handling and reduction of trash. Depending on its physical and chemical characteristics, waste can be divided into four categories: 1) waste that decomposes quickly, such as vegetable residue, leftover meat, leaves, and other organic waste; 2) waste that decomposes slowly, such as plastic, paper, rubber, metal, and remnants of building materials; 3) garbage in the form of dust or ash; and 4) hazardous waste (B-3) for human health, such as waste originating from industry and hospitals and containing various chemicals and dangerous disease agents, among other things (Law of the Republic of Indonesia Number 18 of 2008 concerning Waste Management, 2008).

To complete waste management activities, the participation of all school members is required. Because each individual generates garbage in schools, those directly involved in this activity are students, teachers, employees, and school residents. The students are the essential part of this waste bank activity. It is critical to understand the level of student participation in waste management because the involvement of school residents is critical to the long-term viability of the compost house in the coming year (Manurung, 2008).

In line with research conducted by (Fadhila & Rakimahwati, 2020), children are more creative in producing recycled waste products because children have high imagination power. In addition to the market, household, and office industry. Schools are where many people gather and can become the most significant waste producer. Generally, school waste is only slightly more basic waste than dry waste. Wet waste is produced from fallen tree leaves and food scraps. At the same time, dry waste is mostly paper, plastic, and a little metal. The active role of students in schools is needed to minimize the volume of waste. To improve public health, it is necessary to provide students with sustainable environmental insight education. This can be obtained by introducing school student participation through counseling to strengthen students' creative attitudes.

During the waste bank process, the teacher provides direction and guidance to students on waste bank activities. All school residents attended the waste bank activity. Before the teacher exposes the students, the teacher is given directions first by the waste bank officer. It aims to have the same understanding according to holding a waste bank activity. According to research conducted by (Safitri 2016), the waste management system begins with delivering material by the teacher to students. Students are given assignments related to the waste management system. In addition to the role of teachers, waste bank officers also have many functions in waste bank activities, namely, managing waste which is done once a week, and providing direct direction to students regarding waste bank activities. The waste bank has officers of the students themselves. One of them is the environmental police. The environmental police's duties include checking every corner of the classroom, whether the classroom is neat and clean or not. Every morning and during break hours, the environmental police have the task of checking the corners of the room, starting from the classroom, terrace, bathroom, and other courtyards. This is done to train a sense of responsibility and concern for the school environment. Students in waste bank management dominate. Because the entire waste bank management process, from receiving, weighing, sorting, and recapitulating to distribution, is students' responsibility as waste bank administrators.

The environmental police have one task, namely, checking the school environment. If students or teachers are caught littering, the environmental police report directly to the teacher. In addition, the environmental police report to the teacher if several teachers or students do not comply with these rules. Then the teacher will follow up for those who violate these rules, following the statement (Triwardani 2013) that there is no written sanction in this activity, only a verbal warning from the implementing officer.

All school residents attended the waste bank activity at SDN Tenjolaya IV. The results of interviews with teachers explained that the teacher had a role in providing direction and guidance to students on waste bank activities during the waste bank process. Before the teacher exposes the

students, the teacher is given orders first by the waste bank officer. This aims to have the same understanding according to holding a waste bank activity.

Education-based solutions to foster environmental care characteristics for students can be carried out through programs that schools have designed. For example, SDN Tenjolaya IV instills religious and discipline programs in students through the Waste Bank program. The character of love for the environment instills in students that cleanliness is part of faith. Based on this, students will have a caring attitude towards their environment. Awareness of the environment can increase the comfort of life because individuals who carry out this practice tend to maintain sanitation, balance, and preserve the surrounding physical environment. The way students show the character of loving the environment; students are aware of the importance of cleanliness because cleanliness is part of faith by (disposing of garbage in its place, if you see the waste that is not in its place, it is immediately taken to be thrown into its place, saving in the Garbage Bank according to the time determined by the school). , togetherness in collecting garbage in each class for savings by placing it in bags according to the type of waste.

4. CONCLUSION

From the research results through observations and interviews, it can be concluded that implementing solution-based education to protect the environment from being damaged can be done by making waste banks in schools. Students' enthusiasm for participating in the waste bank program is also high. The active role can see students collecting garbage on the streets and around the school environment and then taking it to school for savings. This shows that the goal of optimizing waste banks as a means of educational solutions is realized. The optimization of the waste bank is carried out through four stages. The first stage is collecting student waste, the second stage is depositing waste to the waste officer, the third stage is sorting waste, and the fourth is coordinating waste by the National Waste Bank. The author realizes that this research is still far from perfect, especially in terms of data sources and informants, because when the research was conducted, it was still in an atmosphere of the COVID-19 pandemic. For this reason, it is necessary to carry out further research, especially in terms of the amount and depth of research data, so that better results can be obtained.

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