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Research Article

Waste Management Strategi: Implementation of Green Point and Collaboration with Green Mollucas Waste Bank at Pattimura University

Advend Sri Rizki Sianturi [1*], Prelly Marsel Joanda Tuapattinaya [1], Sendy Putra Pradana [1]

Biology Education Study Program, Pattimura University, St Ir. M. Putuhena, Ambon 97233, Indonesia
** corresponding author:asianturi1712@gmail.com*

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ABSTRACT

Waste management on university campuses remains a serious challenge, particularly in relation to waste sorting and the reduction of plastic waste. The Green Point program is a campus-based waste collection and sorting initiative that provides designated stations and separate containers for recyclable waste before it is deposited in a waste bank. This study aimed to analyze the effectiveness of the Green Point program in encouraging student involvement in waste collection and management, as well as to examine the relationship between such involvement and environmentally friendly behavior. The study employed a descriptive quantitative method with a correlational approach involving 30 student respondents. Data were collected through a Likert-scale questionnaire and analyzed using Pearson correlation. The results showed that student involvement in the Green Point program had a positive relationship with three indicators of environmental behavior, namely environmental concern (r = 0.626), reduction in plastic use (r = 0.765), and waste management habits (r = 0.800). These findings indicate that greater student participation is associated with stronger environmental awareness and more positive waste-related behavior. In addition, most respondents expressed support for the program and recommended its broader implementation. The findings suggest that the Green Point program is an effective participatory strategy for campus waste management and can contribute to the development of a cleaner, more sustainable educational environment through strengthened environmental education and waste collection systems.

Keywords: environmental behavior, green campus, green point, student involvement, waste management

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INTRODUCTION

Indonesia is one of the world's largest contributors to global waste, with an annual waste production of 38,403,159.87 tons, according to data from SIPSN and KLHK in 2023. One of the cities contributing to this problem is Ambon City. The Environmental and Waste Management Agency (DLHP) of Ambon City reported that plastic waste in the capital of Maluku Province accounts for 30 percent of the total daily waste volume of 246.74 tons. According to data from the National Waste Management Information System, organic waste dominates the waste composition, followed by wood, paper, and plastic waste. If left unmanaged, organic waste can contribute to global warming through methane gas released during the decomposition process.

Waste refers to materials that are unused or discarded as a result of human activities and do not occur naturally. Waste can be categorized into several types, namely organic waste, inorganic waste, hazardous and toxic waste (B3), and residual waste (Hakim et al. 2025). Organic waste is derived from materials that can be naturally decomposed by microorganisms. Inorganic waste comes from materials that are difficult or impossible to decompose naturally. Hazardous and toxic waste (B3) contains substances that may endanger human health or

damage the environment. Meanwhile, residual waste is waste that is difficult or even impossible to recycle due to the complexity of the material, contamination, or limited recycling technology (Adzim, 2023).

Waste management remains an important issue in academic environments, particularly on university campuses. Several campuses have recognized that inadequate waste management practices contribute to low levels of environmental awareness. For example, at IAIN Syekh Nurjati Campus, increasing waste generation resulting from the activities of students, lecturers, and staff has the potential to negatively affect campus environmental sustainability (Andini et al. 2022). A detailed analysis of the types and quantities of waste generated is therefore essential for designing effective and efficient management strategies while supporting sustainable development. However, specific data on campus waste conditions are still limited, making it difficult to formulate appropriate and targeted policies. In addition, low awareness and participation among members of the academic community, as well as limited financial and facility resources, remain significant challenges in campus waste management efforts.

The Green Point program is a campus-based waste sorting and collection initiative designed to encourage the academic community, especially students, to separate recyclable waste according to its type (Ali, 2025). A Green Point is provided as a designated location equipped with separate containers for different categories of waste, such as organic, inorganic, and hazardous waste, in order to support more effective waste management and recycling processes (Alazaiza et al. 2025). In this study, the Green Point program focuses on collecting waste that is eligible to be deposited in a waste bank. The sorted waste is then transferred to the Green Mollucas Ambon Waste Bank, managed by Green Mollucas Ambon, which serves as the receiving institution and carries out further recycling processes. Thus, the Green Point program functions not only as a waste-sorting facility, but also as a participatory strategy to promote environmentally responsible behavior on campus.

