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# **Evaluation of Solid Waste Management Program: Input to a Sustainability Plan for Public Elementary Schools**

Oliver J. Monserrate, Michelle B. Sarmiento, EdD<sup>b,1</sup>

<sup>a</sup> oliver.monserrate@deped.gov.ph

<sup>a</sup> Teacher II, DepEd Nagcarlan, Laguna. Crisanto Guysayko Memorial Elementary School, Nagcarlan Laguna, 4002 Philippines

<sup>b</sup> Thesis Adviser, Laguna State Polytechnic University, San Pablo City, Laguna 4000 Philippines

## ABSTRACT

The study titled "Evaluation of Solid Waste Management Program: Input to a Sustainability Plan for Public Elementary Schools" aims to assess the current practices and effectiveness of solid waste management (SWM) programs in public elementary schools within the Nagcarlan District. Recognizing the growing global concern over waste management and its environmental impact, this research seeks to identify the strengths and weaknesses of existing SWM initiatives while providing actionable recommendations for sustainable practices. Utilizing a descriptive developmental research design, data was collected from 140 teachers across five public elementary schools through structured questionnaires. The study focused on various aspects of solid waste management, including planning and management, waste generation, waste handling and transport, environmental awareness, and involvement. Statistical analyses, including descriptive statistics and correlation assessments, were employed to evaluate the relationship between current practices and sustainability outcomes. Findings indicate that while awareness of solid waste management practices exists among teachers, there are significant gaps in implementation and community involvement. The study highlights the need for enhanced training, resources, and a collaborative approach to foster effective waste management practices within schools. Additionally, the research emphasizes the importance of integrating environmental education into the curriculum to cultivate environmentally responsible behaviors among students. The results of this study aim to inform policymakers, educators, and community stakeholders about effective strategies for improving solid waste management practices in public elementary schools. By contributing to the development of a comprehensive sustainability plan, this research seeks to promote a cleaner, healthier, and more sustainable environment for future generations.

Keywords: Public Elementary Schools, Solid Waste Management, Sustainability Plan, Sustainable Practices

## 1. Introduction

The greatest enemy to the environment is humans. We produce trash at an incredibly quick rate and our waste management methods are still poor. Sustainable waste management is therefore at the core of environmental conservation, seeing as it will help preserve the environment as well as improve it, not only for us but also for other species and future generations.

Humans generate a lot of waste, much of which now affects the air we breathe, the water we drink, and the land on which we live. According to the United Nations, about 11.2 billion tons of solid waste are collected worldwide, almost all of which comes from humans alone. We therefore not only need to manage this waste but also come up with strategies that will manage such waste sustainably.

Humans cannot live without generating waste. As such, sustainable waste management will help us become better and responsible citizens of the planet by carefully, effectively and sustainably managing our waste. We will come up with better ways of managing waste, new technologies of dealing with our waste and the best alternatives for each waste. For instance, food remains and fruits can be composted, plastics recycled, and paper incinerated instead of dumping them all in a landfill.

Sustainability improves the quality of our lives, protects our ecosystem and preserves natural resources for future generations. Schools have many opportunities to promote sustainability, whether it's by setting an example or providing education on the subject. Educational establishments can help turn students into environmentally responsible citizens.

To practice sustainability in schools, the first step is to integrate environmental issues into the curriculum. This includes contents, methods, and learning targets. It's also important to ensure adequate resources such as teaching material and teachers' skills and knowledge.

In view of the pressing global concerns and issues on the environment, the Department of Education (DepEd) urges all public and private schools to lead the role on environmental awareness by enhancing environmental education and by pursuing effective school-based activities that seek to preserve and

protect the environment. This is in pursuant to Republic Act (R.A.) No. 9512, entitled "An Act to Promote Environmental Education and for Other Purposes."

Department of Education (DepEd) ORDER No.72, s. 2003 establishes the Youth for environment in the Schools Organization (YES-O) as the only recognized co-curricular environmental club or organizations in the schools and consolidates all other environmental and/or ecological clubs or organization in the school with main and primary programs or projects for the environment or ecology in the said organization.

1.1 Statement of the Problem

This study seeks to assess the Effectiveness of a Solid Waste Management Program as a Sustainable Strategy for Public Elementary Schools in Nagcarlan District. Specifically, it aims to address the following key inquiries:

1. What is the extent of evidence of solid waste management guidelines concerning:

a. Planning and Management;

- b. Waste Generation; and
- c. Waste Handling and Transport?
- 2. What is the level of environmental awareness among respondents regarding:
- a. Environmental Issues;
- b. Policies; and
- c. Current Conditions?
- 3. What is the level of environmental involvement of the respondents?

4. What is the level of implementation of school-based environmental programs?

5. What is the perceived sustainability of solid waste management in relation to:

- a. Environmental Impact;
- b. Social Equity; and
- c. Economic Viability?

6. Is there a significant correlation among evidence, awareness, involvement, and implementation in relation to sustainability?

- 7. Assessed validity in terms of:
- a. Content;
- b. Feasibility; and
- c. Applicability?

8. What sustainability plan for solid waste management may be proposed?

# Methodology

This study employed a descriptive developmental research design to evaluate the effectiveness of solid waste management programs in five selected public elementary schools within the Nagcarlan District, Division of Laguna. The research involved a total population of 140 teachers, ensuring comprehensive representation across the schools. A teacher-made survey questionnaire, composed mainly of closed-ended questions and behavioral scales, was developed with guidance from research advisers to capture quantitative and qualitative data on perceptions, attitudes, and practices related to waste management and sustainability.

Data collection was conducted through personally administered questionnaires over a one-month period, with strict coordination among the Department of Education, district offices, and school heads. The collected data were analyzed using descriptive statistics, weighted mean analysis, and Pearson's correlation to understand respondent perceptions and explore relationships between program elements and sustainability principles.

The questionnaires for this study are as follows:

**PART I.** Solid Waste Management Guidelines/ Solid Waste Management Framework. This section comprises fifteen (15) statements to determine the respondents' effectiveness in solid waste management guidelines. It consists of three (3) sub-variables: planning and management, waste generation, and waste handling and transport. The sub-variables used were 5-Strongly Agree, 4-Agree, 3-Neutral, 2-Disagree, and 1—Strongly Disagree.

**PART II.** Environmental Awareness. It comprises fifteen (15) statements to determine the respondents' environmental awareness. It comprises three (3) sub-variables: issues, policies and conditions. The sub variables used are 5-Highly Aware, 4-Aware, 3-Moderately Aware, 2-Somewhat Aware and 1-Not Aware.

**PART III.** Environmental Involvement. This section is composed of five (5) statements intended to determine the respondents' environmental involvement. The sub variables used were 5-Very Much Involved, 4-Much Involved, 3-Moderately Involved, 2-Less Involved and 1-Not Involved.

**PART IV.** Implementation of School-based Environmental Programs. This section is composed of five (5) statements intended to determine the respondents' implementation of school based environmental programs. The sub variables used were 5-Highly Implemented, 4-Implemented, 3-Moderately Implemented, 2-Slightly Implemented and 1-Not Implemented.

