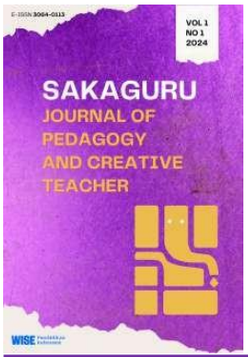

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Research Article

Achieving Blessings Through the Flagship Zero Waste Program at SMAN 4 Mataram

Jauhari Khalid* and Ni Komang Purnawati.

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Abstract

Waste creates cultural problems as it impacts various aspects of life sustainability. Consequently, humans are dependent on their surrounding environment, making it crucial to preserve it to prevent existing issues from escalating into more significant hazards. One of the efforts that can be initiated early on from the school level to address environmental issues is the implementation of zero waste practices. The zero waste program at SMAN 4 Mataram has significantly improved the school environment and the surrounding community. This program, which includes initiatives such as saberling, waste tickets, maggot cultivation, compost production, and classroom cleanliness competitions, has effectively reduced waste volume and created a cleaner, healthier environment. Increased awareness and participation in waste management practices among students and staff have been notable outcomes, alongside the development of waste-based entrepreneurship. Data collection methods include observation, interviews, and surveys to assess the program's effectiveness and impact. he zero waste program at SMAN 4 Mataram has improved the community's well-being by creating a healthier environment and reducing health risks associated with waste accumulation. The program has instilled a sustainable environmental culture among students and staff, which can be passed on to future generations. For similar practices, it is recommended to enhance infrastructure and continually engage the community in environmental education and activities.

Keywords: Zero Waste; Sustainability; Composting; Maggot

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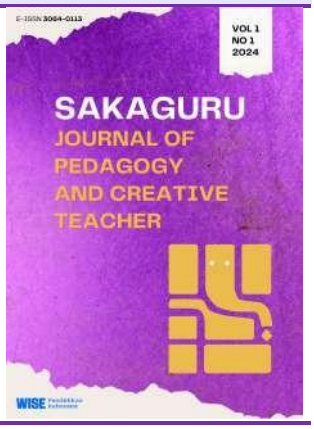

INTRODUCTION

Waste is the byproduct of processed materials that are either unused or have no functional value. However, waste can hold value if it undergoes a recycling process. Organic waste at landfill sites constitutes more than 80 percent, with 68 percent of household waste being composed of organic material [1]. Every human activity inevitably produces waste [2]. According to data from the National Waste Management Information System (SIPSN) by the Ministry of Environment and Forestry (KLHK) in 2022, which includes inputs from 202 regencies/cities across Indonesia, the total amount of waste generated nationally reached 21.1 million tons. Of this total, 65.71% (13.9 million tons) was managed properly, while the remaining 34.29% (7.2 million tons) was not adequately managed [3].

Waste management has become an increasingly alarming global issue. With the growth of the population and excessive consumption patterns, the amount of waste produced has significantly increased. Poorly managed waste can lead to serious environmental pollution, such as water, soil, and air contamination, and has adverse effects on human health and natural ecosystems [4]. Waste creates cultural problems as it impacts various aspects of life sustainability. Consequently, humans are dependent on their surrounding environment, making it crucial to preserve it to prevent existing issues from escalating into more significant hazards [5]. One of the efforts that can be initiated early on from the school level to address environmental issues is the implementation of zero waste practices [6].

Based on observations conducted at SMAN 4 Mataram, like many other schools, it faces significant issues related to the increasing production of waste. The waste generated comes not only from teaching and learning activities but also from the school canteen, school events, and extracurricular activities. With a large student and staff population, and various activities occurring daily, the volume of waste produced is substantial and diverse. Waste from teaching and learning activities typically consists of paper, plastic, and unused stationery. The school canteen is a primary source of both organic and non-organic waste, including food scraps, plastic wrappers, beverage bottles, and various types of food packaging. School events, such as celebrations, sports activities, and art performances, also contribute significantly to the waste volume, particularly single-use items used for decoration and consumption.

