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**Solid Waste Management Awareness and Practice among  
SHS Students: Basis for the Development of School  
Waste Management Program**

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**Abstract**

*Solid waste management (SWM) is a complex matter and has become one of the most critical concerns confronting non-rural spaces in emerging countries as a result of rapid urban growth. The Philippines, a Southeast Asian archipelago country is also suffering from tremendous waste management struggles. Since school is one of the avenues for providing instruction and disseminating information about solid waste management, various research has been undertaken to see how it affects students' knowledge and practices. Meanwhile, it seems that the basic education's emphasis on solid waste management is inadequate. This study aims to determine the significant effects of Solid Waste Management awareness and practices among senior high school students of San Pedro National High School and develop a SWM Program. Using Quantitative research design, precisely the descriptive-correlational method, the data were collected using Standardized Survey Questionnaires from Solid Waste Management Awareness and Practices Questionnaire (SWMAPQ) and analyzed using Regression Analysis. The level of SWM awareness was measured into seven (7) indicators such as (a) definition of solid waste, (b) effect of improper solid waste disposal, (c) relevant laws on solid waste, (d) solid waste prohibited activities, (e) school intervention on solid waste, (f) importance of solid waste management, and (g) student's role and responsibilities while SWM practices of the respondents were measured in five (5) indicators such as (a) segregation of solid waste, (b) reduction of solid waste, (c) reuse of solid waste,*

(d) recycle of solid waste, and (e) disposal of solid waste. Based on the Regression Analysis of Solid Waste Management Awareness and Practices, the data shows a positive linear relationship between SWM awareness and SWM practices of the respondents. The Clean Campus Movement is a proposed program that will build up the High School student's awareness and practices in Solid Waste Management.

**Keywords:** Solid Waste Management Awareness and Practices, Science, National Development, Development Program

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## INTRODUCTION

Solid Waste Management (SWM) is a complex issue with political, economic, institutional, and environmental dimensions. It has become one of the most critical concerns confronting non-rural spaces in emerging countries as a result of rapid urban growth. The disparity in environmental awareness between young and old people in developing countries contributes to environmental challenges or waste management issues, resulting in unsustainable development, which has serious effects in low-income countries.

One serious hazard to the environment and human well-being is the indiscriminate dumping of solid wastes (Ejaz, et al., 2010; Neller & Neller, 2015; Domato, 2002). The intensifying problem of solid trash disposal is attributed by experts to the growing human population and rapid industrialization (Atienza, 2008 cited in Barloa, et al., 2016). Solid wastes are any garbage or refuse resulting from the usage of undesired or worthless resources or substances (Desa, et al., 2011).

Solid wastes, which are an unavoidable by-product of human activity (Sinha et al., 2008), can be classed as biodegradable, recyclable, residual, or special based on their composition. They come from a variety of places, including households, business facilities, industries, and institutions. Every year, countries produce an estimated 1.3 billion tons of waste, according to Recoletos Multidisciplinary Research Journal December estimates.

People's perceptions of rubbish will shift as a result of increased awareness of solid waste management. People have been raised to believe that waste is garbage and that it should not be touched nor approached. Previously, they believed that all waste should be thrown into a single container (Sarino, 2014). According to Baula, as stated by Punongbayan (2014), students must be aware of the waste management program in order to participate in it.

The Philippines as a Southeast Asian archipelago country, is also suffering from tremendous struggle on waste management. Due to increased urbanization, a burgeoning middle class, and a huge young population, it has a vibrant and fast-growing economy. (World Bank, 2020)

As a result of this situation, the Philippines' solid waste production rises (Castillo & Otoma, 2013). Recently, as part of the DENR's tougher implementation of Republic Act 9003, or the Ecological Solid Waste Management Act of 2000, the department has pledged to expedite the approval of local units' (LGUs) 10-year Solid Waste Management Plans.

In view of this issue, public engagement is required for all waste prevention and management measures. Through new technologies that entail product change, product improvement, and product replacement to reduce waste generation, science aids in SWM problem solving. The next step in waste management is waste storage, which includes separate recycling bins, smart bins, underground bins, compost bins, etc., which enable compacting of garbage to store more waste in less spaces and can be built to work with the internet of things to share data. Developing indigenous technologies that transform solid waste into affordable and clean energy requires a paradigm shift. The "green technology approach" is used by a number of inventions to reintegrate garbage into the value chain. Furthermore, by enabling populations that have been displaced by climate change to establish microbusinesses that produce beneficial end goods, the green technology approach has a significant

potential to improve adaptation and resilience. (Hammed et. al., 2021). Integrated Solid Waste Management (ISWM) based on the 4Rs (reduce, recycle, reuse, and recovery) approach, with a special focus on sustainable consumption and production, E-waste management, conversion of agricultural biomass and waste plastics into energy and material resources, and management of hazardous waste, is being considered by the UNEP (UNEP, 2010). Without a question, significant research is being done on a global scale in the field of waste management technologies, and the existing state of waste management can be greatly improved in order to contribute to higher standards of living today, particularly in developing nations (Moustakas & Loizidou, 2019).