Based on observations and interviews, several waste accumulation points were identified within the Pattimura University campus environment, including the FKIP Laboratory, the Faculty of Engineering, the area behind the Rectorate, and the area next to the Pujasera. Among these locations, the most significant waste accumulation was found behind the Pujasera, consisting mainly of organic waste such as food scraps. At each observed point, the waste collected by environmental sanitation staff had not been sorted, as all types of waste were still mixed together in one place. Waste collection is carried out once every two days and transported to the final disposal site, while cleaning activities are conducted twice daily, in the morning and afternoon. In addition, many students still show limited awareness of and concern for the campus environment. These conditions indicate that more innovative and participatory efforts are needed to support the realization of a zero-waste campus at Pattimura University.

Based on these conditions, it is important to examine the implementation of the Green Point program as an alternative strategy for campus waste management at Pattimura University. Therefore, this study aims to analyze the effectiveness of the Green Point program in encouraging student involvement in waste collection and management, as well as to examine the relationship between student involvement and environmentally friendly behavior.

METHODS

This study employed a descriptive quantitative method with a correlational approach to analyze the relationship between the level of student involvement in the Green Point program and environmentally friendly behavior, including environmental concern, reduction in plastic use, and waste management habits. The study involved 30 student respondents who participated in the Green Point program. Research flow and procedures for becoming a waste bank customer in Figure 1.

Data were collected through a Likert-scale questionnaire that aimed to measure three key indicators of environmental behavior:

1. Environmental concern
2. Reduction in plastic use
3. Waste management habits

The questionnaire consisted of statements related to these behaviors, and participants were asked to indicate their level of agreement on a 5-point scale, ranging from 1 (Strongly disagree) to 5 (Strongly agree).

Table 1. Score interpretation categories

Average Score	Assessment Category
4,21 – 5,00	Strongly agree
3,41 – 4,20	Agree
2,61 – 3,40	Somewhat agree
1.81 – 2,60	Disagree
1,00 – 1,80	Strongly disagree

Figure 1. Research flow and procedures for becoming a waste bank customer

The data collected from the survey were analyzed using the Pearson Product-Moment correlation technique to examine the relationship between the level of student involvement in the Green Point program (total participation score) and the three indicators of environmental behavior. The formula used for the Pearson correlation is as follows:

$$\frac{n\sum XY - (\sum X)(\sum Y)}{\sqrt{\{n\sum X^2 - \sum X^2\}\{n\sum Y^2 - (\sum X)^2\}}}$$

Where:
r = Pearson correlation coefficient
X = Student engagement score
Y = Behavior variable score (concern, waste reduction, waste management)
N = number of respondents
The resulting r value ranges from -1 to +1:

- r > 0 indicates a positive relationship
- r < 0 indicates a negative relationship
- The closer to ±1, the stronger the relationship between variables.

RESULTS AND DISCUSSION

Result

The survey conducted on 30 student respondents showed strong support for the Green Point program. Most respondents indicated that they "strongly agree" or "agree" that the program contributes positively to the campus environment. The results also showed that students who participated more actively in the Green Point program

reported higher levels of environmental concern, reduced plastic use, and better waste management habits. Questionnaire results - respondent behavior and involvement in Table 1.

Table 1. Questionnaire results - respondent behavior and involvement

Indicator	Strongly agree (%)	Agree (%)	Somewhat agree (%)	Disagree (%)	Strongly disagree (%)
Environmental concern	60	30	5	3	2
Reduction in plastic use	45	35	15	3	2
Regular waste sorting	40	40	15	3	2

The Pearson correlation analysis was conducted to examine the relationship between student involvement in the Green Point program (total participation score) and three key indicators of environmental behavior: environmental concern, plastic reduction, and waste management habits. The results of the analysis showed significant positive relationships between student involvement and all three behavior indicators. Relationship between student engagement in Green Point and environmental behavior in Figure 2.