Observations indicate that the awareness of students and staff regarding waste management remains relatively low. Many students still dispose of waste carelessly, despite the availability of segregated trash bins throughout the school. Existing recycling efforts are sporadic and have not yet become part of the school culture. Recycling programs, such as the waste bank, have not been effective due to the lack of participation and support from the entire school community. Education on the importance of waste management and recycling is also limited, resulting in many students and staff not fully understanding the negative impacts of waste on the environment and health.

The study by Suci Lestari et al., titled "Zero Waste Concept in Schools: Processing Household Organic Waste as an Alternative Food Source," focuses on the zero waste concept in schools by processing household organic waste into alternative food products. Schools generate a significant amount of organic waste that can be recycled, and by adopting a zero waste lifestyle, this organic waste can be processed into vegetable powder, vegetable chips, tea, and other nutritious food products. At SMK Muhammadiyah Cariu (SMKMC) Bogor, community service activities were carried out through training on organic waste processing

techniques. The training results demonstrated high effectiveness, with an average survey score of 73.78%, proving that the program successfully enhanced students' skills in managing organic waste and supported environmental sustainability [7].

A similar study was conducted by Muchammad Musa Alfaruk, titled "School Principal's Strategy in Creating a Healthy School through the Zero Waste Program." This study aims to address how school principals can create a healthy school environment through a zero waste program. This qualitative descriptive study involved subjects such as the school principal, representatives of the teaching staff, the zero waste program leader, and students at SMP Al Islah Surabaya. The object of this study was the principal's strategy in creating a healthy school through the zero waste program. Data were obtained through observations, interviews, and documentation. The results showed that the principal's strategy at SMP Al Islah Surabaya in creating a healthy school through the zero waste program included enhancing the principal's management skills, improving facilities and infrastructure to support a healthy school, encouraging healthy living habits among school members, and creating a waste-free school environment [8].

While the study by Suci Lestari et al. demonstrated the efficacy of training students to process household organic waste into alternative food products, it left several areas unexplored. Notably, the long-term sustainability of these practices and the mechanisms to ensure continuous engagement from the school community were not thoroughly addressed. The research also did not delve into how the program could be scaled to other schools facing different resource constraints and environmental contexts. Furthermore, the behavioral changes needed to sustain zero waste practices were not fully examined, leaving a gap in understanding how to instill lasting environmental habits among students and staff.

Similarly, the study by Muchammad Musa Alfaruk provided valuable insights into the strategic role of school principals in fostering a healthy school environment through zero waste programs. However, the focus was predominantly on immediate management strategies without a comprehensive analysis of the challenges in changing long-term behaviors among the school population. The study also did not explore the involvement of external stakeholders, such as parents and the local community, which are crucial for the broader adoption and support of zero waste initiatives. Thus, there is a gap in understanding the holistic approach required to implement and sustain zero waste programs effectively across different school environments.

A more comprehensive and sustainable program is needed to manage waste at SMAN 4 Mataram. This program should include intensive education on the importance of waste management, as well as the implementation of effective recycling systems. The involvement of the entire school community, from students and teachers to administrative staff, is crucial for the program's success. Active participation and commitment from all parties should be encouraged through various activities and environmental campaigns. The proposed zero waste program aims not only to reduce the amount of waste produced but also to build lasting environmental awareness among students and staff. This program is expected to serve as a model for other schools in Mataram and its surrounding areas.

The primary objective of the Zero Waste Program at SMAN 4 Mataram is to foster a sustainable and healthy school environment through the implementation of comprehensive waste management practices. This includes educating and training the school community on techniques for processing organic waste into valuable products. The program aims to

significantly reduce the volume of waste generated by the school and to instill a culture of environmental responsibility among students and staff.

Additionally, the initiative seeks to establish school-based entrepreneurship by transforming collected and sorted waste into a source of income for the school. This entrepreneurial aspect not only provides financial benefits but also reinforces the practical value of waste management and recycling. The ultimate goal is to encourage long-term behavioral changes that support environmental sustainability, making zero waste practices an integral part of the school culture and potentially serving as a model for other schools to follow.