According to Oliva, who was mentioned by Villanueva (2013), education is an important component of Solid Waste Management that must be included in order to develop a strong community program. Since school is one of the avenues for providing instruction and disseminating information about solid waste management, various research has been undertaken to see how it affects students' knowledge and practices. Meanwhile, it appears that the solid waste management teaching in basic education is limited and receives little attention. In addition, a systematic review was carried out to find and evaluate papers on SWM in developing nations from 2010 to 2019 that focused on environmental knowledge, awareness, attitudes, and practices. Evidence reveals that students at the secondary and tertiary levels are concerned about the environment and have favorable attitudes toward it, but teachers lack the necessary training to help students implement SWM (Debrah, et al., 2021). As a result, the researchers came up with this study where senior high school students will be utilized.

The goal of this study is to determine the significant effects of Solid Waste Management awareness and practices among SHS students of San Pedro National High School and develop the SWM Program.

Thus, the study is conceived to investigate the level of awareness and practices of SHS students of SPNHS on SWM. Moreover, it also examines whether their awareness and practices will significantly determine the accurate factors to serve as bases for the program. The study's findings will be used to build a School Waste Management Program aimed at cultivating a better knowledge, forming ethical attitudes, and supporting environmentally friendly actions in order to create a safer, healthier, and more sustainable learning environment.

## **STATEMENT OF THE PROBLEM**

The major problem is to determine the effects of solid waste management awareness on the student's practices on solid waste management.

Specifically, the study sought answers to the following questions:

1. How Solid Waste Management Awareness among Senior High School Students is described according to the following specifications:
  - 1.1. Definition of Solid Waste
  - 1.2. Effect of Improper Solid Waste Disposal
  - 1.3. Relevant Laws on Solid Waste
  - 1.4. Solid Waste Prohibited Activities
  - 1.5. School Intervention on Solid Waste
  - 1.6. Importance of Solid Waste Management
  - 1.7. Student's Role and Responsibilities
2. How Solid Waste Management Practices among Senior High School Students being described based on the following indicators;
  - 2.1. Segregation of Solid Waste;
  - 2.2. Reduction of Solid Waste;
  - 2.3. Reuse of Solid Waste;
  - 2.4. Recycle of Solid Waste and
  - 2.5. Disposal of Solid Waste

3. Does solid waste management Awareness exert significant effects on Solid Waste Management Practices?
4. Based on the findings of the study, what school solid waste management program may be developed or proposed?

### Null Hypothesis

Solid waste management awareness does not exert significant effects on solid waste management practices and does not develop SWM program among SHS students of San Pedro National High School.

### METHODOLOGY

The purpose of this study is to see how the awareness on solid waste management affects students' practices on it. Quantitative research was used in this study, specifically the descriptive-correlational method. The goal of quantitative research is to collect numerical data and generalize it across groups of people, Babbie (2010). On the other hand, according to Sousa (2007), the purpose of descriptive-correlational research is to describe variables and the natural connections that exist between and among them. As the principal research tool, standardized questionnaire was used to assess the awareness and practices of students on solid waste management.

### Respondents of the Study

The respondents of the study are public senior high students in Hagonoy, Bulacan. The method of the data collection employed for this study was random sampling. To determine the total percentage of the sample population, the researchers used the formula:  $n$  divide by  $N$  multiply by 100 which results in 25.10% of the population. On the other hand, to determine the sample population for each section, the formula used is  $n$  divide by  $N$  multiply by the total population of the school. As a result, only 288 students were selected from the total population of 1147. The researchers concluded that the result will be enough, reliable and valid.

**Table 1: Respondents of the study**

STRANDS CODE	N	n (25.10%)
A	34	9
B	80	20
C	68	17
D	95	24
E	78	20
F	77	19
G	62	16
H	89	22
I	72	18
J	96	24
K	58	15
L	44	11
M	48	12
N	63	15
O	64	16
P	61	15
Q	58	15
<i>TOTAL</i>	1147	288

**Instrument of the Study**

The study adopted standardized survey questionnaires from Solid Waste Management Awareness and Practices Questionnaire (SWMAPQ) from the study of Molina, & Catan, (2021) entitled “Solid Waste Management Awareness and Practices among Senior High School Students in A State College in Zamboanga City, Philippines” to collect and gather responses from the respondents. SWMAPQ is divided into two parts.

