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Fostering Synergy: Collaboration between Student Organizations and the School Community in Solid Waste Management at Dayap National High School, S.Y. 2024-2025

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Abstract

Aim: Solid waste management (SWM) is a critical environmental challenge faced by communities worldwide, including schools. Improper waste disposal contributes to environment degradation, public health risks, and resources depletion. This study aimed to explore the dynamic relationship between student-led initiatives and school-wide efforts in addressing SWM challenges. By examining the roles, strategies, and outcomes of this collaboration, the study sought to identify effective practices and provide actionable insights that can strengthen SWM programs within the school.

Methodology: This study employed a mixed-methods research design to examine solid waste management (SWM) at Dayap National High School (DNHS), integrating quantitative methods (surveys) and qualitative methods (interviews, observations, and document reviews). A convergent parallel design was utilized, where both qualitative and quantitative data were collected simultaneously and analyzed together. This approach ensured a well-rounded understanding of SWM practices at DNHS, highlighting strengths, challenges, and areas for improvement in fostering collaboration between student organizations and the school community.

Results: The study reveals that Solid Waste Management (SWM) practices and collaboration are not fully consistent, and while some activities are being done, they are only partially implemented. The results highlight areas where there is room for improvement, such as more consistent adherence to segregation practices, more active participation from stakeholders, and stronger leadership from student organizations and faculty. It also indicates that there may be opportunities to enhance community engagement and collaboration in SWM efforts. The primary themes emerged suggest that inconsistency in participation, implementation, and communication are the biggest barriers to effective waste management practices. Despite some positive practices and efforts from different stakeholders, the overall effectiveness is hindered by sporadic involvement, lack of regular education, and inconsistent enforcement of practices. Addressing the structural, educational, and coordination challenges is essential for strengthening the SWM efforts, and a more systematic and inclusive approach is needed to ensure consistent and sustained results.

Conclusion: The study highlights the varying levels of participation among students, faculty, and community members in solid waste management (SWM) activities at Dayap NHS. While many stakeholders actively engage in waste reduction and cleanliness initiatives, participation remains inconsistent, with some individuals displaying minimal involvement. The collaboration between student organizations and the school community has proven effective in promoting environmental responsibility, yet its full potential is hindered by several challenges. These include a lack of awareness, insufficient resources, weak coordination, inconsistent participation, and limited policy enforcement. Despite these obstacles, stakeholders generally perceive the collaborative efforts as beneficial, recognizing their role in fostering teamwork, environmental stewardship, and a cleaner school environment. However, they also stress the need for stronger institutional support, improved communication, and sustained commitment from all involved parties. To enhance SWM collaboration, strategies such as clearer waste management policies, increased educational campaigns, provision of adequate resources, and the establishment of a reward system for active participation should be implemented. Strengthening the partnership between student organizations and the school community through structured programs and continuous engagement will ensure a more sustainable and effective SWM system, fostering long-term environmental consciousness and responsibility at Dayap NHS.



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Keywords: Synergy, Collaboration, Solid Waste Management

INTRODUCTION

Solid waste management (SWM) is a critical environmental challenge faced by communities worldwide, including schools. Improper waste disposal contributes to environment degradation, public health risks, and resources depletion.

Based on the data given by Laguna Provincial Government Environment and Natural Resources Office (PGENRO) last July 13, 2024 as they presented their Waste Analysis and Characterization Study (WACS), each individual produces 0.36 kilogram of waste everyday which contributes to the collected waste. They also stated that Barangay Dayap is one of the leading producer of waste in Calauan since it is the biggest barangay consisting of three (3) relocation sites (Site 1, Site 2, and Makati Homeville), and Dayap Proper comprising of six (6) Puroks (Purok Ibaba, Ilaya, Silangan, Kanluran, Dayap Highway, and Pulong Dayap). They also informed the community of the garbage disposal fee of P33, 000.00 for each truck.

Dayap National High School, like many educational institutions, generates considerable waste daily due to its large population, double shift classes, and diverse activities. Based on the data given by the school's Job Order (J.O.) employees assigned as utility, maintenance, and janitorial services during the assessment of the amount of waste produced in school, there are approximately 15 -20 garbage bags (black bags) each day or 75-100 garbage bags per week were collected. Common forms of wastes include papers, plastics, food wastes, and other materials that, if not managed properly, can lead to pollution and pose health hazards.

Proper handling and disposal of waste not only promote cleanliness but also foster a culture of sustainability and environmental responsibility. Schools, as hubs of education and community engagement, play a significant role in addressing these challenges by instilling eco-friendly practices and values in students. Effective waste management within the school setting requires collaborative efforts among various stakeholders. In particular, student organizations and the school community are pivotal in initiating, promoting, and sustaining SWM practices.

