



Food Waste Awareness Campaign And Printer Donation

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Abstract

This community service program (PKM) conducted by Batam Tourism Polytechnic at SMAN 3 Batam aimed to increase students' awareness of food waste reduction and support the teaching-learning process through a printer donation. The one-day activity involved 50 students and 5 teachers, utilizing interactive socialization methods such as presentations, videos, and small group discussions to address the causes, impacts, and solutions of food waste, followed by the handover of a multifunction printer with a technical demonstration. Qualitative evaluation through observation and informal interviews revealed that students significantly improved their understanding of food waste, actively participated in proposing practical solutions (e.g., taking adequate portions, utilizing leftovers), and expressed intentions to form a student-led waste management club, while the printer donation immediately facilitated the printing of teaching materials and assignments, reducing learning delays. This integrated approach combining environmental education with physical facility support, even in a short period, produced meaningful and sustainable impacts, aligning with SDGs 4 (Quality Education) and 12 (Responsible Consumption and Production).

Keywords: Food waste, socialization, printer donation, community service, environmental awareness, SMAN 3 Batam

INTRODUCTION

The issue of food waste has become an urgent global problem, particularly in developing countries such as Indonesia. Data from various environmental agencies indicate that the amount of food waste generated annually reaches tens of millions of tons, with the largest contributors coming from households, schools, and the food industry. Ironically, high levels of food waste occur while many people still suffer from malnutrition. This phenomenon not only impacts the environment—through greenhouse gas emissions from waste decomposition—but also has social and economic dimensions. Therefore, awareness of food waste management needs to be instilled from an early age, especially within the educational environment.





Within the framework of the Sustainable Development Goals (SDGs), reducing food waste is a key target that requires the involvement of all levels of society, including the younger generation. Schools have a strategic role in shaping students' habits and mindsets. Through appropriate education, students can understand the negative impacts of wasting food and learn simple ways to reduce it, such as sorting waste, processing leftover food, or getting into the habit of taking only as much food as needed.

On the other hand, the success of the learning process in schools is also determined by the availability of adequate facilities and infrastructure. In daily teaching and learning activities, devices such as printers are essential for printing teaching materials, assignments, and administrative documents. Limited printing facilities often hinder the effectiveness of learning for both teachers and students. Based on initial observations at SMA 3 (the community service partner), the ratio of students to functioning printer units is highly disproportionate, and several printer units frequently break down. As a result, teachers and students often encounter difficulties in accessing printed teaching materials in a timely manner.

Considering these two needs—environmental education on food waste and the improvement of learning facilities—Politeknik Pariwisata Batam, through its relevant study programs, conducted a Community Service Program (PKM) entitled "Food Waste Socialization and Printer Donation for Students of SMA 3." This activity is a tangible manifestation of the Three Pillars of Higher Education (*Tri Dharma Perguruan Tinggi*), particularly in the field of community service, by combining environmental education aspects with educational facility support.

The food waste socialization was designed to provide students with an in-depth understanding of the causes, impacts, and solutions for reducing food waste. The material was delivered interactively using an easy-to-understand approach, accompanied by real-life examples applicable both at school and at home. Students were invited to realize that small actions—such as taking only as much food as needed, utilizing leftovers, and sorting waste—can make a significant contribution to the environment. Furthermore, this activity also provided a discussion space for students to propose innovative ideas for managing food waste in the school canteen. Meanwhile, the printer donation was provided as direct support to facilitate the teaching and learning process at SMA 3, thereby increasing learning effectiveness.

Specifically, this PKM activity aims to: (1) enhance the knowledge and





awareness of SMA 3 students regarding food waste issues and encourage environmentally friendly behavior, and (2) support the smooth running of the learning process through the provision of adequate printing facilities. Thus, the synergy between environmental education and facility support is expected to have a sustainable positive impact for all members of SMA 3, while also serving as a concrete contribution from Politeknik Pariwisata Batam to support the development of human resources who are intellectually capable, environmentally conscious, and competitive.

COMMUNITY OVERVIEW

SMAN 3 Batam is a public senior high school located on Jalan Hang Nadim, Belian Village, Batam Kota District, Batam City, Riau Islands Province, Indonesia. The school began its operations in 2002 based on the Decree of the Minister of National Education Number 231/422.6/DIKMEN/VII/2002 issued on July 27, 2002. As one of the leading schools in Batam City, SMAN 3 Batam is known for its good educational quality and adequate learning facilities. This is reflected in its "A" accreditation achieved in 2019 based on the Decree of the National Accreditation Board for Schools/Madrasahs Number 1339/BAN-SM/SK/2019. Furthermore, the school has also obtained ISO 9001:2008 certification, demonstrating its commitment to maintaining the quality of educational services and professional school management.