**PART V.** Principles/Elements of Sustainability. It comprises fifteen (15) statements to determine the respondents' evidence in elements of sustainability. It comprises three (3) sub-variables: environmental impact social equity and economic viability and conditions. The sub variables used are 5-Highly Evident, 4-Evident, 3-Moderately Evident, 2-Less Evident and 1-Not Evident.

The self-made research questionnaires were tested for validity and reliability. Cronbach's alpha fell in all the variables with 5 statements each under the "Excellent" category, reflecting the internal consistency of the instrument.

The researcher conducted pilot testing with 20-30 non-respondent teachers for external validation and five master teachers for internal validation of the research instrument. Then, a letter was sent to the Schools Division Superintendent to conduct the study. After receiving approval, the researcher sent a letter addressed to the Nagcarlan District supervisor and the school heads of the five schools within the district.

The survey questionnaires were forwarded to school heads and teachers through Google Forms. Data were collated for statistical analysis with the assistance of the researcher's statistician. The collected data will be confidential and utilized exclusively for the research. The data gathered were organized, tabulated, and interpreted.

Statistical tools were utilized to present, analyze, and interpret the collected data.

The mean and standard deviation were used to analyze the responses to the descriptive questions provided to respondents.

The Pearson's moment of the correlation coefficient was utilized to analyze the respondents' responses and determine the relationship between variables in the inferential analysis.

#### 2. Results and Discussion

# Table 7

Solid Waste Management Guidelines/ Solid Waste Management Framework in terms of Planning and Management.

ndicator	rs Mear	sD	Verbal Interpretation
1.	I believe the current solid waste management plan in4.44 my school is effective.	.637	Evident
2.	Teachers are involved in the planning of solid waste4.66 management initiatives at my school.	.560	Highly Evident
3.	Solid waste management guidelines are communicated4.56 regularly to teachers and staff in my school.	.615	Highly Evident
4.	The resources provided for implementing solid waste4.36 management practices in my school are sufficient.	.691	Evident
5.	The school's administration supports solid waste4.67 management initiatives.	.501	Highly Evident
verall	4.54	.486	Highly Evident

Legend: 1.0-1.49 (Not Evident); 1.50-2.49 (Less Evident); 2.50-3.49 (Moderately Evident); 3.50-4.49 (Evident); 4.50-5.0 (Highly Evident).

The results presented in Table 7 indicate a positive perception of solid waste management practices among the respondents, primarily teachers, in public elementary schools. With a mean score of 4.44, respondents generally agree that the current solid waste management plan is effective, suggesting that teachers recognize its contributions to managing waste within the school environment. Furthermore, the high mean score of 4.66 indicates highly evident

that teachers are actively involved in the planning of solid waste management initiatives, which is crucial for enhancing the effectiveness of these programs. Additionally, a highly evident (mean of 4.56) that solid waste management guidelines are communicated regularly to teachers and staff underscores the importance of effective communication for successful implementation. Respondents also evident (mean of 4.36) that the resources provided for these practices are sufficient, reinforcing the idea that adequate support is essential for sustainability. The high mean score of 4.67 reflects strong administrative support for solid waste management initiatives, which is critical for fostering effective waste management practices. Overall, the mean score of 4.54 indicates a favorable perception of the solid waste management framework among teachers. Teachers typically participate in the planning of solid waste management initiatives through several key roles and activities: Curriculum Development, Committee Involvement, Professional Development, Program Design, Resource Identification, Student Engagement, Data Collection and Assessment, Community Outreach, Implementation Oversight and Feedback and Evaluation. By actively participating in these areas, teachers contribute significantly to the development of effective solid waste management initiatives that foster a culture of sustainability within schools. Teachers actively contribute to integrating solid waste management and sustainability concepts into the school curriculum. They design lesson plans and learning activities that educate students about waste reduction, recycling, and environmental stewardship, helping to foster awareness and responsible behavior from an early age. Teachers are involved in developing and implementing practical waste management initiatives such as recycling programs, composting projects, and clean-up drives. They coordinate these activities, engage students, and ensure that the programs align with the school's sustainability goals. Teachers act as role models, demonstrating sustainable practices such as waste segregation and energy conservation. Their active involvement encourages students to adopt similar behaviors and fosters a culture of environmental responsibility.

This positive outlook is supported by the work of Kaza et al. (2018), who emphasize that the economic viability of solid waste management systems relies on effective planning, adequate resources, and stakeholder engagement, all of which are crucial for promoting sustainability in schools.

#### Table 8

Solid Waste Management Guidelines/ Solid Waste Management Framework in terms of Waste Generation.

Indicator	rs Mean	SD	Verbal Interpretation
1.	I am aware of the amount of waste generated by my school4.53 daily.	.628	Highly Evident
2.	I believe that the waste generated at my school can be4.74 reduced through better practices.	.439	Highly Evident
3.	I regularly practice waste segregation (e.g., separating4.70 recyclables, compostables, and trash) in my school.	.460	Highly Evident
4.	I feel that my school has effective measures in place to4.49 minimize waste generation.	.617	Evident
5.	I actively seek to reduce waste generation by using 4.66 reusable products (e.g., bags, containers) in my daily life.	.491	Highly Evident
Overall	4.62	.379	Highly Evident

Legend: 1.0-1.49 (Not Evident); 1.50-2.49 (Less Evident); 2.50-3.49 (Moderately Evident); 3.50-4.49 (Evident); 4.50-5.0 (Highly Evident).

The findings presented in Table 8 highlight a strong awareness and proactive approach among teachers regarding waste generation in their schools. With a mean score of 4.53, respondents highly evident that they are aware of the amount of waste generated daily, indicating a high level of consciousness about waste management practices. Furthermore, the mean score of 4.74 suggests a strong belief among teachers that the waste produced at their school can be reduced through better practices, demonstrating a commitment to sustainability. Additionally, a mean of 4.70 indicates that teachers regularly practice waste segregation, which includes separating recyclables, compostables, and trash, reflecting active engagement in responsible waste management behaviors. Teachers also feel that their school has effective measures in place to minimize waste generation, as shown by a mean score of 4.49, which is interpreted as "Evident." Lastly, with a mean score of 4.66, respondents highly evident that they actively seek to reduce waste generation by using reusable products in their daily lives, reinforcing their commitment to sustainable practices. The overall mean score of 4.62, interpreted as

"Highly Evident," signifies a collective recognition of the importance of waste management among teachers. Here are some specific practices that public elementary schools in a district may adopt to demonstrate waste generation management: Waste Audits, Recycling Programs, Composting Initiatives, Educational Workshops, Community Clean-Up Days, Outdoor Learning Projects, Sustainability Clubs and Partnerships with Local Organizations. These practices exemplify how schools within the district can actively engage in managing waste generation while fostering a culture of sustainability among students and the community. Teachers can lead simple waste audits where students collect and categorize waste generated in classrooms, cafeterias, and school events. This hands-on activity raises awareness of the types and amounts of waste produced, helping the school target reduction efforts effectively.

Teachers can organize clear, color-coded bins for recyclables, compostables, and non-recyclables around the school. They can educate students on proper segregation, ensuring that recyclable materials like paper, plastics, and metals are separated immediately, which significantly reduces waste contamination. schools can start composting organic waste from food scraps in the cafeteria or garden trimmings. Teachers can involve students in managing compost bins, learning about decomposition and nutrient cycles, while reducing organic waste sent to landfills. Teachers can lead students in local clean-up events. This practical engagement helps students understand the consequences of waste generation and motivates them to reduce litter.