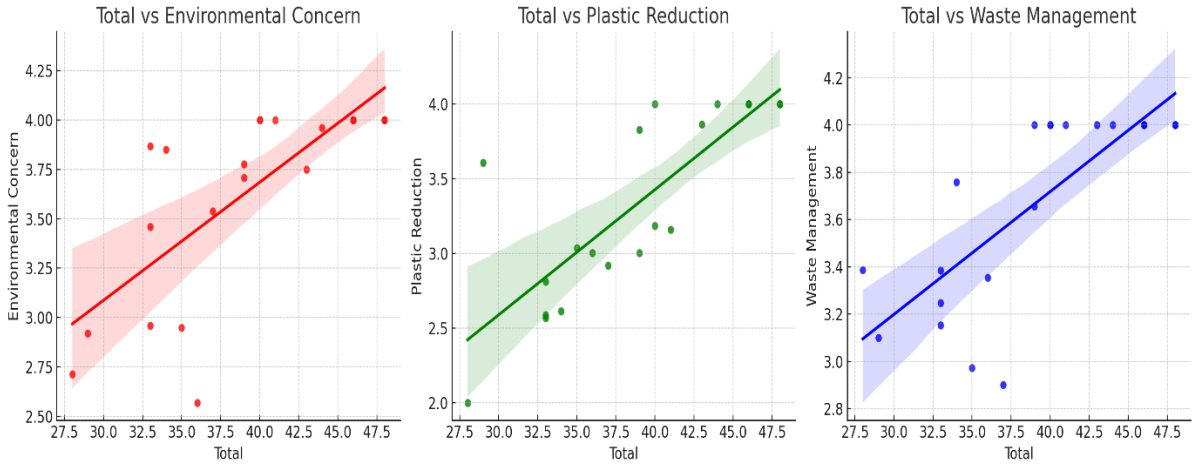

Figure 2. Relationship between student engagement in Green Point and environmental behavior

The scatter plots with regression lines demonstrate a positive relationship between student engagement in the Green Point program and key environmentally friendly behaviors. Specifically, a moderate correlation (r = 0.626) was observed between student participation and environmental concern, indicating that higher engagement led to greater environmental awareness. A stronger relationship (r = 0.765) was found for plastic reduction, suggesting that active involvement in the program significantly reduced plastic use among students. The strongest correlation (r = 0.800) was between student engagement and waste management habits, highlighting that higher participation led to more consistent waste sorting and recycling behaviors. These results underscore the effectiveness of the Green Point program in promoting sustainable practices on campus.

In addition to the survey and correlation analysis, an important aspect of the Green Point program involves the sorting of plastic waste by students. This process is crucial for the program's success, as it contributes to the reduction of plastic waste on campus and supports recycling efforts. The figure below provides an example of how plastic waste is sorted before being submitted to the Green Mollucas Waste Bank.

Figure 3. Example of plastic waste sorting for submission to the Green Mollucas Waste Bank

In the image above, plastic waste is categorized into different types: blue plastic bottles, colored plastic bottles and cups, and hard plastics. This sorting process is essential for the proper management of waste, ensuring that recyclable plastics are separated from non-recyclable materials. By actively participating in this sorting process, students contribute to creating a cleaner, more sustainable campus environment.

Discussion

The results of the study highlight the positive impact of the Green Point program on student engagement in environmental behavior. The Pearson correlation analysis showed strong positive relationships between student involvement in the Green Point program and key indicators of environmentally friendly behavior, including environmental concern, plastic reduction, and waste management habits. These findings confirm that active participation in the Green Point program significantly contributes to positive behavioral change in students.

A moderate positive relationship (r = 0.626) was observed between student engagement and environmental concern, suggesting that students who participated more in the Green Point program developed a greater awareness of environmental issues. This finding aligns with Luqman Hakim and Hidayati (2023), who found that participatory programs in higher education institutions increase students' awareness of environmental problems. By engaging in hands-on activities such as waste sorting and recycling, students in this study exhibited higher levels of environmental concern, a key factor in promoting sustainable behavior. This is further supported by Rodríguez-Guerreiro et al. (2024), who emphasized that engagement in sustainability programs positively influences environmental consciousness among university students.