The first part focused on Solid Waste Management Awareness of the respondents. There were seven indicators to be measured such as (a) definition of solid waste, (b) effect of improper solid waste disposal, (c) relevant laws on solid waste, (d) solid waste prohibited activities, (e) school intervention on solid waste, (f) importance of solid waste management, and (g) student’s role and responsibilities.

The second part dealt with the Solid Waste Management Practices of the respondents. There were five (5) indicators to be measured such as (a) segregation of solid waste, (b) reduction of solid waste, (c) reuse of solid waste, (d) recycle of solid waste, and (e) disposal of solid waste.

**Table 2: Scale Measurement of Solid Waste Management Awareness and Practices**

Scale	Solid Waste Management Awareness	Solid Waste Management Practices
3.50 – 4.00	Very High (VH)	Always (A)
2.50 – 3.29	H (High)	Often (O)
1.50 – 2.49	Low (L)	Seldom (S)
1.00 – 1.74	Very Low (VL)	Never (N)

Cronbach’s Alpha serves as the validity level of the instrument which is SWMAPQ. George and Mallery (2019) states that the accepted value of Cronbach’s Alpha is 0.7, 0.8 is good and 0.9 is excellent. Therefore, SWMAPQ obtained a Cronbach’s Alpha value of 0.9.

**RESULTS AND DISCUSSION**

This study aimed to determine the significant effects of Solid Waste Management awareness and practices among SHS students of San Pedro National High School and develop the SWM Program.

**Solid Waste Management Awareness**

The level of solid waste management awareness was measured into seven (7) indicators to be measured such as (a) definition of solid waste, (b) effect of improper solid waste disposal, (c) relevant laws on solid waste, (d) solid waste prohibited activities, (e) school intervention on solid waste, (f) importance of solid waste management, and (g) student’s role and responsibilities.

**Table 3: Awareness on Solid Waste Management in Terms of its Definition**

PART I	Not Fully Aware	Not aware	Aware	Fully Aware	GWA	Interpretation
<b>A. Definition of Solid Waste</b>						
As a Senior High School Student, I am aware of/ on/ that solid waste are						
a. agricultural waste	17	20	168	83	3.10	H
b. construction debris	15	57	163	53	2.88	H
c. commercial waste	18	33	171	66	2.99	H
d. institutional waste	18	64	158	48	2.82	H
e. street sweepings	16	25	141	106	3.17	H
f. discarded household	14	53	151	70	2.96	H
g. non-hazardous industrial waste	15	51	160	62	2.93	H
<b>Weighted Mean:</b>					<b>2.98</b>	<b>H</b>

Table 3 presents the level of awareness among Senior High School students on the terms of definition of solid waste which consists of seven (7) items. Based on the obtained weighted mean of 2.98 or interpreted as “High” it means that students have high knowledge on the matter. In the study, Singh, Solanki, and Pal (2021) defined solid waste as collected materials from wastewater and water supply treatment facilities, as well as garbage, refuse, and abandoned items from mining, farming, businesses, and community activities. There are many different kinds of solid wastes that are created, including municipal wastes, industrial wastes, mine wastes, nuclear wastes, medical wastes, etc. Understanding what solid waste is will be beneficial so that when the user engages in waste management activities, communities will become more aware of managing their wastes effectively. (Nmere, et al. 2021)

**Table 4: Solid Waste Management Awareness in Terms of the Effect of Improper Solid Waste Disposal**

PART I	Not Fully Aware	Not aware	Aware	Fully Aware	GWA	Interpretation
<b>B. Effect of Improper Solid Waste Disposal</b>						
As a Senior High School Student, I am aware of/ on/ that improper disposal of solid waste may lead to						
a. clogging of drainage canal that will lead to floods during rainy season	18	19	126	125	3.24	H
b. breeding or shelter of pests such as flies, rats and mosquitos	21	44	126	97	3.04	H
c. human illnesses	17	24	128	119	3.21	H
d. <i>degradation</i> or destruction on environment such as a pollution.	15	31	137	105	3.15	H
e. serious treat on animals	13	31	135	109	3.18	H
<b>Weighted Mean:</b>					<b>3.17</b>	<b>H</b>

Table 4 shows the effect of improper solid waste disposal with a general weighted mean 3.17 with a descriptive rating “High”. It means that respondents are “fully aware” of the effects of improper solid waste disposal. Having improper waste management has serious negative effects in health and the environment. The health concerns are mishandling garbage from hospitals and clinics. The most serious health risks for the general public are caused indirectly due to the disease from flies, rats and mosquitoes. (Adnan, Jha and Kumar, 2020)