This positive outlook on waste generation and management practices is further supported by Oduro et al. (2018), who emphasize that awareness campaigns and educational programs can significantly reduce waste generation in educational settings. By fostering a culture of sustainability and responsible waste management, schools can effectively contribute to environmental conservation and instill lifelong sustainable habits in students.

#### Table 9

Solid Waste Management Guidelines/ Solid Waste Management Framework in terms of Waste Handling and transport.

Indicator	rs Mean	SD	Verbal Interpretation
1.	I believe that waste handling practices in my school are4.53 safe and effective.	.617	Highly Evident
1.	I am informed about the properprocedures for waste4.64 transport within my school.	.578	Highly Evident
2.	I feel that the waste transport methods used in my school4.53 minimize environmental impact.	.542	Highly Evident
3.	I regularly participate in training or information sessions4.39 about waste handling and transport practices.	.652	Evident
4.	I believe that my school provides adequate resources and 4.46 tools for proper waste handling and transport.	.628	Evident
Overall	4.51	.492	Highly Evident

Legend: 1.0-1.49 (Not Evident); 1.50-2.49 (Less Evident); 2.50-3.49 (Moderately Evident); 3.50-4.49 (Evident); 4.50-5.0 (Highly Evident).

The results presented in Table 9 indicate strong confidence among teachers regarding waste handling and transportation practices within their schools. With a mean score of 4.53, respondents highly evident that waste handling practices at their school are safe and effective, reflecting a positive perception of current procedures. The mean score of 4.64 further emphasizes that teachers feel well-informed about the proper procedures for waste transport, which is essential for ensuring safety and compliance with environmental standards. Additionally, the respondents feel that the waste transport methods employed at their school effectively minimize environmental impact, as indicated by a mean score of 4.53, which also falls within the "Highly Evident " category. While the mean score of 4.39 suggests that teachers agree with the statement regarding their regular participation in training or information sessions about waste handling and transport practices, it highlights an area where further engagement could enhance knowledge and skills. Furthermore, a mean score of 4.46 indicates that teachers believe their school provides adequate resources and tools for proper waste handling and transport, supporting the effectiveness of waste management efforts. The overall mean score of 4.51, interpreted as "Highly Evident," reflects a collective endorsement of the effectiveness and safety of waste handling and transportation practices. Here are some specific practices that public elementary schools in a district may adopt to demonstrate effective waste handling and transportation: Establishment of Segregation Stations, Regular Waste Collection Schedules, Training for Staff, Partnerships with Local Waste Management Authorities, Implementation of a Waste Management Policy, Monitoring Waste Transport Practices, Community Involvement Initiatives, Waste Reduction Campaigns and Documentation and Reporting. These practices illustrate how schools within the district can effectively manage waste handling and transportation, contributing to overall sustainability and environmental stewardship. Schools must coordinate with local waste management services to establish consistent collection schedules, ensuring waste is removed promptly to prevent health hazards and environmental pollution (UNEP, 2018). Kaza et al. (2018) highlight that efficient collection systems are vital for urban waste management, which applies to school contexts as well. The importance of proper training for school staff involved in waste handling and transportation. Training programs should cover safe handling techniques, segregation protocols, and the environmental implications of improper waste management.

This positive view is supported by research conducted by Ahmed et al. (2019), which emphasizes the importance of proper training and infrastructure investments for effective waste management in educational settings. By ensuring safe waste handling and transportation practices, schools can foster a culture of responsibility and sustainability, ultimately contributing to broader environmental goals.

Table 10

Environmental Awareness in terms of Issues.

Indicator	rs Mean	SD	Verbal Interpretation
1.	I am aware of the environmental issues affecting my4.80 community, such as pollution and waste management.	.419	Highly Aware
2.	I believe that my actions can positively impact the 4.79 environment and help mitigate environmental issues.	.424	Highly Aware
3.	I feel knowledgeable about sustainable practices that can4.71 reduce the environmental impact in my daily life.	.472	Highly Aware
4.	I regularly engage in activities that promote environmental4.51 awareness (e.g., attending workshops, participating in clean-up events).	.594	Highly Aware
5.	I believe that schools and communities should prioritize4.81 education on environmental issues and sustainability.	.408	Highly Aware
Overall	4.72	.347	Highly Aware

Legend: 1.0-1.49 (Not Aware); 1.50-2.49 (Somewhat Aware); 2.50-3.49 (Moderately Aware); 3.50-4.49 (Aware); 4.50-5.0 (Highly Aware).

The findings presented in Table 10 highlight a high awareness among teachers regarding environmental issues that affect their community. With a mean score of 4.80, respondents highly aware that they are aware of environmental challenges, such as pollution and waste management, indicating a high level of consciousness about the local ecological context. Furthermore, the mean score of 4.79 reflects a high belief among teachers that their individual actions can positively impact the environment and contribute to mitigating these issues. Additionally, a mean of 4.71 suggests that teachers feel knowledgeable about sustainable practices that can reduce environmental impact in their daily lives, reinforcing their commitment to responsible behavior.

The data also indicates that teachers actively engage in activities promoting environmental awareness, as evidenced by a mean score of 4.51, which signifies high awareness. This active participation is essential for fostering a culture of sustainability within the school and the community. Moreover, with a mean score of 4.81, respondents highly aware that schools and communities should prioritize education on environmental issues and sustainability, underscoring the importance of integrating environmental education into curricula. The overall mean score of 4.72, interpreted as " Highly Aware," reflects a collective commitment to environmental awareness and action among teachers.

In this context, collective commitment refers to the shared dedication and agreement among teachers to prioritize and engage in environmental awareness and action. It indicates that the majority of teachers not only recognize the importance of environmental issues but are also united in their commitment to address these challenges actively. Collective commitment among teachers signifies a strong, unified approach to fostering environmental awareness and action, enhancing the effectiveness of sustainability initiatives within the school and the community.

This positive perception is supported by research conducted by Davis (2019), which emphasizes the critical role of environmental education in shaping responsible behaviors and fostering a culture of sustainability in educational settings. By promoting environmental consciousness, schools can empower students and staff to take informed actions that benefit both the community and the environment.

Table 11

Environmental Awareness in terms of Policies

Indicators	]	Mean	SD	Verbal Interpretation	
1.	I believe that our community has effective policies in- place to address environmental issues.	4.56	.552	Highly Aware	
2.	I am aware of the environmental policies implemented by my school or organization.	4.66	.491	Highly Aware	
3.	I feel that the existing policies promote sustainable- practices effectively.	4.50	.617	Highly Aware	

Overall	4.64	417	Highly Aware	
5.	I think that more stringent policies are needed to protect4.72 the environment in my community.	.466	Highly Aware	
4.	I believe that stakeholders (e.g., community members,4.74 government, organizations) should be involved in developing environmental policies.	.470	Highly Aware	

Legend: 1.0-1.49 (Not Aware); 1.50-2.49 (Somewhat Aware); 2.50-3.49 (Moderately Aware); 3.50-4.49 (Aware); 4.50-5.0 (Highly Aware).