Objectives

This study aimed to explore the dynamic relationship between student-led initiatives and school-wide efforts in addressing SWM challenges. By examining the roles, strategies, and outcomes of this collaboration, the study sought to identify effective practices and provide actionable insights that can strengthen SWM programs within the school.

Specifically, it addressed the following research problems:

1. What is the level of participation of students, faculty, and community members in SWM activities at Dayap NHS?
2. How effective is the collaboration between student organizations and the school community in SWM initiatives?
3. What challenges hinder the successful implementation of SWM practices at Dayap NHS?
4. What are the perceptions of different stakeholders regarding the effectiveness of collaborative efforts in SWM?
5. What strategies can be implemented to enhance the collaboration between student organizations and the school community for better SWM practices?

METHODS

Research Design

This study employed a mixed-methods research design to examine solid waste management (SWM) at Dayap National High School (DNHS), integrating surveys, interviews, observations, and document reviews. The approach combined quantitative methods (surveys to gather statistical data on perceptions, participation levels, and effectiveness of SWM initiatives) and qualitative methods (interviews, observations, and document reviews to gain deeper insights into stakeholder roles, challenges, and collaborative efforts). A convergent parallel design was utilized, where both qualitative and quantitative data were collected simultaneously and analyzed together. This approach ensured a well-rounded understanding of SWM practices at DNHS, highlighting strengths, challenges, and areas for improvement in fostering collaboration between student organizations and the school community.



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Population and Sampling

The participants of this study are fifteen (15) key stakeholders of Dayap National High School (DNHS) who are actively involved in solid waste management (SWM) initiatives. These include ten (10) student leaders from various organizations engaged in SWM programs, four (4) school staff / faculty who collaborate with students or supervise waste management activities, and one (1) parent who are involved in the school's waste management efforts. To ensure the relevance and depth of insights, participants were selected through purposive sampling, focusing on individuals with direct involvement or experience in SWM activities.

Instruments and Data Collection

1. Surveys

Surveys were distributed to student leaders, faculty members, and community participants using Google Forms to efficiently collect quantitative data on perceptions, participation levels, and the effectiveness of solid waste management (SWM) initiatives. The survey instrument was carefully designed to ensure both validity and reliability. Content validity was established by having experts in research methodologies review the survey questions to confirm their relevance, clarity, and alignment with the study objectives. To further enhance validity, a pilot test was conducted with a small group similar to the target respondents to identify ambiguities and inconsistencies, leading to necessary refinements. These measures ensured that the survey produced reliable and accurate data for analyzing the collaboration between student organizations and the school community in SWM at Dayap NHS.

2. Interviews

Interviews were conducted to gain in-depth insights into the roles, challenges, and contributions of each stakeholder group in the collaborative SWM process. A structured interview approach was used, wherein a fixed set of predetermined questions was asked in the same order to all 15 participants. This method ensured consistency across responses, making it easier to compare perspectives and analyze common themes. The structured format allowed for a focused discussion while maintaining reliability in data collection. By engaging directly with stakeholders, the interviews provided qualitative data that complemented the survey results, offering a deeper understanding of the experiences and perceptions of those involved in SWM initiatives.

3. Observation

On-site observations were conducted to document SWM activities, such as waste segregation, recycling initiatives, and awareness campaigns within the school. The goal was to assess the extent of collaboration between students, faculty, and community members in real-time. An observation checklist was used to systematically record SWM practices, ensuring a structured approach to data collection. This method provided valuable insights into actual behaviors, effectiveness of implemented strategies, and any gaps in adherence to SWM guidelines. Unlike self-reported data from surveys and interviews, direct observation allowed for an unbiased assessment of the sustainability and efficiency of collaborative waste management efforts.

4. Document Review

A document review was performed to examine school policies, activity logs, and reports related to SWM initiatives. By analyzing existing records, the study gained secondary data that supplemented the primary findings from surveys, interviews, and observations. Documents such as waste management policies, event reports, and participation records helped validate claims made by stakeholders and provided historical context for the development of SWM programs. Reviewing these materials also helped identify trends, areas of improvement, and best practices that could be used to strengthen future collaboration in waste management efforts.

Data Analyses

The collected data were analyzed using the following methods:

1. Quantitative Data Analysis

Survey responses were systematically analyzed using descriptive statistics, specifically frequency and percentage distributions. This approach allowed for the identification of trends, stakeholder perceptions, and the overall level of



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participation in solid waste management (SWM) initiatives at Dayap National High School (DNHS). By quantifying responses, the study provided measurable insights into the effectiveness of collaboration between student organizations and the school community in SWM efforts.

2. Qualitative Data Analysis

Interview transcripts, observation notes, and document reviews were analyzed thematically to identify recurring patterns, stakeholder perspectives, and areas for improvement. Thematic analysis enabled a deeper exploration of the roles, challenges, and contributions of each stakeholder group. By coding and categorizing responses, meaningful themes emerged, reflecting the real-world dynamics of SWM implementation at DNHS. This approach helped uncover the underlying factors influencing participation and collaboration.