**Table 5: Awareness in Terms of Relevant Laws on Solid Waste**

PART I	Not Fully Aware	Not aware	Aware	Fully Aware	GWA	Interpretation
<b>C. Relevant Laws on Solid Waste</b>						
As a Senior High School Student, I am aware of/ on/ that different laws or ordinances relevant to solid waste management such as						
a. Presidential Decree No. 825	29	92	136	31	2.59	H
b. R.A. No. 9003	22	121	118	27	2.52	H
c. R.A. No. 8749	25	119	112	32	2.52	H
d. R.A. No. 9275	27	105	124	32	2.56	H
e. City/ Municipal Ordinance in my locality	19	57	155	57	2.87	H
<b>Weighted Mean:</b>					<b>2.61</b>	<b>H</b>

Table 5 data presents senior high school students on their awareness of different laws on solid waste. Based on the indicators, it can be observed that senior high school students are aware of the Laws that concern solid waste. The weighted mean is 2.61 which shows only average awareness of the respondents about the laws governing solid waste. The last indicator got the highest, indicating awareness in the Municipal Ordinance. In relation to RA No. 9003, an act providing for an ecological solid waste management program, Hagonoy, Bulacan have effective implementation of solid waste management strategies such as the conducting of intensive information campaign and regular monitoring of the ordinance on prohibition in the use of plastic and styrofoam within their locality. The Philippine Civil Code's Article 3 emphasizes "Ignorance of the law excuses no one from compliance therewith". Molina and Catan (2021) mentioned that it is necessary for students to know the different laws relevant on solid waste. It implies that teachers should integrate in their lessons some relevant laws on solid waste management.

**Table 6: Awareness on Solid Waste Management in Terms of Solid Waste Prohibited Activities**

<b>PART I</b>	<b>Not Fully Aware</b>	<b>Not aware</b>	<b>Aware</b>	<b>Fully Aware</b>	<b>GWA</b>	<b>Interpretation</b>
<b>D. Solid Waste Prohibited Activities</b>						
As a Senior High School Student, I am aware of the following prohibited activities such as						
a. littering throwing or dumping of waste in public places such as a roads, esteros, etc.	18	28	146	96	3.11	H
b. open burning of leaves and plastics.	19	35	155	79	3.02	H
c. open dumping of waste on flood prone areas	17	53	151	67	2.93	H
d. mixing of solid waste in any waste box or receptacle	16	46	158	68	2.97	H
<b>Weighted Mean:</b>					<b>3.02</b>	<b>H</b>

Table 6 shows the level of awareness among senior high school students on solid waste prohibited activities. Data presents that respondents have "High" awareness on prohibited activities with a weighted mean of 3.02. The students who have high awareness on different prohibited activities are more likely to follow solid waste management practices, to disregard violations in any relevant law and avoid being fined or imprisoned.

**Table 7: Awareness on Solid Waste Management in Terms of School Intervention**

<b>PART I</b>	<b>Not Fully Aware</b>	<b>Not aware</b>	<b>Aware</b>	<b>Fully Aware</b>	<b>GWA</b>	<b>Interpretation</b>
<b>E. School Intervention on Solid Waste</b>						
As a Senior High School Student, I am aware of the school initiative such as						
a. having solid waste management program	11	25	157	95	3.17	H
b. having policies on Solid Waste Management	16	28	158	86	3.09	H
c. having sanction on violating the schools or community Solid Waste Management Policy	16	33	163	76	3.04	H
d. generating funds out of waste	17	46	163	62	2.94	H
<b>Weighted Mean:</b>					<b>3.06</b>	<b>H</b>

Table 7 shows the responses of the senior high school students in terms of school initiative in solid waste management. The data shows students obtained a weighted mean of 3.06. This level of awareness can be interpreted that students have “High” awareness of the school solid waste management program. Olsen (2020) emphasizes that teachers hold the responsibility for ensuring that students gain the knowledge and abilities that are needed to preserve human life, sustainable environmental practices, and sustainable development. The increased knowledge about environmental issues raises awareness, which may enable individuals to take action to protect the natural environment.

**Table 8: Awareness in Terms of Importance of Solid Waste Management**

<b>PART I</b>	<b>Not Fully Aware</b>	<b>Not aware</b>	<b>Aware</b>	<b>Fully Aware</b>	<b>GWA</b>	<b>Interpretation</b>
<b>F. Solid Waste Prohibited Activities</b>						
As a Senior High School Student, I am aware of the importance of Solid Waste Management such as						
a. key to achieve a clean and green environment	12	16	124	136	3.33	H
b. reduce the reproduction of pests.	15	29	141	103	3.15	H
c. protect public health.	13	13	123	139	3.35	H
<b>Weighted Mean:</b>					<b>3.28</b>	<b>H</b>

Table 8 identifies the students’ solid waste management awareness in terms of the importance of it. The table gives a general weighted mean of 3.28 as an interpretation of “High”. This indicates that students are highly aware of the importance of implementation of solid waste management which is a key to achieve a clean and green environment and protect public health.