By identifying these issues, this research seeks to develop and implement an effective zero waste program at SMAN 4 Mataram. The goal is to provide tangible solutions to the environmental challenges the school faces, addressing the significant waste production and management problems. Through this program, we aim to establish a comprehensive approach that includes intensive education on waste management, effective recycling systems, and active participation from the entire school community. This program is designed not only to mitigate the volume of waste generated but also to instill a culture of environmental responsibility and sustainability among students, teachers, and administrative staff. By fostering long-term behavioral changes and encouraging ongoing commitment to zero waste principles, the initiative aims to create a cleaner, healthier school environment.

Moreover, the successful implementation of this zero waste program at SMAN 4 Mataram is expected to serve as a model for other schools in Mataram and surrounding areas. By demonstrating the practical benefits and feasibility of sustainable waste management practices, this program can inspire and motivate other communities to adopt similar approaches, thereby contributing to broader environmental conservation efforts and the creation of healthier educational environments.

METHODS

The Zero Waste Program at SMAN 4 Mataram is designed as a community service activity aimed at creating a clean and healthy school environment through comprehensive waste management. The program is implemented at SMAN 4 Mataram, located in the city of Mataram, West Nusa Tenggara. This study falls under the category of descriptive qualitative research, using a participatory approach that involves the entire school community. Data collection techniques include observation and documentation. The target community for this service activity includes all members of SMAN 4 Mataram, such as students, teachers, and administrative staff. The program also aims to involve students' parents and the surrounding community to ensure that the positive impact of the program is widely felt and sustainable. The implementation of this activity consists of three main stages: planning, execution, and evaluation, as figure 1. below:

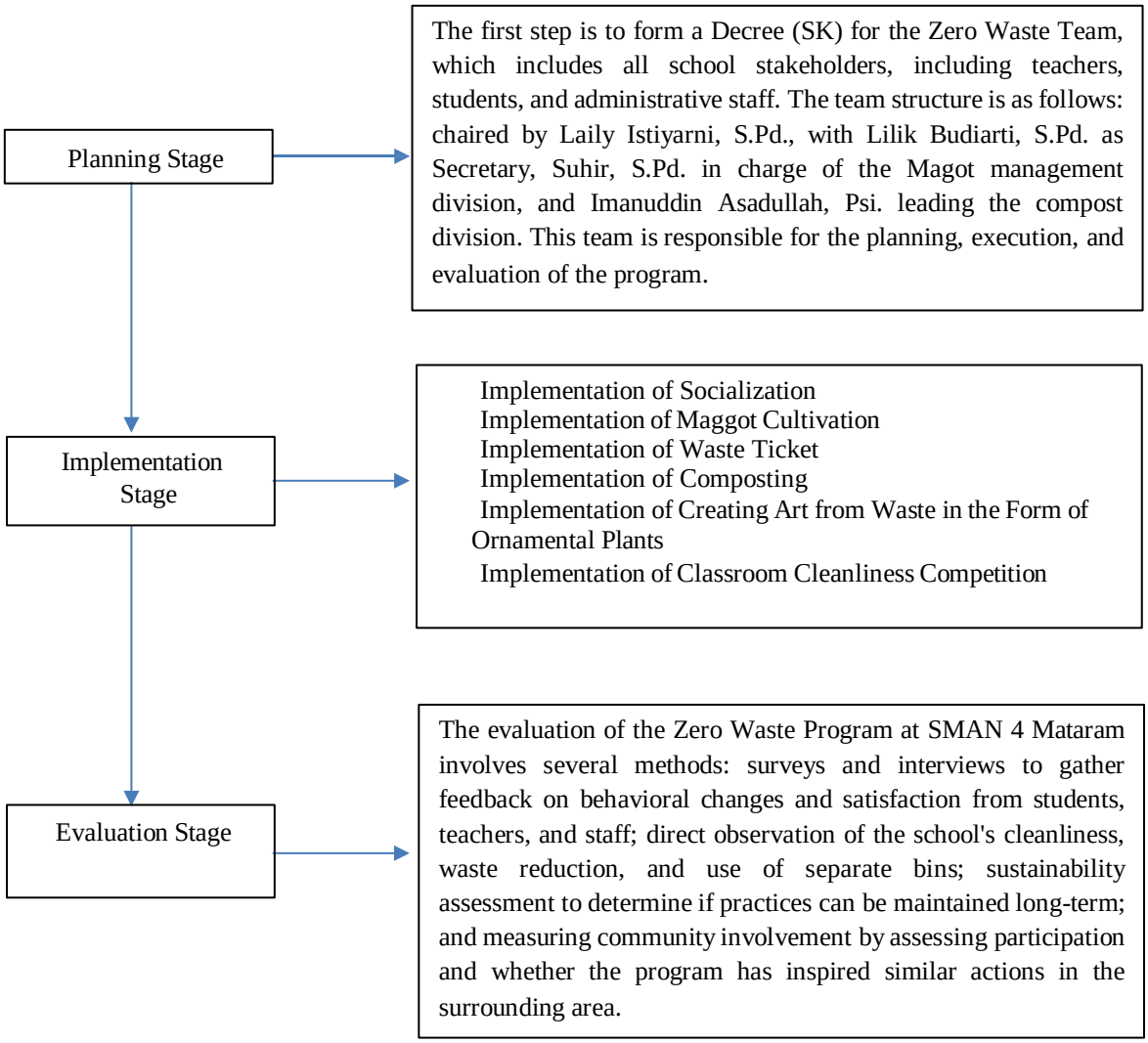

Figure 1. The Implementation of Activity Zero Waste

The impact of the Zero Waste Program at SMAN 4 Mataram is evaluated through several methods. Surveys and interviews are used to collect feedback from students, teachers, and administrative staff regarding the changes they have noticed and their satisfaction with the program. Direct observation is conducted to assess physical changes in the school environment, such as increased cleanliness and reduced waste volume. Sustainability assessment helps to evaluate whether the changes can be maintained over the long term, making zero waste practices an integral part of the school culture. Community involvement is measured by assessing the active participation of all school members and whether the program has successfully inspired similar actions in the surrounding community. Thus, this program is expected not only to provide solutions to waste problems but also to build sustainable environmental awareness and responsibility within the school community.

RESULT AND DISCUSSIONS

Result

The implementation of the Zero Waste Program at SMAN 4 Mataram has demonstrated several significant positive impacts. First, the school environment has become cleaner and healthier. With the program in place, school cleanliness has drastically improved, litter has decreased, and the school area appears more orderly. Students and staff have also become more aware of the importance of maintaining their surrounding environment, contributing to a more comfortable and safe learning atmosphere. Second, the volume of waste generated by the school has significantly decreased. Through various waste management activities such as the segregation of organic and non-organic waste, maggot cultivation, and compost production, the school has been able to reduce the amount of waste sent to landfills. This program also encourages students to be more responsible in disposing of their waste properly. Third, the program has successfully fostered school-based entrepreneurship. The collected and sorted waste has economic value that can be utilized. The school has been able to produce items such as compost and ornamental plants from organic waste, which are then sold to generate additional income. This not only provides financial benefits but also teaches students entrepreneurial skills and the importance of recycling.

Zero Waste

Zero Waste Indonesia is the first online-based community in Indonesia, founded by Maurilla Imron and Kirana Agutina in [9]. The community aims to encourage Indonesians to adopt a zero-waste lifestyle as a means to preserve the environment by minimizing individual waste production [10]. Zero waste is a novel concept that provides solutions to various problems arising from waste [11]. According to Paul Connett, the concept of zero waste involves avoiding the use of incinerators and landfills, eliminating the practice of waste disposal, and creating sustainable communities [12]. The Zero Waste International Alliance asserts that zero waste involves preserving all resources through responsible production systems and consumption patterns, ensuring that used products can be reused. This approach avoids dealing with used packaging or product materials by incineration or landfill disposal, which can increase air emissions, cause environmental pollution, and pose threats to human health [13].