The findings presented in Table 11 indicate a robust perception of environmental policies among teachers, reflecting a strong commitment to sustainability within the community. With a mean score of 4.56, respondents highly aware that their community has effective policies in place to address environmental issues, suggesting confidence in the existing regulatory framework. Additionally, the mean score of 4.66 highlights that teachers are aware of the environmental policies implemented by their school or organization, reinforcing the importance of communication regarding policy initiatives.

Furthermore, a mean score of 4.50 indicates that respondents believe the current policies effectively promote sustainable practices, demonstrating their recognition of the positive impact of these regulations. The data also reveals a high consensus (mean of 4.74) that stakeholders, including community members, government, and organizations, should be involved in developing environmental policies, emphasizing the need for collaborative efforts in sustainability initiatives. Lastly, with a mean score of 4.72, respondents highly aware that more stringent policies are necessary to protect the environment in their community, highlighting their proactive stance on environmental protection.

The overall mean score of 4.64, interpreted as "Highly Aware," reflects a collective endorsement of the effectiveness and importance of environmental policies among teachers. Teachers in this case exhibit a strong level of awareness regarding the effectiveness and importance of environmental policies. Here's how this score translates to their level of awareness: High Awareness Level, Strong Agreement, Engagement with Policies, and Commitment to Improvement. In summary, a mean score of 4.64 signifies that the respondents are highly aware of environmental policies, demonstrating a solid understanding of their importance and effectiveness. This level of awareness is crucial for fostering a proactive and informed approach to environmental stewardship within the educational setting. The respondents demonstrated a high level of awareness regarding environmental policies related to solid waste management. They strongly recognize that their community has effective policies addressing environmental issues, reflecting knowledge of national frameworks such as the Ecological Solid Waste Management Act (Republic Act 9003) highlighted by the Department of Education (2003). Teachers are also well-informed about the specific policies implemented within their schools.

This positive outlook aligns with the insights of Hargreaves et al. (2017), who stress that effective environmental policies are crucial for promoting awareness and encouraging responsible waste management practices in educational settings. By fostering strong environmental policies, schools can create an environment that not only supports sustainability but also empowers students and the community to take meaningful action toward environmental stewardship.

#### Table 12

Environmental Awareness in terms of Conditions.

Indicators		Mean	SD	Verbal Interpretation
1.	I believe the current environmental conditions in my community are a significant concern.	y4.64	.589	Highly Aware
2.	I feel that the physical infrastructure in my community (e.g., waste disposal facilities, recycling centers) is adequate for managing waste effectively.	v4.39 s	.695	Aware
3.	I am aware of the health impacts associated with poor environmental conditions in my area.	r4.71	.469	Highly Aware
4.	I believe that my community is taking sufficient steps to improve environmental conditions.	\$4.56	.615	Highly Aware
5.	I feel that awareness of environmental conditions is promoted effectively within my school or organization	s4.68	.527	Highly Aware
Overall		4.60	.453	Highly Aware

Legend: 1.0-1.49 (Not Aware); 1.50-2.49 (Somewhat Aware); 2.50-3.49 (Moderately Aware); 3.50-4.49 (Aware); 4.50-5.0 (Highly Aware).

The findings presented in Table 12 highlight a high awareness among teachers regarding environmental conditions in their community. With a mean score of 4.64, respondents highly aware that the current environmental conditions are a significant concern, indicating a heightened awareness of local ecological issues. Additionally, a mean score of 4.71 suggests that teachers are well-informed about the health impacts associated with poor environmental conditions in their area, reinforcing the importance of environmental education in raising awareness.

While teachers express high agreement (mean of 4.56) that their community is taking sufficient steps to improve environmental conditions, a slightly lower mean score of 4.39 indicates that there is room for improvement regarding the adequacy of physical infrastructure, such as waste disposal facilities and recycling centers. This suggests that while there is recognition of efforts made, there is also an acknowledgment of the need for enhanced infrastructure to support effective waste management.

Moreover, with a mean score of 4.68, respondents highly aware that awareness of environmental conditions is effectively promoted within their school or organization, highlighting the role of educational institutions in fostering environmental consciousness. The overall mean score of 4.60, interpreted as "Highly Aware," reflects a collective endorsement of the importance of environmental conditions and the need for continued efforts to address them. It indicates that the respondents—teachers in this context—possess a strong level of awareness regarding environmental conditions and their significance. Here's how these scores translate to their awareness level: Strong Awareness Level, Collective Endorsement, Recognition of Challenges, Motivation for Action, and Continuous Improvement. A mean score of 4.60 signifies that the respondents are highly aware of environmental conditions, demonstrating a solid understanding of their importance and the need for continued efforts to address these issues. This awareness is crucial for promoting a culture of environmental responsibility and stewardship within the school and the community. The respondents exhibit a strong awareness of the environmental conditions, affecting their community and schools. They recognize that current environmental issues, such as pollution and inadequate waste facilities, are significant concerns, which aligns with the findings of Zhang et al. (2020) emphasizing that supportive school leadership and community engagement are vital for effective awareness programs. Teachers are also aware of the health risks associated with poor environmental conditions, reinforcing the need for continued environmental education as highlighted by the American Public Health Association (2020).

These findings align with the research conducted by Zhang et al. (2020), which emphasizes that supportive school leadership and community engagement are critical for effective environmental awareness programs. By prioritizing the improvement of environmental conditions and promoting awareness, schools can play a vital role in cultivating a sustainable community and empowering students to take active roles in environmental stewardship.

Table 13

#### Environmental Involvement of the Respondents

Indicators	М	ean	SD	Verbal Interpretation
1.	I actively participate in environmental initiatives or 4. projects in my school and community.	56	.540	Very Much Involved
2.	I volunteer my time to support environmental4.3 organizations or causes.	39	.631	Much Involved
3.	I make conscious efforts to reduce my personal4. environmental impact (e.g., recycling, conserving energy, reducing waste).	54	.498	Very Much Involved
4.	I encourage my family, friends, and colleagues to engage4. in environmentally friendly behaviors.	73	.446	Very Much Involved
5.	I stay informed about environmental issues and policies4. that affect my local area and beyond.	66	.503	Very Much Involved
Overall	4.	50	.415	Very Much Involved

Legend: 1.0-1.49 (Not Involved); 1.50-2.49 (Less Involved); 2.50-3.49 (Moderately Involved); 3.50-4.49 (Much Involved); 4.50-5.0 (Very Much Involved).

The findings presented in Table 13 indicate a strong level of environmental involvement among teachers, reflecting their active engagement in sustainability efforts within their schools and communities. With a mean score of 4.56, respondents very much involved that they actively participate in environmental initiatives or projects, showcasing a commitment to fostering a culture of sustainability. Furthermore, a mean score of 4.64 suggests that teachers make conscious efforts to reduce their personal environmental impact, such as recycling, conserving energy, and minimizing waste, which demonstrates individual responsibility towards environmental stewardship. Yes, there are several specific programs that can demonstrate the involvement of teachers in environmental initiatives within the district. Here are some examples: School Garden Programs, Recycling Initiatives, Energy Conservation Campaigns, Clean-Up Drives, Environmental Clubs, Environmental Clubs, Professional Development Workshops, Partnerships with Local Organizations, and Integration of Environmental Education in Curriculum. These programs exemplify the active involvement of teachers in sustainability efforts and demonstrate their commitment to fostering a culture of environmental stewardship within their schools and communities.