**Table 9: Awareness on Solid Waste Management in Terms of Student’s Role and Responsibilities**

<b>PART I</b>	<b>Not Fully Aware</b>	<b>Not aware</b>	<b>Aware</b>	<b>Fully Aware</b>	<b>GWA</b>	<b>Interpretation</b>
<b>G. Student’s Role and Responsibilities</b>						
As a Senior High School Student, I am aware of my role and responsibilities such as						
a. reduce the waste generated.	14	13	142	119	3.27	H
b. clean as you go or CLAYGO	7	19	121	141	3.38	H
c. segregate waste when disposing based on the trashcan labels	8	27	133	120	3.27	H
d. compost organic waste.	15	23	156	94	3.14	H
e. recycle waste into a new product	10	23	130	125	3.28	H
f. refuse single used items.	8	41	154	85	3.10	H
g. reuse items.	10	24	142	112	3.24	H
<b>Weighted Mean:</b>					<b>3.24</b>	<b>H</b>

Table 9 implies that among senior high school students in the level of solid waste management in terms of their role and responsibilities in the implementation of the program, is relatively “high” with the weighted mean of 3.24. The findings suggest that students are well-aware of their role and responsibilities in the solid waste management program. Based on this assessment, the practice of waste management may be improved through awareness in addition to waste management awareness (Vivek et. al., 2020).

**Table 10: Practices on Solid Waste Management in Terms of Segregation**

PART II	Never	Seldom	Often	Always	GWA	Interpretation
<b>A. Segregation of Solid Waste</b>						
I practice solid waste management by segregating waste based on/ which are						
a. biodegradable (e.g. Papers, leaves, vegetable) from non-biodegradable (e.g. Plastics, wires, cans).	13	28	134	113	3.20	O
b. recyclable (e.g. Papers, plastic bottles, cans) from non-recyclable (e.g. Food waste, leaves)	9	91	66	122	3.05	O
c. non-harmful waste from toxic wastes (e.g. Battery, ink, pentel pen).	16	49	125	98	3.06	O
<b>Weighted Mean:</b>					<b>3.10</b>	<b>O</b>

Table 10 shows that within indicator (a) the weighted mean is 3.10 which is in the scale of “O” (Often). It shows that the SHS students often execute this practice of segregation of solid waste in different categories within the vicinity of their area. As per sub-category the table shows that a. (biodegradable) yielded the highest GWA with 3.20 and b. (recyclable) yielded the lowest GWA with 3.05 but are all still within the scale of “O” (Often).

**Table 11: Practices on Solid Waste Management in Terms of Reduction**

PART II	Never	Seldom	Often	Always	GWA	Interpretation
<b>B. Reduction of Solid Waste</b>						
I practice solid waste management by reducing waste by						
a. buying in bulk	31	78	140	39	2.65	O
b. using ecobag	9	28	118	133	3.30	O
c. using reusable items rather than single use items	16	28	133	111	3.18	O
d. saying no to plastic if only have few items bough	15	37	142	94	3.09	O
e. preffering items with less packaging	11	43	148	86	3.07	O
f. taking lunch in schools using reusable container	15	33	136	104	3.14	O
g. converting food waste into animal feed	20	32	120	116	3.15	O
h. repairing broken furniture or appliances	11	33	129	115	3.21	O
i. buying important items only	11	23	112	142	3.34	O
<b>Weighted Mean:</b>					<b>3.13</b>	<b>O</b>

Table 11 shows that within indicator (b) the weighted mean is 3.13 which is in the scale of “O” (Often). It shows that the SHS students execute this practice of reduction of solid waste often in different categories within the vicinity of their area. As per sub-category the table shows that i. (buying important items only) yielded the highest GWA with 3.34, and a. (buying in bulk) yielded the lowest GWA with 2.65 but are all still within the scale of “O” (Often).

**Table 12: Practices on Solid Waste Management in Terms of Reuse**

PART II	Never	Seldom	Often	Always	GWA	Interpretation
<b>C. Reuse of Solid Waste</b>						
I practice solid waste management by reusing items such as						
a. scrap papers as memo or scratch for solving	17	22	137	112	3.19	O
b. compostable waste is converted into fertilizer.	13	36	156	83	3.07	O
c. washable food and water containers	15	26	119	128	3.25	O
d. grocery bags	9	32	125	122	3.25	O
e. intact and unused clothes and toys are given to the less fortunate or	13	34	136	105	3.16	O
<b>Weighted Mean:</b>					<b>3.18</b>	<b>O</b>

Table 12 shows that within indicator (c) the weighted mean is 3.18 which is in the scale of “O” (Often). It shows that the SHS students execute this practice of reusing of solid waste often in different categories within the vicinity of their area. As per sub-category the table shows that c. (washable food and water containers) and d. (grocery bags) showcased a tie that yielded the highest GWA of 3.25, and b. (compostable waste is converted into fertilizer) yielded the lowest GWA with 3.07 but are all still within the scale of “O” (Often).