3. Triangulation

To ensure the credibility, reliability, and validity of the findings, a triangulation method was employed. Data collected from surveys (quantitative), interviews, observations, and document reviews (qualitative) were cross-verified to establish consistency and accuracy. This method reduced potential biases and provided a more holistic understanding of SWM collaboration. By integrating multiple data sources, the study strengthened its conclusions, offering well-supported recommendations for enhancing SWM practices within the school community.

Ethical Considerations

In the conduct of this mini study, ethical considerations were carefully observed to ensure the integrity, confidentiality, and well-being of all participants. Before starting, the researcher sought the approval of the School Principal, Dr. Evelyn P. Navia. Prior to data collection, informed consent was obtained from all respondents, ensuring that they fully understood the purpose of the study and their voluntary participation. Anonymity and confidentiality were strictly maintained by not disclosing any personally identifiable information. Participants were given the freedom to withdraw from the study at any stage without any consequences. Furthermore, the study adhered to ethical guidelines by ensuring that data collection methods were non-invasive and posed no harm to the respondents. All information gathered was used solely for academic purposes, with findings reported honestly and without bias.

To address potential biases from purposive sampling and self-reported data, the study ensured diverse participant selection by including students, faculty, and community members, following clear inclusion criteria to avoid favoritism, and using triangulation by comparing data from surveys, interviews, observations, and document reviews. To reduce bias in self-reported data, anonymity and confidentiality were maintained to encourage honest responses, while observational data were cross-checked to verify accuracy. Survey and interview questions were carefully worded to avoid leading responses, and participants were encouraged to provide both positive and critical feedback.

RESULTS AND DISCUSSIONS

The results of this study highlight key findings on the roles, challenges, and outcomes of the collaborative efforts in managing solid waste. Data from surveys, interviews, observations, and document reviews are summarized below:

Table 1. Demographic Profile of Participants

Participants	Age	Gender	Role in the School Community
1	39	Female	Faculty / Staff
2	14	Female	Student
3	34	Female	Faculty / Staff
4	16	Male	Student
5	14	Male	Student
6	15	Female	Student
7	15	Male	Student



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8	14	Female	Student
9	14	Female	Student
10	14	Female	Student
11	40	Female	Faculty / Staff
12	46	Female	Faculty / Staff
13	13	Male	Student
14	13	Female	Student
15	39	Male	Parent / Community Member

This table provides demographic details about 15 participants involved in a study or survey on Solid Waste Management (SWM) at Dayap NHS. The following analysis breaks down the data based on Age, Gender, and Role in the School Community. The majority of participants are students (66.67%), with a smaller representation of faculty/staff (26.67%) and a single parent/community member (6.67%). Most students fall between 13 to 14 years of age, showing a youthful engagement with SWM activities. The data highlights a gender balance, with a slight majority of female participants (66.67%) compared to male participants (33.33%). The sample is relatively diverse in terms of roles, though students clearly make up the largest group from various school's organizations such as: Youth for Environment in Schools Organization (YES-O), Filipino Club- Kabataang Pangarap ni Rizal (KAPARIZ), English Club, Student-Led Watching Team (SWT), and Teatro Alinaya, emphasizing the focus on student engagement in solid waste management efforts.

This demographic profile helps to understand the composition of participants in the SWM initiatives and the importance of student involvement in promoting waste management at Dayap NHS.

Table 2. Participation in Solid Waste Management Activities

Respondents	I participate in waste segregation activities organized by the school.	I attend and actively engage in SWM programs or clean-up drives.	I help in promoting SWM awareness among peers and community members.	I understand the importance of my role in the school's SWM efforts.
1	4- Agree	4- Agree	5- Strongly Agree	5- Strongly Agree
2	4- Agree	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree
3	5- Strongly Agree	4- Agree	4- Agree	5- Strongly Agree
4	4- Agree	3- Neutral	4- Agree	5- Strongly Agree
5	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree
6	5- Strongly Agree	3- Neutral	3- Neutral	5- Strongly Agree
7	5- Strongly Agree	3- Neutral	3- Neutral	4- Agree
8	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree
9	4- Agree	3- Neutral	3- Neutral	4- Agree
10	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree
11	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree
12	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree
13	5- Strongly Agree	4- Agree	5- Strongly Agree	5- Strongly Agree
14	5- Strongly Agree	3- Neutral	4- Agree	5- Strongly Agree
15	5- Strongly Agree	4- Agree	4- Agree	5- Strongly Agree

Table 2 shows that most respondents (11 out of 15) strongly agree that they participate in waste segregation activities, showing a high level of involvement in this aspect of SWM. Only a few reports being agreeing, which still reflects a positive attitude towards this activity. There are 6 out of 15 strongly agree that they attend and engage in SWM programs or clean-up drives. Some respondents are neutral, indicating some inconsistency in engagement levels among participants. A strong number of respondents (8 out of 15) strongly agree that they actively promote



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SWM awareness. However, there are a few neutral responses (3 out of 15), which might suggest some variation in how actively others engage in raising awareness. Almost all respondents (13 out of 15) strongly agree that they understand the importance of their role in the school's SWM efforts. This suggests a very strong awareness and acknowledgment of the significance of their contributions to SWM at school.