Additionally, the data reveals that teachers encourage their family, friends, and colleagues to engage in environmentally friendly behaviors, indicated by a high mean score of 4.73, further extending their influence beyond the school environment. A mean score of 4.66 highlights that teachers stay well-informed about environmental issues and policies affecting their local area and beyond, reflecting a proactive approach to understanding and addressing ecological concerns.

While the mean score of 4.39 for volunteering time to support environmental organizations or causes is slightly lower, it still indicates agreement and suggests that while teachers are engaged, there may be opportunities to increase participation in external environmental initiatives. The overall mean score of 4.60, interpreted as "Very Much Involved," underscores the collective commitment of teachers to environmental involvement and sustainability.

These findings resonate with the work of Malone (2007), who emphasizes the importance of student and community engagement in fostering environmental stewardship. By actively participating in environmental initiatives and encouraging others to follow suit, teachers play a vital role in cultivating a sustainable future.

Table 14

Implementation of School-based Environmental Programs.

Indicators	Mean	SD	Verbal Interpretation
1. My school has implemented comprehensive environmental education programs across the curriculum.	4.51	.594	Highly Implemented
<ol> <li>My school actively engages students in hands-on, experiential learning activities related to environmental sustainability.</li> </ol>	4.51	.569	Highly Implemented
<ol> <li>My school has established partnerships with local environmental organizations or community groups to support environmental initiatives.</li> </ol>	4.52	.581	Highly Implemented
4. My school provides ongoing professional development opportunities for teachers to integrate environmental education into their teaching practices.	4.50	.594	Highly Implemented
5. My school has dedicated resources (e.g., funding, facilities, staff) to support the implementation and maintenance of environmental programs.	4.44	.638	Implemented
Overall	4.50	.514	Highly Implemented

Legend: 1.0-1.49 (Not Implemented); 1.50-2.49 (Slightly Implemented); 2.50-3.49 (Moderately Implemented); 3.50-4.49 (Implemented); 4.50-5.0 (Highly Implemented).

The findings presented in Table 14 indicate a strong commitment to the implementation of school-based environmental programs among the teachers surveyed. With a mean score of 4.51, respondents highly implemented that their school has implemented comprehensive environmental education programs across the curriculum, highlighting the integration of sustainability into various subjects. Similarly, a mean score of 4.51 reflects that the school actively engages students in hands-on, experiential learning activities related to environmental sustainability, which is essential for fostering practical knowledge and skills.

The data further reveals that teachers believe their school has established valuable partnerships with local environmental organizations and community groups to support these initiatives, as indicated by a mean score of 4.52, reinforcing the importance of collaboration in promoting sustainability. Additionally, a mean score of 4.50 suggests that ongoing professional development opportunities are provided for teachers to effectively incorporate environmental education into their teaching practices, which is crucial for enhancing educators' capacity to teach sustainability concepts.

While the mean score of 4.44 for the availability of dedicated resources (such as funding, facilities, and staff) is slightly lower, it still indicates agreement, suggesting that there is some level of support for the implementation and maintenance of environmental programs. The overall mean score of 4.50, interpreted as "Highly Implemented," reflects a collective endorsement of the effectiveness and importance of school-based environmental programs. It indicates a strong level of implementation of school-based environmental programs among the respondents. Here's how this score translates to their level of implementation Level, Collective Endorsement, Perceived Adequacy of Resources, Commitment to Environmental Goals, and Ongoing Engagement. A mean score of 4.50 indicates that school-based environmental programs are perceived as highly implemented, demonstrating that teachers recognize their effectiveness and importance. This level of implementation reflects a supportive environment where initiatives are actively integrated into school practices, contributing to the overall culture of sustainability.

These findings align with the work of Ballantyne and Packer (2005), who emphasize that comprehensive environmental education programs significantly influence students' environmental knowledge, attitudes, and behaviors. By prioritizing the implementation of these programs, schools can cultivate a culture of sustainability and empower students to become responsible stewards of the environment.

Table 15

Principles/Elements of Sustainability in terms of Environmental Impact.

Indicator	s Mean	SD	Verbal Interpretation
1.	I believe that human activities significantly4.78 contribute to environmental degradation.	.434	Highly Evident
2.	I feel that our community takes adequate measures to 4.54 minimize its environmental impact.	.604	Highly Evident
3.	I am aware of the various ways individuals can4.66 reduce their environmental footprint.	.489	Highly Evident
4.	I believe that education about environmental issues is 4.74 crucial for promoting sustainable practices.	.455	Highly Evident
5.	I think that more initiatives should be implemented4.75 to address the environmental impacts of local industries.	.435	Highly Evident
Overall	4.70	.371	Highly Evident

#### Legend: 1.0-1.49 (Not Evident); 1.50-2.49 (Less Evident); 2.50-3.49 (Moderately Evident); 3.50-4.49 (Evident); 4.50-5.0 (Highly Evident).

The findings presented in Table 15 highlight a high awareness and commitment among teachers regarding the principles and elements of sustainability in terms of environmental impact. With a mean score of 4.78, respondents highly evident that human activities significantly contribute to environmental degradation, indicating a deep understanding of the ecological consequences of daily practices. Furthermore, a mean score of 4.54 reflects the belief that their community takes adequate measures to minimize environmental impact, suggesting a recognition of local efforts towards sustainability.

The data also reveals that respondents are well-informed about various ways individuals can reduce their environmental footprint, as indicated by a mean score of 4.66. This awareness reinforces the importance of personal responsibility in fostering sustainable practices. Additionally, with a mean score of 4.74, teachers highly evident on the critical role of education in promoting understanding of environmental issues, which is essential for cultivating a culture of sustainability.

Moreover, the mean score of 4.75 suggests that there is a strong belief in the necessity of implementing more initiatives to address the environmental impacts of local industries, reflecting a proactive stance on enhancing community sustainability efforts. The overall mean score of 4.70, interpreted as "Highly Evident," underscores a collective commitment to understanding and addressing environmental impacts among teachers. Collective commitment refers to the shared dedication and agreement among a group—in this case, teachers—to prioritize and engage in efforts to understand and address environmental impacts. This concept implies that the teachers are united in their belief that sustainability is important, and they are collectively willing to take actions that support this belief. In summary, collective commitment among teachers signifies a strong, unified approach to understanding and addressing environmental impacts, which translates into a higher level of sustainability within the school. This shared dedication enhances the effectiveness of sustainability initiatives and fosters a culture of environmental responsibility that benefits the entire community.

This perspective aligns with the principles outlined by Chester and Allen (2019), who emphasize the need for effective waste management to mitigate negative environmental effects. By fostering awareness and promoting sustainable practices, schools can play a pivotal role in addressing environmental challenges and encouraging responsible stewardship within the community.

#### Table 16

Principles/Elements of Sustainability in terms of Social Equity.