**Table 13: Practices on Solid Waste Management in Terms of Recycle**

PART II	Never	Seldom	Often	Always	GWA	Interpretation
<b>D. Recycle of Solid Waste</b>						
I practice solid waste management by recycling items by						
a. converting old items into new products	12	33	156	87	3.10	O
b. generating funds out from plastic bottles, metals or cans	10	46	148	84	3.06	O
c. creating art craft	11	45	128	104	3.13	O
<b>Weighted Mean:</b>					<b>3.10</b>	<b>O</b>

Table 13 shows that within indicator (d) the weighted mean is 3.10 which is in the scale of “O” (Often). It shows that the SHS students execute this practice of recycling of solid waste often in different categories within the vicinity of their area. As per sub-category the table shows that c. (creating art craft) yielded the highest GWA of 3.13, and b. (generating funds out from plastic bottles, metals, or cans) yielded the lowest GWA with 3.06 but are all still within the scale of “O” (Often).

**Table 14: Practices on Solid Waste Management in Terms of Disposal**

PART II	Never	Seldom	Often	Always	GWA	Interpretation
<b>E. Disposal of Solid Waste</b>						
I practice solid waste management by disposing						
a. biodegradable items in compost pit.	17	45	156	70	2.97	O
b. items in proper trash bins.	9	27	129	123	3.27	O
c. waste materials in common open	20	47	144	77	2.97	O

dumps						
d. non-biodegradable items by selling it in junkshop.	16	47	139	86	3.02	O
e. special waste (e.g. Laboratory waste) are disposed in a garbage container	15	43	149	81	3.03	O
<b>Weighted Mean:</b>					<b>3.05</b>	<b>O</b>

Table 14 shows that within indicator (e) the weighted mean is 3.05 which is in the scale of “O” (Often). It shows that the SHS students execute this practice of disposing of solid waste often in different categories within the vicinity of their area. As per sub-category the table shows that b. (items in proper trash bins) yielded the highest GWA of 3.27, and a. (biodegradable items in compost pit) and c. (waste materials in common open dumps) showcased a tie that yielded the lowest GWA with 2.97 but are all still within the scale of “O” (Often).

**Significance effects of solid waste management Awareness (SWMA) on Solid Waste Management Practices**

Solid waste management awareness and practice can significantly lessen negative effects on the environment and human health in favor of promoting economic growth and raising living standards. Table 15 shows the correlation of SWM awareness and Solid waste Management Practice.

**Table 15: Effects of Solid Waste Management Awareness and Practices of Solid Waste**

Variables	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	.860	.146		5.885	.000
Definition of Solid Waste	.084	.057	.089	1.465	.144
Effect of Improper Solid Waste Disposal	.055	.061	.070	.905	.366
Relevant Laws on Solid Waste	.055	.042	.067	1.323	.187
Solid Waste Prohibited Activities	.167	.050	.210	3.302	.001
School Intervention on Solid Waste	.100	.057	.121	1.764	.079
Importance of Solid Waste Management	.053	.057	.070	.925	.356
Student’s Role and Responsibilities	.221	.060	.244	3.701	.000

R = .702  
 R-squared = .492  
 F-value = 38.816  
 p-value = .000  
 alpha = 0.05

The **R value** of .702 indicates that there is a positive linear relationship between SWM awareness and SWM practices, this also indicates that when SWM awareness increases, SWM practices also increases. Moreover, the squared value of .492 indicates a 49.2% variability of the response data around its mean.

**F-value** is equal to 38.816 while the **p-value** of .000 is lower that the **alpha value** of 0.50. This indicates that SWM awareness bears significant effects on SWM practices when considering the jointed effects of all variables of SWM awareness. Which support that study of Dennis V. Madrigal and Enrique G. Oracion (2017) “Solid Waste Management Awareness, Attitude, and Practices in a Philippine Catholic Higher Education Institution” found that except for sex, which exhibited no link with attitudes or behaviors, it was discovered that age and

educational level were substantially correlated with awareness, attitudes, and practices. And the study of Margarita C. Paghasian (2017) “Awareness and Practices on Solid Waste Management among College Students in Mindanao State University Maigo School Arts and Trades” Which was contrary to what was discovered, which was that the students' awareness of solid waste management had no impact on their disposal methods but had an impact on their practices especially related to segregation, reduce, reuse, and recycle.