The responses reflect a positive attitude toward waste management activities in the school. Most respondents actively participate in waste segregation and clean-up drives, promote SWM awareness, and recognize the importance of their role. However, there is some variation in engagement levels, particularly in promoting awareness and attending programs, as indicated by a few neutral responses.

The results highlight significant participation from students, aligning with studies by Kumar, et. al (2020) and Chandran and Shah (2019), which emphasize the active role of youth in promoting environmental awareness and waste management practices. However, the moderate engagement of faculty and limited participation from the community mirror findings by Adewale (2018), who identified stakeholder disparities as a common issue in school-based SWM programs.

Table 3. Perception of Collaboration

Respondents	Collaboration between student organizations and the school community is effective.	SWM programs demonstrate strong teamwork among stakeholders.	Communication among students, faculty, and community members is clear and constructive.	The partnership between student leaders and faculty has enhanced SWM efforts.
1	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree
2	5- Strongly Agree	4- Agree	4- Agree	5- Strongly Agree
3	3- Neutral	3- Neutral	3- Neutral	3- Neutral
4	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree
5	5- Strongly Agree	4- Agree	5- Strongly Agree	4- Agree
6	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree
7	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree
8	4- Agree	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree
9	4- Agree	4- Agree	3- Neutral	4- Agree
10	4- Agree	3- Neutral	3- Neutral	5- Strongly Agree
11	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree
12	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree
13	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree
14	4- Agree	4- Agree	5- Strongly Agree	5- Strongly Agree
15	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree

Table 3 reveals that majority of respondents (10 out of 15) strongly agree that the collaboration between student organizations and the school community is effective. This suggests that most students perceive the collaboration as successful. A few respondents (4 out of 15) agree and one respondent is neutral, indicating that while the majority see this collaboration as effective, some students might not be as convinced. Most respondents (9 out of 15) strongly agree that SWM programs demonstrate strong teamwork among stakeholders. This indicates a positive view of teamwork in the school's SWM programs. However, a few respondents (4 out of 15) agree, and 2 respondents is neutral, which might suggest that while teamwork is generally seen as strong, there are a few who may perceive it less positively. A significant portion (11 out of 15) strongly agrees that communication among students, faculty, and community members is clear and constructive. This shows that effective communication is widely recognized. A few respondents (1 out of 15) agree, and 3 respondents are neutral. This variation suggests that while communication is generally seen as positive, there may be occasional breakdowns or inconsistencies. Most respondents (12 out of 15) strongly agree that the partnership between student leaders and faculty has enhanced SWM efforts. This demonstrates a strong belief in the positive impact of this partnership on SWM initiatives. A few respondents (2 out of 15) agree, showing a slightly more reserved view but still positive overall.

Overall, the responses suggest a positive perception of collaboration in SWM efforts at the school. The majority of respondents believe that collaboration between student organizations and the school community is



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effective, that SWM programs demonstrate strong teamwork, that communication is clear, and that the partnership between student leaders and faculty is beneficial. However, there are a few neutral responses, particularly regarding communication and teamwork, indicating that while most students see collaboration positively, some might not feel as strongly about its effectiveness or clarity.

While most stakeholders viewed collaboration as positive, the varying perceptions between faculty, students, and community members indicate a need for stronger alignment. This is supported by Lee et al. (2020), who noted that successful collaboration requires equitable contribution and shared vision among all participants.

Table 4. Challenges and Opportunities

Respondents	Limited resources hinder the implementation of effective SWM initiatives	Training programs on proper waste management are sufficient and accessible	Stakeholders are motivated to collaborate in addressing SWM challenges
1	4- Agree	4- Agree	4- Agree
2	5- Strongly Agree	5- Strongly Agree	4- Agree
3	4- Agree	3- Neutral	3- Neutral
4	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree
5	4- Agree	4- Agree	4- Agree
6	4- Agree	4- Agree	5- Strongly Agree
7	4- Agree	5- Strongly Agree	5- Strongly Agree
8	4- Agree	4- Agree	5- Strongly Agree
9	3- Neutral	4- Agree	3- Neutral
10	4- Agree	5- Strongly Agree	3- Neutral
11	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree
12	5- Strongly Agree	5- Strongly Agree	5- Strongly Agree
13	4- Agree	5- Strongly Agree	5- Strongly Agree
14	4- Agree	4- Agree	4- Agree
15	4- Agree	4- Agree	4- Agree