Indicators	Mea	n	SD	Verbal Interpretation
1.	I believe that all individuals in our community have4.78 equal access to resources and opportunities.		.434	Highly Evident
2.	I feel that our organization actively promotes social4.54 equity among its members.		.604	Highly Evident
3.	I am aware of any policies or initiatives aimed at4.66 addressing social inequities in our community.		.489	Highly Evident
4.	I believe that social equity is essential for fostering a4.74 positive and inclusive environment.		.455	Highly Evident

 5. I think that more educational resources should be4.75 provided to raise awareness about social equity issues.
 .435
 Highly Evident

 Overall
 4.70
 .371
 Highly Evident

Legend: 1.0-1.49 (Not Evident); 1.50-2.49 (Less Evident); 2.50-3.49 (Moderately Evident); 3.50-4.49 (Evident); 4.50-5.0 (Highly Evident).

The findings presented in Table 16 illustrate a high commitment to the principles of social equity among the teachers surveyed. With a mean score of 4.78, respondents highly evident that all individuals in their community have equal access to resources and opportunities, reflecting a deep understanding of the importance of fairness in promoting sustainability. Additionally, a mean score of 4.54 indicates that teachers feel their organization actively promotes social equity among its members, highlighting the role of educational institutions in fostering an inclusive environment.

Furthermore, the mean score of 4.66 suggests that teachers are aware of policies or initiatives aimed at addressing social inequities within their community, demonstrating an engagement with local efforts to promote social justice. The respondents also strongly agree (mean of 4.74) that social equity is essential for fostering a positive and inclusive environment, emphasizing the interconnectedness of social equity and overall community well-being.

Moreover, with a mean score of 4.75, respondents believe that more educational resources should be provided to raise awareness about social equity issues, indicating a proactive stance on the need for increased education and advocacy in this area. The overall mean score of 4.70, interpreted as "Highly Evident," reflects a collective endorsement of the significance of social equity among teachers. Collective endorsement refers to a shared agreement or consensus among a group regarding the importance of a particular issue—in this case, social equity. When respondents demonstrate collective endorsement, it means that they collectively recognize and affirm the significance of social equity in their educational context. This shared understanding can lead to unified actions and commitments towards addressing these issues within the school and community. In summary, collective endorsement of the significance of social equity, the program is likely to remain relevant and effective, contributing to a more inclusive and sustainable school environment.

This perspective aligns with the work of Chen and Geng (2019), who stress the need for inclusive practices that ensure all community members benefit from environmental initiatives. By prioritizing social equity, schools can contribute to creating a more equitable and sustainable community for all.

# Table 17

Indicators		Mean	SD	Verbal Interpretation
1.	I believe that economic viability is essential for the long-term sustainability of our community.	e4.68	.498	Highly Evident
2.	I feel that local businesses in our area are adopting sustainable practices to enhance economic viability.	g4.53	.593	Highly Evident
3.	I am aware of initiatives in our community that promot economic growth while ensuring environmenta sustainability.	e4.57 ll	.552	Highly Evident
4.	I believe that investing in green technologies and sustainable practices can lead to economic benefits.	d4.76	.430	Highly Evident
5.	I think that more educational resources should be provided to promote understanding of economi- viability and sustainability.	e4.74 c	.470	Highly Evident
Overall		4.66	.413	Highly Evident

Principles/Elements of Sustainability in terms of Economic Viability

Legend: 1.0-1.49 (Not Evident); 1.50-2.49 (Less Evident); 2.50-3.49 (Moderately Evident); 3.50-4.49 (Evident); 4.50-5.0 (Highly Evident).

The findings presented in Table 17 demonstrate a high consensus among teachers regarding the principles of economic viability as it relates to sustainability. With a mean score of 4.68, respondents highly evident that economic viability is essential for the long-term sustainability of their community, indicating a clear understanding of the interplay between economic health and environmental stewardship. Additionally, a mean score of 4.53 reflects a belief that local businesses are adopting sustainable practices to enhance economic viability, showcasing an appreciation for the role of community enterprises in promoting sustainability.

Furthermore, the mean score of 4.57 indicates that teachers are aware of various initiatives in their community aimed at promoting economic growth while ensuring environmental sustainability, highlighting their engagement with local efforts to balance these objectives. The data also reveals a strong

belief (mean of 4.76) in the potential economic benefits of investing in green technologies and sustainable practices, suggesting a proactive approach to integrating sustainability into economic strategies.

Moreover, with a mean score of 4.74, respondents feel that more educational resources should be provided to enhance understanding of economic viability and sustainability, indicating a commitment to continuous learning in this area. The overall mean score of 4.66, interpreted as "Highly Evident," underscores the teachers' collective endorsement of economic viability as a critical element of sustainability. Collective endorsement refers to a shared agreement or consensus among a group regarding the importance of a specific issue—in this case, economic viability as a critical element of sustainability. When respondents demonstrate collective endorsement, it means they collectively recognize and affirm the significance of economic viability in their educational context, indicating a unified commitment to integrating this concept into their practices and policies. In summary, collective endorsement of economic viability among teachers reflects a strong commitment to integrating this concept into sustainability initiatives, enhancing the overall sustainability of the program. By fostering an environment of continuous learning and collaboration around economic viability, the program is likely to remain relevant and effective, contributing to a more sustainable and responsible school environment.

These insights align with the work of Yadav and Singh (2021), who emphasize that integrating economic considerations into waste management strategies is crucial for achieving long-term sustainability goals. By prioritizing economic viability alongside environmental initiatives, schools can foster a sustainable community that thrives economically while protecting its natural resources.

#### Table 18

Correlation of Evidence, Awareness, Involvement, Implementation to sustainability.

	Principles/Elements of Sustainability			
Solid Waste Management Program	Environment Impact	Social Equity	Economics Viability	
Solid Waste Management Framework				
• Planning and management	.523**	.631**	.611**	
• Waste generation	.617**	.681**	.711**	
• Waste handling and transport	.578**	.641**	.665**	
Environmental Awareness				
• Issues	.682**	.655**	.679**	
Policies	.699**	.725**	.703**	
Conditions	.689**	.740**	.777**	
Environmental Involvement	.705**	.709**	.712**	
Implementation of School-based Environmental Programs	l .544**	.620**	.601**	

\*\*Correlation is significant at the 0.01 level (2-tailed). \*Correlation is significant at the 0.05 level (2-tailed).

Verbal Interpretation of r-value: +1.0 Perfect positive +/- association +0.8 to +1.0 Very strong +/- association +0.6 to +0.8 Strong +/- association +0.4 to +0.6 Moderate +/- association +0.2 to +0.4 Weak +/- association 0.0 to +0.2 Very weak +/- or no association

The findings presented in Table 18 demonstrate significant correlations between various components of the solid waste management program and the principles/elements of sustainability, specifically environmental impact, social equity, and economic viability. The correlation coefficients, denoted by \*\*, indicate strong relationships between the indicators, emphasizing the interconnectedness of these factors.

In the context of the Solid Waste Management Framework, the highest correlation is observed in waste generation, with coefficients of 0.617 for environmental impact, 0.681 for social equity, and 0.711 for economic viability. This indicates that effective waste generation practices are closely linked to achieving sustainability goals across all three dimensions. Additionally, the planning and management aspect shows significant correlations of 0.523, 0.631, and 0.611, respectively, underscoring the importance of strategic planning in enhancing sustainability outcomes.