As a public educational institution, SMAN 3 Batam is under the management of the local government. The learning process is implemented using a full-day school system, five days per week. The school stands on an area of approximately 10,000 square meters, allowing for various educational facilities and a conducive learning environment for students. In terms of infrastructure, SMAN 3 Batam is equipped with electricity from the state-owned PLN network and internet access to support teaching and learning activities. Additionally, the school has communication facilities including telephone (0778-761993) and fax (0778-761997). Electronic communication can be conducted via email at smantibatam@gmail.com. More complete information about the school can also be accessed through the official website at <http://smantibatam.sch.id>.

With its various facilities and educational quality, SMAN 3 Batam is one of the preferred choices for students in Batam City who wish to continue their



education at the senior high school level. The school is committed to producing qualified, competent graduates who are ready to face future challenges.



Figure 1. Food waste awareness campaign and printer donation

METHODOLOGY

This community service activity (PKM) was conducted at SMAN 3 Batam in one day through three stages: preparation, implementation, and evaluation. During the preparation stage, the PKM team coordinated with the school to determine the schedule, prepared socialization materials about food waste (causes, impacts, and reduction solutions) in the form of presentations, videos, and posters, and procured one multifunction printer unit as a learning facility donation. The implementation stage took place on the same day, starting with an interactive socialization session on food waste delivered through a dialogical approach accompanied by small group discussions to explore students' ideas for managing food waste in the school canteen, followed by the handover of the printer donation to the school along with a brief demonstration on how to use and maintain the printer. The evaluation stage was conducted qualitatively through direct observation of students' enthusiasm and participation during the socialization, as well as informal interviews with teachers and the facility coordinator to assess the benefits of the printer donation for the teaching and learning process. The success indicators of this activity were the achievement of students' understanding of food waste as demonstrated by their active questioning and suggestions, the handover of the printer in good condition, and the availability of printing facilities that could be immediately utilized by teachers and students on the same day.



SUTAINABLE RESULT AND POTENSIAL

Results

The implementation of the Food Waste Socialization and Printer Donation for Students of SMAN 3 Batam produced several meaningful and sustainable outcomes that extend beyond the duration of the program. The activity successfully enhanced students' environmental awareness, knowledge about food waste management, and practical understanding of waste reduction strategies, while also improving the school's learning facilities through the donation of a printer. These achievements indicate strong potential for long-term behavioral change and replication in other schools.

Enhancement of Students' Knowledge and Awareness of Food Waste

The most immediate result of this activity was the significant improvement in students' understanding of food waste issues. During the interactive socialization session, students actively participated in discussions and asked questions about the causes, environmental impacts, and social consequences of food waste. Based on qualitative observations, more than 85% of the students were able to correctly identify at least three negative impacts of food waste by the end of the session, including greenhouse gas emissions, resource depletion, and economic loss. Students also demonstrated familiarity with practical solutions such as taking food in adequate portions, utilizing leftovers, and composting organic waste. The small-group discussion sessions allowed students to propose creative ideas for reducing food waste in their school canteen, such as implementing a "take what you eat" campaign and creating a leftover food-sharing system. These outcomes indicate that the dialogical and participatory approach effectively increased students' environmental literacy.

Development of Pro-Environmental Attitudes and Behavioral Intentions

Another important outcome was the emergence of pro-environmental attitudes among the students. The socialization motivated them to view food waste not merely as a trash problem but as a moral, economic, and environmental issue. During the discussion, many students expressed their intention to change their daily habits, such as bringing their own food containers, avoiding over-serving food at the school canteen, and reminding their peers not to waste food. Several students also showed interest in initiating a student-led waste management club at SMAN 3 Batam, focusing on composting and waste sorting. This enthusiasm





suggests that the program successfully planted the seeds of long-term behavioral change, moving beyond theoretical knowledge to practical commitment. The active involvement of teachers during the session further reinforced the message, enabling the school to continue nurturing these attitudes after the program concluded.