Table 4 indicates that most respondents (14 out of 15) agree or strongly agree that limited resources hinder the implementation of effective SWM initiatives. This indicates a strong perception that resource limitations are a challenge to effective waste management in the school. While many respondents (14 out of 15) agree or strongly agree that training programs on proper waste management are sufficient and accessible, a few respondents (1 out of 15) are neutral, indicating that some feel the training programs might not be as effective or widely accessible. This suggests that while there is a generally positive perception of the availability of training, there might be areas for improvement in reaching or engaging all students. A majority (7 out of 15) strongly agree that stakeholders are motivated to collaborate in addressing SWM challenges. This demonstrates a strong belief in the willingness of students, faculty, and the community to work together on SWM. However, there are 5 respondents who agree and there are 3 who answered neutral, indicating some variation in perception regarding stakeholders' motivation.

The responses indicate a general recognition of challenges in Solid Waste Management (SWM), particularly concerning limited resources, which is seen as a major hindrance to implementing effective initiatives. Despite this,



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there is a strong belief in the motivation of stakeholders to collaborate, and most students perceive the availability of training programs positively. However, some neutral responses in both training availability and stakeholder motivation suggest that there may be opportunities to improve access to resources and further enhance collaboration and engagement.

Table 5. Strength, Challenges, and Suggestion for Improvements of SWM

Respondents	What is the greatest strength of the SWM collaboration at Dayap NHS?	What challenges hinder collaboration in SWM initiatives?	What improvements would you suggest for enhancing SWM collaboration?
1	Teamwork	Proper coordination	Unity
2	The greatest strength of SWM collaboration was unity. Because I strongly believe that if we have unity, everything will go smoothly.	In my opinion, lack of cooperation is one of the problems. In this kind of program, everyone should be cooperative because this is a huge problem not only in school but also in our country so we should take this seriously.	As a student in our school, I clearly observe what's happening inside of it especially in our trash bins. And in my opinion, someone should always check if the trash is being thrown in their respective areas namely: biodegradable, non-biodegradable, etc. Because if we are not going to take actions, the signage on the trash bins was useless.
3	The trash bins intended for waste management.	The behavior of the students.	Educates the students about the importance of SMW and how to practice it.
4	community-driven approach, where students, teachers, and local stakeholders actively participate. It fosters awareness, responsibility, and teamwork.	it may be the following: 1. Lack of awareness 2. Limited resources 3. weak coordination 4. Inconsistent participation 5. Lack of policy enforcement	1. Clear, strong, and consistent policy and guidelines 2. Provision of resources 3. Regular monitoring and feedback
5	Teamwork	Communication among students	About peers
6	Their strength is that they didn't stop of teaching students even though some are stubborn they just keep on teaching hoping the student's comprehension change to start learning what SMW does. Their ability of constant care, unchanging plans and there are steadfast which helps in performing this thing.	SWM needs cooperation not only to the students but each localities, the ones who understands SWM is the one who cares about mother earth but those who don't, just doesn't care of what's going to happen, And the other problem is the lack of Financials that is supposedly going to buy a signage, having a signage can lower the possibility of students to throw their trash to any trash bins, the signage should last longer and to stay	I suggest keeping an eye on every student mostly to those who are stubborn enough and throw their waste anywhere whenever they wanted to. Putting a signage in every trash that is being held in the school will be helpful. Also, if a student is caught in the scene of throwing their waste anywhere not in the trash bin it's better off to talk straight to them or it's much better if the elders is the one who's going to talk to them. Some Students are too stubborn to



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		clear/understandable. Being financially unstable is the most challenging part of SWM.	participate in SWM, they will only listen if they are confronted by someone more importantly their elders.
7	Teamwork	Lack of materials (e.g. brooms, dustpan, plastic bags)	More materials especially near or inside bathrooms because people often leave their trash in the toilet and/or in the bathroom stall.
8	It makes the school more presentable and cleaner	Some students don't participate in this activity, or they just threw away their trash anywhere	Make it more engaging and entertaining for students
9	helping each other	communication and coordination difficulties	public awareness campaign
10	Developing and sustaining strong working relationships and clear communication also.	Lack of public awareness	engage residents in decision making and establish concise laws and guidelines
11	The greatest strength is the collaboration of internal and external stakeholders.	The delayed collection of garbage due to limited number of garbage collector	The discipline of the students in terms of garbage disposal.
12	Awareness, participation, cooperation among students and faculty.	Inadequate infrastructure, limited access to recycling facilities, lack of segregated waste collection system	Enhanced communication and awareness campaigns by engaging in training and capacity building Improve Infrastructure
13	The greatest strength of SWM collaboration at DNHS is having a safer and cleaner place for students to go to which will result to less symptoms inside the school.	The possible challenges are not agreeing of some people, considering they may not have time.	Explaining the top priority, how it would help students, faculty members etc.
14	Their strength is their clear and good partnership to make the environment clean.	Our school lacks on program that teach students, faculty teachers and others how to maintain cleanliness and how to segregate the garbage they make.	The SWM should coordinate with the officers of the clubs and other stakeholders.
15	Maintain cleanliness and orderliness in school	Not all are cooperative in the program	Encourage every stakeholder to participate and increase materials needed in the program