Zero waste is an environmental management concept aimed at minimizing waste to near zero. This concept emphasizes efforts to reduce the volume of waste produced at the individual, community, and industrial levels [14]. Zero waste is one of the most visionary concepts for addressing waste and pollution issues [15]. Zero Waste can be an effective solution for achieving sustainable waste management and improving environmental quality. The Zero Waste concept also plays a role in reducing environmental pollution. By efficiently managing waste, this approach helps to decrease the volume of waste that contaminates the environment, including water, soil, and air, thereby reducing the likelihood of pollution [16].

Implementation of the Zero Waste Program at SMAN 4 Mataram

Zero waste is a waste management model that treats waste as a valuable resource. At SMAN 4 Mataram, the concept of zero waste is implemented with a focus on reducing the amount of

waste, recycling, reusing, and developing waste-based entrepreneurship. The programs conducted at SMAN 4 Mataram encompass various initiatives designed to manage waste effectively and sustainably. SMAN 4 Mataram has adopted the zero waste management model, treating waste as a valuable resource. The zero waste program at this school includes various initiatives aimed at reducing the amount of waste, encouraging recycling and reuse, and fostering waste-based entrepreneurship.

The socialization and implementation of Saberling (Saturday Clean-Up) is an initiative aimed at increasing awareness and participation of the entire school community in maintaining environmental cleanliness. This activity is held every two weeks on Saturdays and involves students, teachers, and school staff. During Saberling, all participants gather to clean the school and surrounding areas, including classrooms, courtyards, and other public facilities. The goal of this activity is to create a cleaner and healthier school environment and to instill the habit of maintaining cleanliness among students and staff. Through intensive socialization, it is hoped that all school members will understand the importance of environmental cleanliness and commit to maintaining it sustainably.

Figure 2. Socialization and Implementation of Saberling

The waste ticket program is an innovative initiative that requires every student to bring waste as their "ticket" to go home. Every day, students collect waste from home or school and submit it to the waste collection point at the school. This program aims to increase students' awareness of the importance of waste management and encourage them to practice waste segregation at home. As a result, the volume of improperly managed waste at school has significantly decreased, and active student participation in waste management activities has increased.

Figure 3. Implementation of the Waste Ticket Program

Maggots are the larvae of the black soldier fly species, *H. illucens*. This species is a viable option for providing a protein-rich feed source due to its ease of availability, cultivation, and its high protein content of around 40-48% and fat content of 25-32% [17]. The maggot cultivation program utilizes black soldier fly larvae to process organic waste. The maggot cultivation division team, supervised by Suhir, S.Pd., manages this activity by involving

students in the creation and management of maggot cultivation facilities. The program aims to reduce organic waste at the school in an environmentally friendly manner. Maggots can quickly decompose organic waste, and the end product can be sold as animal feed or used as natural fertilizer. The harvested maggots are sold to the Lisan Ampenan Maggot Center (AMC) Waste Bank at a price of 5,000 IDR per kilogram, providing additional income for the school.

Figure 4. Maggot Cultivation

The compost production program focuses on processing leaf litter and food scraps into organic fertilizer. Compost is organic material (organic waste) that has undergone decomposition due to the interaction with microorganisms (decomposing bacteria) that work within it. This organic material includes leaves, grass, straw, leftover twigs and branches, animal manure, fallen flowers, urine, and more [18].

The zero waste team, led by Imanuddin Asadullah, Psi., along with students, manages the collection, processing, and utilization of compost. This program aims to reduce organic waste and produce organic fertilizer that can be used in the school garden or sold to generate additional income for the school. The compost produced is used to fertilize ornamental plants and the school garden, and it is also sold to the surrounding community, enhancing environmental awareness and community involvement.