The **B Coefficients** of the regression analysis show the extent to which the variables of SWM awareness exert effects as predictors of SWM practices. For every unit increase in SWM practices, Student’s Role and Responsibilities increases by .221. Solid waste prohibited Activities by .167.

While combined effects account for a general effect of SWM awareness and SWM practices, the regression analysis also accounts for individual effects which is show in the **Beta Coefficient**. It can be also inferred from the data’s beta coefficients that student’s role and responsibilities is the best predictor (.244) followed by Solid Waste Prohibited Activities (.210).

The project Clean Campus Movement is a program that builds up the High School student’s awareness and practices on Solid Waste Management

**SOLID WASTE MANAGEMENT PROGRAM**

I. TITLE: Clean Campus Movement

II. Proponent:

III. Proposed Date: Year Round

IV. Proposed Venue: San Pedro National High School, Brgy, San Pedro, Hagonoy. Bulacan

V. Rationale:

With the current situation of waste disposal, maintaining proper solid waste management among students is crucial. The clean campus movement maintains and helps students’ awareness to improve practices on the appropriate management of solid waste materials in the School campus and their communities.

In support of the project Clean Campus Movement of the School, the provision of a functional solid waste management program must be implemented. Thus, the program will give awareness to the school personnel and the students about the proper disposal of waste and encourage effective waste management practices.

VI. Objectives

The program aims to accomplish the following:

1. Maintain a clean and healthy environment for students, teachers, parents, and stakeholders by practicing proper waste management.
2. Create an opportunity for the students to practice proper solid waste management in school and their wider communities; and
3. Develop students’ awareness and encourage effective solid waste management practices in school campuses, homes, and communities.

VII. Matrix of Activity

Activities	Objectives	Strategies	Timeline
Strengthen School’s Solid Waste Management	<ul style="list-style-type: none"> <li>▪ To strengthen environmental education and improve the awareness of waste disposal and solid waste management in School</li> </ul>	<ul style="list-style-type: none"> <li>▪ Creation of a School Organization that will facilitate Solid Waste Management concerns of the School</li> <li>▪ Electing Student Officers and Coordinators that will lead the program</li> </ul>	1 <sup>st</sup> Quarter of the School Year

		<ul style="list-style-type: none"> <li>▪ Integrate the importance of Solid Waste Management Practices in the curriculum and the Activities of the school</li> </ul>	
Promote Waste segregation	<ul style="list-style-type: none"> <li>▪ To separate recyclable waste from disposal waste for possible reuse</li> <li>▪ To ensure that waste materials are can be processed to recreate new products for the benefit of the school</li> <li>▪ To separate hazardous waste for disposal in landfills or for appropriate processed</li> </ul>	<ul style="list-style-type: none"> <li>▪ Providing Trash bins with labels to encourage waste segregation practices</li> <li>▪ Develop a waste collection strategy in the classroom and school</li> <li>▪ Device an activity that will promote students to segregate their classroom and school waste</li> </ul>	2 <sup>nd</sup> and 3 <sup>rd</sup> quarters of the School year
Minimal waste to zero waste habit	<ul style="list-style-type: none"> <li>▪ To decrease the waste materials and ensure a reduction in landfill waste for final disposal</li> </ul>	<ul style="list-style-type: none"> <li>▪ Encourage Students to bring their utensils to reduce plastic waste</li> <li>▪ Create ads and campaigns promoting zero waste</li> <li>▪ Sustaining Earth-friendly habits and practices for the school, home, and Communities</li> </ul>	Year-round
Systematize School's Waste recycling and reuse activities	<ul style="list-style-type: none"> <li>▪ To reduce the quantities of all generated waste by the school</li> <li>▪ To follow the municipal guideline and policy in waste management</li> </ul>	<ul style="list-style-type: none"> <li>▪ Make a recording of waste disposal reports from school and classroom</li> <li>▪ Constructing a waste segregation area for the school</li> <li>▪ Inform students of the municipal guidelines for collecting disposable waste</li> </ul>	Year-round
Inculcating proper disposal Practices	<ul style="list-style-type: none"> <li>▪ To regulate the disposal and non-disposal of waste by the School Campus</li> <li>▪ To guide the School personnel and student on the process of storage and disposal requirements of all waste generated on the school campus.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Information dissemination on the organized waste disposal process of the School</li> <li>▪ Create a program/ seminar on 3R (reduce, reuse, and recycle) for Solid waste Management</li> <li>▪ Conduct training program for the school personnel on managing waste materials (hazardous waste) establishing contingency plans and regulatory requirement</li> </ul>	Year-round

## VII. Expected Output

- Provide awareness of Solid Waste Management
- Enhance practices in Solid Waste Management
- Develop a Functional Solid Waste

## **RECOMMENDATION**

Based on the result of the findings, the solid waste management awareness shows that students have an average awareness on relevant laws on solid waste. Hence, activities that will enhance the awareness regarding the relevant laws on solid waste must be intensified by the school. Moreover, research pertaining on how to enhance the awareness of students especially on relevant laws on SWM must be conducted.