Table 5 highlights several recurring themes such as teamwork, unity, collaboration, and awareness. These are indicative of the strong social fabric and cooperative spirit driving the solid waste management (SWM) collaboration at Dayap NHS. The greatest strength of SWM collaboration at Dayap NHS lies in the collective effort and unity of all stakeholders. The teamwork, awareness-building, and resilience showcased by participants have resulted in a cleaner, safer, and more presentable school environment. However, emphasizing the role of specific strategies and ensuring sustainability could further enhance the program's success.

The challenges hindering collaboration in SWM initiatives at Dayap NHS range from individual attitudes and behavioral issues to systemic deficiencies such as inadequate infrastructure, weak coordination, and financial constraints. Addressing these challenges requires a multi-pronged approach, including awareness campaigns,



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improved communication, infrastructure development, and financial support. Such measures could significantly enhance the effectiveness and sustainability of SWM programs at the school.

The suggestions for improving SWM collaboration at Dayap NHS reflect a blend of practical, educational, and behavioral strategies. By focusing on clear policies, education, resource provision, and effective communication, the school can foster a more inclusive and effective SWM system. Engaging stakeholders, enhancing infrastructure, and adopting innovative approaches will likely result in improved participation and better waste management outcomes.

Table 6. Students Organizations' Contribution, Challenges Faced , and Suggestions to Improve Collaboration in SWM

Student-Respondents	How does your organization contribute to SWM initiatives at Dayap NHS?	What challenges do you face in coordinating with other stakeholders?	What suggestions can you offer to improve collaboration in SWM efforts?
1	Last November, our organization held a launching of a project "Shoot Mo, Plastic Bottle Mo" that aims to help SWM in separating plastic bottles that's mixed with other trash.	One of the challenges was the unexpected emergencies of the guest speakers. But because of unity, we managed to handle it well.	I suggest that they need to be constant to have a good result.
2	SSLG contributes by cleaning the garden and taking the initiative of leading the Brigada Eskwela every year. though, this is not enough to lessen the solid waste in our school.	<ol style="list-style-type: none"> 1. Incompatible schedule 2. Lack of resources 3. weak cooperation 	(a) It's better to include the clean-up drive every month and require the students to clean after class for at least 1 hour a day, (b) lessen the use of any materials that causes the overload solid waste in our school. they said, " prevention is better than cure"
3	To improve students	Communication	Nothing
4	We can help on keeping an eye to the students and cooperate on reporting to students on what to do in terms of SWM, and we can also provide financial assistance.	I never been through that. I didn't face stakeholders before.	To have enough money to buy the signage needed in the school.
5	Yes	None	More materials.
6	We remind them to manage their waste		
7	3R reduce, reuse and recycle		
8	Training, workshops and technical assistance	misunderstandings or misinterpretations	identify gaps and needs, encourage innovation
9	Our organization contributes for a safer place for students by managing the solid waste.	The challenge I only face is being shy, considering I barely know who they are which bring	Cooperation of all clubs and students



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		anxiety for me to talk with people I don't know.	
10	KAPARIZ, our organization contributes to the cleanliness and SWM initiatives by cleaning not only our garden but the library too.	For me there is no challenges facing the other stakeholders to coordinate with them.	As a officer of KAPARIZ, We can help the SWM with their programs and other projects for our school

Table 6 shows the contributions of organizations to SWM initiatives at Dayap NHS reflect a commendable commitment to fostering a cleaner and safer school environment. While the efforts are impactful at a basic level, there is potential for scaling these contributions through more strategic, coordinated, and innovative approaches. Enhancing infrastructure, implementing long-term programs, and building stronger collaboration among organizations can further improve SWM outcomes.

The challenges faced in coordinating with stakeholders highlight both systemic and individual issues. Addressing these requires a multi-faceted approach, including improved communication, resource planning, and capacity building. By resolving these challenges, collaboration in SWM initiatives can become more effective and inclusive

The suggestions emphasize practical, policy-driven, and collaborative measures to enhance SWM efforts. By addressing operational gaps, promoting stakeholder engagement, and allocating resources effectively, these recommendations can strengthen collaboration and the overall impact of SWM initiatives at Dayap NHS.