The data also reveals that environmental awareness plays a crucial role in sustainability, with strong correlations for issues (0.682, 0.655, 0.679), policies (0.699, 0.725, 0.703), and conditions (0.689, 0.740, 0.777). The highest correlation is found in the conditions category, particularly with social equity (0.740) and economic viability (0.777), indicating that awareness of environmental conditions significantly influences perceptions of equity and economic considerations. Influence of Environmental Awareness on Equity and Economic Considerations: Understanding Interconnectedness: Awareness of environmental conditions helps individuals recognize the interconnectedness between environmental health, social equity, and economic viability. For

instance, understanding how pollution disproportionately affects marginalized communities fosters a sense of social equity. This awareness can lead to advocacy for policies that address these disparities. Informed Decision-Making: When individuals are aware of environmental conditions, they are better equipped to make informed decisions that consider both social and economic factors. For example, communities that understand the environmental impacts of local industries can push for sustainable practices that promote both ecological health and economic growth. Advocacy for Sustainable Practices: Awareness can drive community members to advocate for sustainable practices that benefit all socio-economic groups. This might include supporting local businesses that prioritize sustainability or lobbying for equitable environmental policies that ensure all community members have access to clean air, water, and green spaces. Resource Allocation: Increased awareness of environmental issues can lead to a demand for more equitable resource allocation. Communities might advocate for investments in green technologies or infrastructure that benefit lower-income areas, promoting both social equity and economic viability. Educational Initiatives: Literature suggests that environmental education enhances awareness, leading to more informed and engaged citizens. Increased awareness through education can empower individuals to participate in decision-making processes that address environmental challenges while considering social equity and economic implications (Hungerford & Volk, 1990; Stevenson et al., 2014).

Supporting Literature: Hungerford & Volk (1990): Their research emphasizes that environmental education fosters awareness, which is crucial for developing responsible citizens who understand the socio-economic implications of environmental issues. Stevenson et al. (2014): This study discusses how integrating environmental education into curricula helps students grasp the importance of sustainability, which encompasses social equity and economic considerations. Kopnina (2012): Kopnina's work on education for sustainable development highlights the need for a holistic understanding of sustainability, which includes social justice and economic viability, stemming from increased environmental awareness. In summary, awareness of environmental conditions influences equity and economic considerations by fostering understanding, informed decision-making, advocacy, and resource allocation. Literature supports the idea that enhanced environmental awareness leads to a more equitable and sustainable approach to addressing both environmental and socio-economic challenges

Furthermore, environmental involvement shows robust correlations of 0.705, 0.709, and 0.712, suggesting that active participation in environmental initiatives is positively associated with sustainability principles. The implementation of school-based environmental programs also demonstrates significant correlations, with coefficients ranging from 0.544 to 0.601, highlighting the importance of these programs in fostering sustainable practices. Correlation Between Implementation of School-Based Environmental Programs and Environmental Involvement: Positive Association: The robust correlations of 0.705, 0.709, and 0.712 indicate that there is a strong positive relationship between environmental involvement and the implementation of school-based environmental programs. This suggests that as the quality and effectiveness of these programs increase, so does the level of active participation from teachers and students in environmental initiatives. Mutual Reinforcement: Effective school-based environmental programs often encourage and facilitate greater environmental involvement among stakeholders. For instance, when programs are well-implemented, they provide opportunities for hands-on activities, community engagement, and learning experiences that actively involve students and teachers. This, in turn, reinforces their commitment to sustainability practices, creating a cycle of engagement and effectiveness. Implications:

Enhanced Engagement: The correlation implies that schools with well-implemented environmental programs are likely to see higher levels of engagement from teachers and students. This active involvement can lead to a more dynamic and participatory approach to sustainability, where individuals feel empowered to contribute. Increased Awareness and Responsibility: As environmental involvement grows alongside effective program implementation, it suggests that participants are becoming more aware of environmental issues and their responsibilities. This heightened awareness can lead to more informed decisions and actions that positively impact the community and the environment. Long-Term Sustainability: The positive correlation implies that successful implementation of environmental programs can lead to long-term sustainability outcomes. Engaged and involved stakeholders are more likely to advocate for and maintain these initiatives, ensuring that sustainability becomes a core value within the school culture. Need for Support and Resources: The findings highlight the importance of providing adequate support, resources, and training to ensure the successful implementation of environmental involvement involvement among their staff and students. In summary, the strong correlation between the implementation of school-based environmental programs and environmental involvement implies that effective programs can significantly enhance participation and commitment to sustainability principles. This relationship emphasizes the need for schools to focus on implementing robust environmental education initiatives that actively engage the entire school community, leading to a culture of environmental stewardship and sustainable practices.

Overall, these findings align with the work of Davis (2019), who emphasizes the critical role of environmental awareness in shaping responsible behaviors and fostering a culture of sustainability. By understanding the correlations between solid waste management practices and sustainability principles, schools can develop more effective strategies to promote environmental stewardship and enhance community well-being.

## Table 19

Validation in terms of Content.

Indicator	s	Mean	SD	Verbal Interpretation
1.	I believe that the objectives of the solid waste management program4.68		.498	Very High
	are clearly articulated and easy to understand.			

Overall	4.66	.413	Very High	
5.	I think that the educational materials included in the solid waste4.74 management program are of high quality and support effective learning about waste management practices.	.470	Very High	
4.	I believe that the guidelines in the solid waste management program4.76 can be practically applied in our school's daily operations.	.430	Very High	
3.	I feel that the solid waste management program provides 4.57 comprehensive information covering all necessary aspects of waste management.	.552	Very High	
2.	I find that the content of the solid waste management program is4.53 relevant to the specific needs and challenges faced by our school.	.593	Very High	

# Legend: 1.0-1.49 (Very Low); 1.50-2.49 (Low); 2.50-3.49 (Moderate); 3.50-4.49 (High); 4.50-5.0 (Very High).

The findings presented in Table 19 highlight a strong endorsement of the content validation for the solid waste management program among the respondents. With a mean score of 4.68, participants very high that the objectives of the program are clearly articulated and easy to understand, indicating effective communication of the program's goals. Furthermore, a mean score of 4.53 reflects that teachers find the content relevant to the specific needs and challenges faced by their school, emphasizing the program's applicability in real-world contexts.

Additionally, the mean score of 4.57 suggests that respondents feel the solid waste management program provides comprehensive information covering all necessary aspects of waste management, reinforcing its thoroughness and educational value. Notably, the high mean score of 4.76 indicates a high belief that the guidelines outlined in the program can be practically applied in the daily operations of the school, which is crucial for the program's success and integration into existing practices.

Moreover, with a mean score of 4.74, respondents very high that the educational materials included in the program are of high quality and effectively support learning about waste management practices. The overall mean score of 4.66, interpreted as " Very High," underscores a collective confidence in the content's effectiveness and relevance.

These findings align with the insights of Henderson and Tilbury (2004), who emphasize the importance of well-structured educational content in fostering effective environmental education and promoting sustainable practices within schools. By ensuring that the solid waste management program is well-articulated and relevant, schools can enhance their efforts toward sustainability and empower students to take active roles in environmental stewardship.

# Table 20

Validation in terms of Feasibility.