A stronger positive relationship (r = 0.765) was found between student participation in the Green Point program and plastic reduction. Students who were more involved in the program reported a significant decrease in their use of single-use plastics. This is consistent with previous studies that show that educational and participatory sustainability programs can lead to tangible reductions in plastic consumption (Putri et al. 2025). The Green Point program appears to have successfully motivated students to adopt more sustainable consumption behaviors, such as using reusable water bottles and bags. These behaviors reflect the broader trend in campus sustainability programs that encourage students to become more mindful of their ecological footprint.

The strongest correlation (r = 0.800) was found between student engagement and the development of waste management habits, indicating that higher participation in the Green Point program led to more consistent waste sorting and recycling behaviors. This aligns with findings from Filho et al. (2019), who demonstrated that engagement in university-based sustainability programs significantly improves students' waste management practices. The Green Point program's effectiveness in fostering consistent waste management practices highlights the importance of ongoing participation and the positive impact of recycling incentives on student behavior (Shaherani et al. 2026). By participating in these activities, students not only contribute to campus sustainability but also develop long-term habits that can extend beyond their academic years.

The findings from this study suggest that the Green Point program has been highly effective in promoting sustainable behaviors among students. The program's success can be attributed to its combination of educational outreach, incentive-based participation, and hands-on experience in waste sorting and recycling (Wijayadi et al. 2025). The strong correlations between student involvement and the three key indicators of environmentally friendly behavior underscore the program's impact in fostering a sustainable campus environment. These results

are consistent with other studies that have documented the success of participatory sustainability programs in improving environmental behavior (Rodríguez-Guerreiro et al. 2024).

While the Green Point program has proven effective, the survey results also point to areas where the program could be enhanced. For example, although most students strongly agree or agree that the program contributes positively to the campus environment, accessibility to waste sorting stations remains a challenge. 30% of respondents indicated that some sorting stations are not easily accessible, particularly in areas with high foot traffic. Expanding the number of waste sorting stations across campus and placing them in more strategic locations could increase participation, especially among students who are not yet fully engaged. Additionally, increasing outreach and educational campaigns could help raise awareness among students who are not yet active participants in the program. These recommendations align with the findings from Rodríguez-Guerreiro et al. (2024), who suggest that ongoing engagement and feedback loops are crucial for maintaining high levels of participation in sustainability programs.

The Green Point program supports the achievement of Sustainable Development Goals (SDGs), particularly SDG 12 (Responsible Consumption and Production) and SDG 13 (Climate Action). By promoting waste reduction and encouraging sustainable consumption, the program contributes to global efforts to reduce plastic waste and mitigate climate change. Research has shown that campus sustainability programs are essential in achieving the SDGs and can serve as models for other universities to replicate (Filho et al., 2019). Green Point's alignment with global sustainability objectives highlights the importance of universities as leaders in environmental action and sustainability education.

Future studies could explore the long-term effects of the Green Point program on students' sustainability behaviors after they graduate. Longitudinal research could provide insights into whether students continue to engage in sustainable practices after leaving the campus environment. Additionally, the program could be expanded to include other types of waste, such as organic waste and e-waste, to make it more comprehensive. Economic evaluations of the program could also be conducted to assess the cost-effectiveness of waste management initiatives and determine the economic benefits of recycling programs.

CONCLUSION

This study highlights that waste management, particularly at Pattimura University, remains a critical issue, with inadequate sorting and management practices, particularly concerning plastic and organic waste. The implementation of the Green Point program has positively influenced student behavior, improving waste sorting and waste management habits. Pearson's correlation analysis shows a significant positive relationship between student engagement in the program and environmental concern ($r = 0.626$), plastic reduction ($r = 0.765$), and waste management habits ($r = 0.800$). These findings suggest that higher engagement leads to greater awareness and positive behavioral change. While the program has garnered strong student support, improvements are needed in education, outreach, and accessibility to optimize its impact. Overall, Green Point is a strategic step toward a zero-waste and sustainable campus by actively involving the academic community in creating a clean, healthy, and environmentally responsible campus.

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