Table 7. Faculty/Staff' Support, Assessment, Barriers, and Suggestions

Faculty/Staff Respondents	1. How do you support SWM programs organized by student groups?	2. What is your assessment of the effectiveness of collaboration in SWM initiatives?	3. What barriers prevent stronger collaboration in SWM activities?	4. How can the school administration enhance support for SWM efforts?
1	Promoting the program	The success of SWC is depending on the dedication of the teacher in promoting the program.	Discipline	Aside from promoting the program be the role model in SWM activities.
2	By observing and following the SWM.	It needs more awareness campaign.	The awareness of the students in the school.	Encourage and support campaigns regarding SMW.
3	Attending inauguration of their projects and following their mechanism to their projects.	Ineffective due to inconsistency of their doings	Consistency of initiatives	Monitoring and evaluation of the SWM programs
4	I participated in the program	4/5 Very good	Lack of awareness and education Inconsistent facilities	School administration continuously support by creating clear waste segregation policies, engage student in the process and by giving reward system

Table 7 reflects a strong sense of support for SWM programs through active participation, promotion, and adherence to the established mechanisms. To further enhance the effectiveness of these efforts, incorporating more



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resource-based support, peer-driven initiatives, and structured feedback systems would be beneficial for the growth and sustainability of SWM practices at Dayap NHS.

This reflects a general awareness of the positive aspects of collaboration in SWM at Dayap NHS but also highlights significant areas that need improvement. While some respondents see good results, there is a strong call for more consistent practices, better leadership, and stronger awareness campaigns to improve the effectiveness of the SWM initiatives. Addressing these concerns can lead to more successful and sustainable collaboration in the future.

It also reveals several barriers to stronger collaboration in SWM activities at Dayap NHS, including issues related to scheduling, resource constraints, discipline, and awareness. Addressing these barriers through better planning, education, and infrastructure improvements can help create a more effective and sustainable SWM program. Collaboration will likely improve as stakeholders are given the resources, training, and motivation to participate actively.

The responses suggest several ways the school administration can enhance its support for SWM initiatives, ranging from infrastructural improvements to stronger engagement with the school community through role modeling and rewards. By addressing these areas, the administration can create a more supportive and effective environment for waste management, improving the overall success of SWM efforts at Dayap NHS.

Table 8. Parent/Community Member's Involvement, Challenges, and Recommendation

Parent /Community Member Respondent	1. How are you involved in the school's SWM programs?	2. What impact do the school's SWM initiatives have on the community?	3. What challenges do you face when participating in these activities?	4. What improvements would you recommend strengthening school-community collaboration in SWM?
1	Participate in program that may collect funds for school improvement	The community had understood more about the program	Time unavailability	Improve the delivery of information about the program and seek the cooperation of everyone in school

Table 8 reveals that the respondent is contributing to SWM efforts by supporting the school through fundraising activities, which is valuable. Encouraging further involvement in more direct aspects of SWM could enhance the impact of their contributions and broaden their engagement in school-wide waste management initiatives. The answer indicates a positive impact in terms of awareness and understanding of the SWM program. However, the next steps for enhancing the program's impact could involve evaluating the effectiveness of the awareness raised, encouraging more community participation, and expanding the initiatives to create more direct and measurable outcomes in the community.

The challenge of time unavailability is a practical issue that can be mitigated through better planning, flexibility, and a clear division of labor. Addressing this issue could increase participation and ensure that more people can engage effectively in SWM initiatives without feeling overwhelmed by other commitments.

The recommendation to improve information delivery and ensure broader cooperation highlights a need for more effective communication and engagement in SWM initiatives. By focusing on better communication strategies and actively involving all stakeholders, the school can foster a stronger sense of community and a more effective collaboration in solid waste management efforts.

The recommendations from participants align with best practices outlined by Patel et al. (2021) and Tan & Rivera (2019), such as the integration of community incentives, regular monitoring, and capacity-building initiatives. Implementing these strategies could strengthen partnerships and enhance overall SWM practices.



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Table 9. Observation Checklist

A. SWM Practices

Criteria	Yes	No	Partially
Waste bins are properly labeled and used for segregation.			/
Participants follow waste segregation procedures during activities.			/
Recycling or upcycling practices are observed.			/

B. Collaboration

Criteria	Yes	No	Partially
Student organizations take the lead in SWM activities.			/
Faculty and staff actively support SWM programs.			/
Community members participate in SWM initiatives.			/

Table 9 reveals that solid waste management (SWM) practices and collaboration are not fully consistent, and while some activities are being done such as waste segregation, recycling, and collaboration between student organizations, faculty, and the community, they are only partially implemented. The results highlight areas where there is room for improvement, such as more consistent adherence to segregation practices, more active participation from stakeholders, and stronger leadership from student organizations and faculty. It also indicates that there may be opportunities to enhance community engagement and collaboration in SWM efforts.