Figure 5. Compost Production

Creating artwork, this program transforms plastic waste into pots for ornamental plants, which are then enriched with compost to nourish the plants. This not only reduces plastic waste but also promotes creativity and the reuse of discarded materials. This activity teaches students the importance of recycling and provides them with practical skills in creating artwork from waste. Classroom cleanliness competitions are held to encourage students to maintain cleanliness and take care of their classroom environment. This competition not only improves the cleanliness of the school environment but also fosters a sense of responsibility and camaraderie among students. The cleanest and most orderly class receives an award, motivating students to continue maintaining cleanliness.

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Figure 6. Student Artwork from Waste Processing

Based on the positive impacts and outcomes achieved from the implementation of the zero waste program at SMAN 4 Mataram, the objective of this initiative is to create a clean and healthy school environment through waste reduction and sustainable waste management practices. The program aims to enhance environmental awareness and responsibility among students, teachers, and school staff, encouraging waste segregation, recycling, and proper waste management as part of the school culture. Additionally, the program develops waste-based entrepreneurship by utilizing waste as a valuable resource through activities such as maggot cultivation and compost production, as well as improving students' entrepreneurial skills by producing and selling products made from processed waste.

The zero waste program at SMAN 4 Mataram also promotes creativity and innovation by inspiring students to create artworks using recycled materials and waste, such as making art from plastic waste. This program fosters innovation in waste management and the reuse of recyclable materials. To achieve these goals, active participation from the entire school community, including students, teachers, staff, and parents, is emphasized to build a spirit of cooperation and togetherness in maintaining a clean and healthy school environment. Additionally, the program provides adequate waste management infrastructure with facilities for waste segregation, composting, and recycling, supported by local government and community assistance. With these goals, the zero waste program at SMAN 4 Mataram is expected to make a tangible contribution to creating a cleaner, healthier, and more sustainable environment, and to shape a generation with high environmental awareness and responsibility. In simple terms, zero waste means eliminating unnecessary and unwanted waste from every product and its lifecycle stages. The concept of zero waste is typically implemented through five methods: Refuse, Reduce, Reuse, Recycle, and Rot [19]. Zero Waste outlines five principles of waste management known as the 5R principles [20]. These principles are:

1. Refuse. This means rejecting or not using unnecessary items. The principle of refuse involves limiting consumption to reduce waste production. Examples include refusing plastic bags, plastic cutlery, or plastic utensils when ordering food online, as well as single-use items like sachets of ketchup or chili sauce, and tissues.
2. Reduce. This involves reducing or avoiding excess. By reducing consumption, the amount of waste generated decreases, which also impacts the reduction of resource exploitation such as water, energy, and others.
3. Reuse. This means using items again rather than discarding them as waste. It involves repurposing items for other needs.
4. Recycle. This is the process of managing waste or used items into useful products with value. In the zero waste concept, recycling is done after the processes of refuse,

reduce, and reuse. This means recycling is applied to items that cannot be refused, reduced, or reused.

5. Rot. This involves managing organic waste by composting food scraps, fruit peels, and vegetable leftovers into organic fertilizer. Composting uses soil organisms like worms, bacteria, and fungi to decompose the waste. The end result of composting produces compost that can enrich the soil, and the nutrients can be reused for plant growth.

SMAN 4 Mataram has implemented the zero waste concept through various programs that encompass the five main principles of waste management: Refuse, Reduce, Reuse, Recycle, and Rot. The following table (Table 1) illustrates the division of zero waste activities at SMAN 4 Mataram based on each of these principles:

Table 1. Implementation of Zero Waste Program Based on Zero Waste Principles

Zero Waste Principles	Zero Waste Program at SMAN 4 Mataram	
	Activity	Description
Refuse (*Menolak*)	Waste Ticket	Students are required to bring their waste as a ticket to go home. This reduces the amount of waste generated as students become more aware of the waste they carry and avoid using single-use items.
Reduce (*Mengurangi*)	Maggot Cultivation	This program helps reduce the amount of organic waste by converting it into useful resources through maggot cultivation. Maggots decompose organic waste, reducing the volume of waste that needs to be disposed of.
	Classroom Cleanliness Competition	This competition encourages students to maintain cleanliness and reduce the amount of waste in their classrooms.
	Implementation of Socialization and Saberling	Socialization and Saberling activities, conducted regularly, encourage the entire school community to participate in clean-up efforts, thereby reducing the overall waste generated in the school environment.
Reuse (*Menggunakan Kembali*)	Creating Artwork from Waste in the Form of Ornamental Plants	Plastic waste is processed into pots for ornamental plants, promoting the reuse of materials that are typically discarded.
Recycle (*Mendaur Ulang*)	Waste Ticket	The waste brought by students is collected and sorted for recycling. This includes plastic, paper, and other recyclable materials.
	Compost Production	Organic waste such as leaves and food scraps are processed into compost, which is a form of recycling organic materials.
Rot (*Membusukkan*)	Maggot Cultivation	In addition to reducing, maggot cultivation also falls under the rot method as maggots decompose organic waste into natural fertilizer.
	Compos Production	The process of composting organic waste such as leaves and food scraps is a rot method, where organic materials are broken down into compost that is useful for plants.

By dividing the zero waste program activities at SMAN 4 Mataram into the five main methods of the zero waste concept, it is evident that the school has implemented various approaches to manage waste effectively and sustainably.

Discussions

The implementation of the zero waste program at SMAN 4 Mataram has had numerous significant positive impacts on the school environment and the surrounding community. This program has successfully created a cleaner and healthier school environment through initiatives such as the waste ticket system, maggot cultivation, compost production, and classroom cleanliness competitions, which have significantly reduced the volume of waste generated by the school. Students and staff are now more aware of the importance of waste management and actively participate in recycling and waste sorting practices. Additionally, the program has fostered waste-based entrepreneurship among students, with products like compost and potted plants that can be sold, providing additional income for the school.

However, the program is not without challenges. One major challenge is the resistance from some members of the school community to change their habits. Many students and staff were initially reluctant to separate waste or adhere to the waste ticket rules. Furthermore, the lack of adequate infrastructure for waste management, such as separate waste bins and composting facilities, made the effective implementation of the program difficult. Participation from the entire school community was also uneven; some students and staff were very enthusiastic, while others were less involved. To address these challenges, intensive education and socialization about the importance of waste management and the benefits of the zero waste program were conducted. Environmental socialization events were held to increase awareness and participation. The school also sought to improve waste management infrastructure by providing separate waste bins throughout the school and building adequate composting facilities. Support from local government and community donations also helped enhance these facilities.

Through a comprehensive and inclusive approach, the challenges faced in implementing the zero waste program at SMAN 4 Mataram were successfully overcome. This program not only reduced waste volume and created a cleaner and healthier school environment but also built a sustainable environmental culture and empowered students with entrepreneurial skills. This success demonstrates that with commitment and cooperation from the entire school community, waste management challenges can be overcome, and long-term benefits can be achieved.

This community service activity is based on previous research by Harmaen et al. on "School Principal Leadership Strategies in Realizing Quality Education to Support the Achievement of Sustainable Development Goals (SDGs) at SMAN 4 Mataram." Therefore, this study aims to determine how the principal's leadership strategy and impact in realizing quality education to support the achievement of Sustainable Development Goals (SDGs) at SMAN 4 Mataram. This research uses a qualitative approach with a case study type. The results of this study indicate that the principal's leadership strategy in realizing quality education at SMAN 4 Mataram is carried out through a democratic leadership model supported by various school flagship programs (Child Friendly School, Zero Waste, Literacy and Numeracy) [21].

The research by Harmaen et al. highlights the leadership strategies of the school principal at SMAN 4 Mataram in realizing quality education to support the achievement of Sustainable Development Goals (SDGs). This strategy is implemented through a democratic leadership model supported by various flagship school programs, including Child-Friendly School, Zero Waste, Literacy, and Numeracy. On the other hand, the zero waste initiative at SMAN 4 Mataram also reflects an inclusive and participative leadership model. The principal actively participates in forming the Zero Waste Team and involving the entire school community in various waste management activities, such as the waste ticket system, maggot cultivation, and compost production. This democratic and participative leadership enables all parties to contribute and feel ownership of the program.