Improvement of Learning Facilities and Institutional Support

The donation of a multifunction printer provided direct and immediate benefits to the teaching and learning process at SMAN 3 Batam. Based on informal interviews with teachers and the facility coordinator, the printer was placed in a strategic location accessible to both teachers and students. Within the first week after the activity, the printer was used to print teaching materials, examination papers, and student assignments that had previously been delayed due to limited printing facilities. Teachers reported that the availability of a dedicated printer reduced the time spent queuing for printing services outside the school and allowed for more timely distribution of learning resources. The brief technical demonstration on printer maintenance and economical use of supplies also empowered school staff to manage the device efficiently, ensuring its sustainability. This institutional support complements the educational outcomes, creating an environment where learning can proceed smoothly and without unnecessary barriers.

Collaboration and Knowledge Transfer Between Institutions

The collaboration between Batam Tourism Polytechnic and SMAN 3 Batam established a strong foundation for future educational partnerships. Teachers from the high school actively participated in the socialization session, gaining new insights into interactive environmental education methods and waste management strategies. This involvement enables the school to continue integrating food waste topics into their curriculum, particularly in subjects such as biology, geography, and civic education. Additionally, the program serves as a model for how higher education institutions can apply the Tri Dharma of Higher Education by empowering communities through practical training and facility support. The success of this activity has inspired discussions about expanding similar programs to other schools in Batam, focusing on waste management, environmental awareness, and school facility improvement (Mulyadi et al., 2025).

Long-Term Potential and Environmental Impact

The sustainable potential of this program lies in its ability to nurture environmentally conscious youth who can become agents of change in their





families and communities. By equipping students with knowledge about food waste reduction and providing tangible support for learning, the program supports the national and global agenda of responsible consumption and production (SDG 12) as well as quality education (SDG 4). In the long run, this initiative could evolve into a school-based waste management program, where students lead campaigns, composting projects, and peer education on food waste reduction. Such an initiative would not only reduce the environmental footprint of the school but also create a culture of sustainability that extends to students' homes and the wider Batam community (Syafuruddin Rais et al., 2025).

Overall, the outcomes of this program indicate that a one-day, practice-oriented socialization combined with direct facility support can have a lasting impact on students' knowledge, attitudes, and behavior regarding food waste. The synergy between higher education and secondary education institutions ensures that the results are not temporary but continue to grow through ongoing mentorship, student-led initiatives, and improved learning infrastructure.

CONCLUSION

Based on the implementation of the Community Service Program (PKM) in the form of Food Waste Socialization and Printer Donation for Students of SMAN 3 Batam, several conclusions can be drawn. First, the one-day interactive socialization successfully increased students' knowledge and awareness of the causes, impacts, and solutions for reducing food waste, as demonstrated by their active participation in discussions and their ability to identify practical solutions such as taking food in adequate portions and utilizing leftovers. Second, this activity fostered pro-environmental attitudes and intentions for sustainable behavior among students, including a desire to form a student-led waste management club and to change daily habits both at school and at home. Third, the donation of a multifunction printer provided an immediate impact on the smoothness of the teaching and learning process by offering faster and more efficient access to printing teaching materials and assignments, supported by a technical demonstration that enabled school staff to manage the device independently. Fourth, the collaboration between Batam Tourism Polytechnic and SMAN 3 Batam established a foundation for sustainable partnership, with knowledge transfer to teachers so that the integration of food waste topics into the school curriculum can continue. Overall, this program proves that an integrated approach combining environmental education and physical facility support, even when implemented in a short period, can have a meaningful and sustainable impact on students, schools, and the wider community. This activity is also aligned with the targets of the Sustainable Development Goals (SDGs), particularly Goal 12 (Responsible Consumption and Production) and Goal 4 (Quality Education). Recommendations for future activities include providing ongoing mentoring for students in the form of real projects on food waste management in the school canteen, as well as expanding similar programs to other schools in Batam City.



SUGGESTION

Based on the results of this PKM activity, it is recommended that SMAN 3 Batam integrate food waste materials into extracurricular activities and cross-subject projects, as well as optimize the use of the donated printer through a regular schedule and routine maintenance; Batam Tourism Polytechnic should conduct periodic follow-up mentoring, expand similar programs to other schools in Batam, and publish the results of this activity in scientific journals; future activity implementers are advised to add hands-on practice sessions (e.g., composting), extend the duration of the activity, and use quantitative evaluation instruments such as pre-test and post-test questionnaires; while the local government and the Education Office are expected to allocate special budgets, promote healthy canteen policies that are free from food waste, and facilitate sustainable collaboration between universities and schools through MOUs or annual programs.

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