Table 10. Observational Notes

Category	Details
Positive Practices Observed	Some stakeholders practice waste segregation, but there are inconsistencies due to mixing of different waste types.
	Recycling drives are conducted, but participation is inconsistent, with only certain groups actively involved.
	Awareness campaigns and training sessions are conducted infrequently or do not reach all stakeholders, limiting their impact.
	Labeled bins for different types of waste are available but not consistently used by all stakeholders.
	Clean-up drives are occasionally organized but lack regular scheduling, leading to fluctuating participation and impact.
	Community involvement in waste management is occasional but lacks a formal or consistent structure.
	Some waste management practices, such as segregation and disposal, are monitored, but follow-up or documentation is inconsistent.
	Meetings or discussions about waste management are held irregularly, limiting effective communication and shared decision-making.
	Lessons on solid waste management are part of the curriculum but are not consistently taught across all classes or year levels.
Challenges Noted	Inconsistent involvement of students, staff, and community members leads to gaps in waste management efforts.
	Insufficient training or awareness programs result in stakeholders being unaware of proper waste segregation, recycling, and disposal practices.
	Rules and guidelines for waste management are unclear or not consistently enforced, reducing compliance.
	Prevailing attitudes that de-prioritize waste management hinder the cultivation of eco-friendly



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habits.
Despite awareness campaigns, many individuals fail to segregate waste correctly, leading to contamination of recyclable materials.
Delays or inconsistencies in waste collection services cause accumulation of waste, leading to hygiene and aesthetic issues.
Lack of systematic data collection and analysis make it difficult to assess the effectiveness of waste management initiatives or identify areas for improvement.
Poor coordination and communication between student organizations, school authorities, and community members hinder collaborative efforts.
Practices like burning waste or illegal dumping persist due to lack of awareness or alternative disposal methods.
Lack of sustained awareness campaigns reduce the visibility and importance of waste management initiatives.

Table 10 reveals that the primary themes emerging from the observations suggest that inconsistency in participation, implementation, and communication are the biggest barriers to effective waste management practices. Despite some positive practices and efforts from different stakeholders, the overall effectiveness is hindered by sporadic involvement, lack of regular education, and inconsistent enforcement of practices. Addressing the structural, educational, and coordination challenges is essential for strengthening the SWM efforts, and a more systematic and inclusive approach is needed to ensure consistent and sustained results.

The survey and observational findings underscore the critical role of collaboration, consistent with Smith and Torres (2021), who noted that stakeholder partnerships enhance SWM outcomes. However, gaps in communication, as identified in this study, resonate with challenges highlighted by Kim and Park (2020), who argued that ineffective communication can undermine collaborative efforts.

The challenges of resource limitations and insufficient training reflect barriers identified in Hassan and Abdullah's (2019) research, which reported similar issues in school-based programs. Additionally, the observed cultural attitudes and infrastructure gaps align with findings by Rodriguez and Chen (2018), who stressed the need for comprehensive stakeholder education and facility upgrades.

Conclusion

The study highlights the varying levels of participation among students, faculty, and community members in solid waste management (SWM) activities at Dayap NHS. While many stakeholders actively engage in waste reduction and cleanliness initiatives, participation remains inconsistent, with some individuals displaying minimal involvement. The collaboration between student organizations and the school community has proven effective in promoting environmental responsibility, yet its full potential is hindered by several challenges. These include a lack of awareness, insufficient resources, weak coordination, inconsistent participation, and limited policy enforcement. Despite these obstacles, stakeholders generally perceive the collaborative efforts as beneficial, recognizing their role in fostering teamwork, environmental stewardship, and a cleaner school environment. However, they also stress the need for stronger institutional support, improved communication, and sustained commitment from all involved parties. To enhance SWM collaboration, strategies such as clearer waste management policies, increased educational campaigns, provision of adequate resources, and the establishment of a reward system for active participation should be implemented. Strengthening the partnership between student organizations and the school community through structured programs and continuous engagement will ensure a more sustainable and effective SWM system, fostering long-term environmental consciousness and responsibility at Dayap NHS.

Recommendations

To further enhance collaboration between student organizations and the school community in solid waste management (SWM) at Dayap National High School, a holistic and strategic approach is crucial. Leadership training for student organization members can empower them to effectively plan and sustain impactful SWM initiatives. Establishing clear policies and implementing incentive systems can encourage active participation and foster accountability among students, faculty, and community members. Integrating SWM principles into the school curriculum can nurture environmental awareness and responsibility from an early stage. Leveraging technology for



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waste monitoring, communication, and engagement can improve efficiency and participation. Collaborations with local government units and NGOs can provide resources, expertise, and community-driven solutions. Addressing material and financial limitations is essential to ensure access to tools like segregated waste bins and composting systems. Finally, regular monitoring, feedback, and evaluation will help measure effectiveness and guide improvements. By adopting this comprehensive approach, Dayap National High School can cultivate a culture of environmental stewardship and sustain impactful SWM practices.

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