Indicator	rs Mean	SD	Verbal Interpretation
1.	I believe that the solid waste management program is4.68 practical and can be effectively implemented in our school setting.	.498	Very High
2.	I feel that our school has sufficient resources (e.g., funding,4.53 materials, personnel) to successfully implement the solid waste management program.	.593	Very High
3.	I believe that the school administration actively supports4.57 the feasibility of implementing the solid waste management program.	.552	Very High
4.	I think that adequate training opportunities are provided to 4.76 teachers and staff to ensure successful implementation of the solid waste management program.	.430	Very High
5.	I feel that community involvement is effectively integrated4.74 into the solid waste management program, enhancing its feasibility and success in our school.	.470	Very High
Overall	4.66	.413	Very High

Legend: 1.0-1.49 (Very Low); 1.50-2.49 (Low); 2.50-3.49 (Moderate); 3.50-4.49 (High); 4.50-5.0 (Very High).

The findings presented in Table 20 illustrate a high consensus among teachers regarding the feasibility of the solid waste management program. With a mean score of 4.68, respondents very high that the program is practical and can be effectively implemented in their school setting, indicating confidence in its applicability. Additionally, a mean score of 4.53 reflects that teachers feel their school has sufficient resources—such as funding, materials, and personnel—to successfully implement the program, which is critical for ensuring the initiative's sustainability.

Moreover, the mean score of 4.57 suggests that respondents believe the school administration actively supports the feasibility of implementing the solid waste management program, highlighting the importance of leadership in fostering an environment conducive to successful program execution. The data also reveals a high mean score of 4.76, indicating strong agreement that adequate training opportunities are provided to teachers and staff, which is essential for equipping them with the necessary skills to implement the program effectively.

Furthermore, with a mean score of 4.74, respondents feel that community involvement is effectively integrated into the solid waste management program, enhancing its feasibility and success within the school. The overall mean score of 4.66, interpreted as " Very High," reflects a collective endorsement of the program's feasibility and the support systems in place for its implementation.

These findings align with the insights of Kaza et al. (2018), who emphasize that the success of waste management initiatives relies on adequate resources, administrative support, and community engagement. By prioritizing these elements, schools can foster a sustainable framework for waste management that benefits both the school environment and the broader community.

## Table 21

Validation in terms of Applicability.

Indicators		Mean	SD	Verbal Interpretation
1. I beli applic	eve that the solid waste management progr able to the specific context and needs of our so	am is4.68 chool.	.498	Very High
2. I feel manag existin	that the practices outlined in the solid gement program can be easily integrated int ng school routines.	waste4.53 o our	.593	Very High
3. I thin manag situati	k that the guidelines provided in the solid gement program can be adapted to fit dif ons faced by teachers and students.	waste4.57 ferent	.552	Very High
4. I belie effect enhan	eve that the solid waste management program c ively utilized in our daily school operatio ce sustainability.	can be4.76 ns to	.430	Very High
5. I fee encou it app	I that the solid waste management pro rages student participation and involvement, m licable in engaging them in sustainability pract	ogram4.74 aking ices.	.470	Very High
Overall		4.66	.413	Very High

Legend: 1.0-1.49 (Very Low); 1.50-2.49 (Low); 2.50-3.49 (Moderate); 3.50-4.49 (High); 4.50-5.0 (Very High).

The findings presented in Table 21 underscore a high consensus among teachers regarding the applicability of the solid waste management program within their educational context. With a mean score of 4.68, respondents very high that the program is relevant to the specific needs and challenges faced by their school, indicating a high level of recognition of its importance. Furthermore, a mean score of 4.53 reflects that teachers feel the practices outlined in the program can be easily integrated into existing school routines, suggesting that the program is designed with practicality in mind.

Additionally, the mean score of 4.57 indicates that respondents believe the guidelines provided can be adapted to fit various situations encountered by both teachers and students, further reinforcing the program's flexibility and relevance. The data also shows a very high (mean score of 4.76) that the solid waste management program can be effectively utilized in daily school operations to enhance sustainability, highlighting its potential to make a tangible impact on school practices.

Moreover, with a mean score of 4.74, teachers feel that the program encourages student participation and involvement, making it applicable for engaging students in sustainability practices. The overall mean score of 4.66, interpreted as "Very High," reflects a collective endorsement of the program's applicability and effectiveness. These findings align with the insights of Davis (2019), who emphasizes the importance of integrating relevant and adaptable educational programs into school curricula to promote environmental awareness and sustainability. By ensuring that the solid waste management program is applicable and engaging, schools can foster a culture of responsibility and stewardship among students and staff alike.

The validation results of the environmental programs indicate a strong alignment between the program objectives and the actual practices implemented within the school clusters. With high mean scores reflecting teachers' perceptions of the effectiveness and relevance of the programs, it suggests that the initiatives are well-received and seen as beneficial in fostering environmental awareness and sustainability among students. The implications of these validation results are significant. They indicate that when programs are validated as effective, schools are likely to continue investing in and refining these initiatives, leading to consistent practices that promote responsible environmental stewardship. Additionally, validated programs can serve as benchmarks for best practices, encouraging collaboration among schools to share successful strategies and resources.

## 3. Recommendations

Based on the findings, the following recommendations are proposed:

- Enhance Training and Resources: It is essential to provide targeted professional development programs for teachers that focus specifically on innovative waste management practices and emerging sustainability trends. Workshops could include hands-on sessions where teachers actively engage in waste audits and develop practical strategies for waste reduction tailored to their school's unique context. Additionally, creating a resource hub with digital materials, best practices, and case studies can support teachers in implementing effective waste management initiatives in their classrooms.
- 2. Strengthen Community Involvement: To improve the effectiveness of waste management initiatives, schools should actively seek to establish partnerships with local businesses, environmental organizations, and government agencies. These collaborations can result in joint community clean-up events, recycling drives, and educational campaigns that engage not only students but also parents and community members. By fostering a sense of shared responsibility, schools can cultivate a supportive network that enhances involvement and participation in sustainability efforts.
- 3. Develop Clear Policies and Implementation Guidelines: Schools should implement comprehensive waste management policies that clearly define the roles and responsibilities of all stakeholders, including students, teachers, and administrative staff. These policies should outline actionable steps for waste reduction, recycling, and community engagement, ensuring everyone understands their part in the process. Additionally, schools should regularly review and update these policies based on feedback from the school community and the results of monitoring efforts, ensuring that they remain relevant and effective in promoting sustainable practices.
- 4. Recommendations for Future Researchers: Future research should explore the long-term impacts of implemented waste management practices on both environmental outcomes and student behavior. Investigating the effectiveness of specific programs and initiatives in different contexts can provide valuable insights. Additionally, qualitative studies could further examine the perceptions and experiences of teachers and students involved in these programs, enriching the understanding of factors that facilitate or hinder successful implementation.
- 5. Implementation Strategies: To ensure the effective implementation of the recommendations, schools should develop a phased approach that includes pilot programs, regular monitoring, and evaluation. Establishing a task force composed of teachers, students, and community members can facilitate the rollout of initiatives and ensure accountability. Regular feedback sessions can help identify challenges and adjust strategies as needed, fostering a culture of continuous improvement in solid waste management practices.

By adopting these enhanced recommendations, public elementary schools can significantly improve their solid waste management practices, creating a more engaged and environmentally responsible community that benefits both the school and the wider environment.

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