Another relevant initiative was conducted by Syeftian Pranata et al. with the title "Implementation of the Zero Waste Program to Form Ecological Citizens (Case Study of Waste Management Efforts at SMA Negeri 1 Mataram)." This study aims to describe the implementation of the zero waste program to form ecological citizens and the factors that influence the implementation of the zero waste program to form ecological citizens at SMAN 1 Mataram. This research uses a qualitative approach with a case study type. The subjects and informants of this study were determined based on the criteria. The data that has been collected is analyzed descriptively through data reduction, data presentation and conclusion. The findings in this study are the implementation of the zero waste program to form ecological citizens at SMAN 1 Mataram including the goals of the zero waste program, the implementation time of the zero waste program, the application of zero waste refuse, reduce, reuse, recycle, rot, environmental knowledge, environmental skills, environmental attitude, environmental participation. Internal factors that influence the implementation of the zero waste program include teachers, students, zero waste infrastructure [22].

The research by Syeftian Pranata et al. focuses on the implementation of the zero waste program at SMAN 1 Mataram to cultivate ecological citizens. This program's implementation encompasses the principles of refusing, reducing, reusing, recycling, and rotting waste, while also enhancing environmental knowledge, skills, attitudes, and participation. Internal factors influencing the implementation include teachers, students, and zero waste infrastructure. Similarly, the zero waste program at SMAN 4 Mataram applies these principles, such as recycling and composting. However, this program places greater emphasis on entrepreneurial aspects, such as maggot cultivation and compost production, which are sold to generate additional income for the school. Furthermore, the program engages students in creative activities, like making art from waste, which not only promotes recycling but also fosters creativity and innovation.

In conclusion, the comparison between the research by Harmaen et al. and Syeftian Pranata et al. with the zero waste initiative at SMAN 4 Mataram demonstrates that leadership strategies and zero waste program implementation can be effectively applied through an inclusive and participative approach. The initiative at SMAN 4 Mataram not only focuses on waste reduction but also develops waste-based entrepreneurship, adding value to the school and community. By integrating elements from both studies, the zero waste program at SMAN 4 Mataram can achieve more comprehensive and sustainable results.

CONCLUSION

The implementation of the zero waste program at SMAN 4 Mataram has created a cleaner and healthier school environment through initiatives such as Saberling, waste tickets, maggot cultivation, compost production, and classroom cleanliness competitions. This program has increased awareness and participation among students and staff in waste management and fostered waste-based entrepreneurship, with products like compost and ornamental plant pots being sold to generate additional income for the school. These results contribute to community well-being by creating a healthier environment and reducing health risks from waste accumulation. The high environmental awareness among students and staff forms a sustainable environmental culture that can be passed on to the next generation. The development of waste-based entrepreneurship also provides practical skills and economic opportunities for students, positively impacting the local economy. However, there are several challenges in this activity, such as resistance from some school community members to change habits and the lack of adequate infrastructure for waste management, such as separate waste bins and composting facilities, which make the program implementation less effective.

Based on the experience of the Zero Waste Program at SMAN 4 Mataram, several recommendations can be made for similar activities in the future. Education and awareness about waste management should be continuously enhanced through seminars, workshops, and regular discussions. Recycling facilities should be adequate and placed throughout the school area. Innovation in waste management, such as waste-based entrepreneurship projects, should be developed to produce high-value products. Regular evaluations are necessary to assess the program's effectiveness and make necessary improvements. We urge all school residents and stakeholders to foster positive habits that directly impact the quality of the school. Support and commitment from all parties are essential. With these recommendations, similar community service activities in the future are expected to be more effective and have a greater positive impact on the environment and quality of life at school.

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CONFLICT OF INTEREST

"The Authors declare no conflict of interest."

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