Furthermore, the study called for students, faculty members, other stakeholders, and local authorities to involve communities in waste management. Students, faculty members, other stakeholders, and local authorities should be educated on proper waste management practices including reducing, recycling, reusing, and rethinking, and be made aware of the health benefits of good waste management activities. The study also encourages students, faculty members, other stakeholders, and local authorities to make money from solid waste through recycling.

## **CONCLUSION**

This study presents the solid waste management awareness and practice among SHS students. Based on the findings of the study, the following conclusions are drawn: The SHS students at San Pedro National High School are knowledgeable and mindful on solid waste management. Results revealed that these students have a high understanding on definition of solid waste, effect of improper solid waste disposal, solid waste prohibited activities, school intervention on solid waste, importance of solid waste management and student's role and responsibilities. However, students have an average knowledge on the different laws on solid waste.

The awareness on solid waste management of the students has a significant effect on solid waste management practices. The results revealed that students have a good solid waste management practice in terms of segregation, reduction, reuse, recycle and disposal.

The researchers in their desire to continuously raise awareness and practice on solid waste management, developed a solid waste management program for school. This can be given in the school during parent – teacher meeting or in community based programs.

**REFERENCES**

- Adnan M., Jha A., and Kumar S., (2020). Municipal Solid Waste Management and its Impact: A Review, *International Journal of Advanced Research in Engineering and Technology (IJARET)*, 11(5), pp. 685-693. <https://iaeme.com/Home/issue/IJARET?Volume=11&Issue=5>
- Babbie, E. R. (2010). *Research Guides: Organizing Academic Research Papers: Quantitative Methods*. Sacred Heart University Library. <https://library.sacredheart.edu/c.php?g=29803&p=185930>
- Debrah, Justice & Vidal, et al. (2021). *Raising Awareness on Solid Waste Management through Formal Education for Sustainability: A Developing Countries Evidence Review*. [https://www.researchgate.net/publication/348622144\\_Raising\\_Awareness\\_on\\_Solid\\_Waste\\_Management\\_through\\_Formal\\_Education\\_for\\_Sustainability\\_A\\_Developing\\_Countries\\_Evidence\\_Review](https://www.researchgate.net/publication/348622144_Raising_Awareness_on_Solid_Waste_Management_through_Formal_Education_for_Sustainability_A_Developing_Countries_Evidence_Review)
- George, D. & Mallery, P. (2019). *IBM SPSS Statistics 25: A Simple Guide and Reference*. 25th Edition. Routledge: Taylor and Francis Group
- Govani, Janki et al, (2021). *Chapter 4 - New generation technologies for solid waste management*. *Current Developments in Biotechnology and Bioengineering*. <https://www.sciencedirect.com/science/article/pii/B9780128210093000154>
- Hammed, T.B. & Sridhar, M. K. C. (2021) *Green Technology Approaches to Solid Waste Management in the Developing Economies*. In: Ogue, N., Ayal, D., Adeleke, L., da Silva, I. (eds) *African Handbook of Climate Change Adaptation*. Springer, Cham. [https://link.springer.com/chapter/10.1007/978-3-030-45106-6\\_174](https://link.springer.com/chapter/10.1007/978-3-030-45106-6_174)
- Licy, C.D., Vivek, R., & Saritha, K. et al., (2013). Awareness, Attitude and Practice of School Students towards Household Waste Management. *J. Environ.*, 2, 147–150.
- Molina, R. A., & Catan, I. (2021). Solid waste management awareness and practices among senior high school students in a state college in Zamboanga City, Philippines. *Aquademia*, 5(1), ep21001.
- Moustakas, K., & Loizidou, M. (2019) *Advances and prospects in the field of waste management*. *Environmental Science and Pollution Research* 26, 35283–35287. <https://link.springer.com/article/10.1007/s11356-019-06585-x>
- Nmere, O., et al., (2020). Influence of Public Relations' Media Public Enlightenment Campaign and Community Participation Strategies on Waste Management. *Problems and Perspectives in Management*, 18(1), 82-96. doi:10.21511/ppm.18 (1).2020.08 [https://www.coa.gov.ph/wpfd\\_file/hagonoy-executive-summary-2019/](https://www.coa.gov.ph/wpfd_file/hagonoy-executive-summary-2019/)
- Olsen, S.K. et al. (2020). Assessing Teachers' Environmental Citizenship Based on an Adventure Learning Workshop: A Case Study from a Social-ecological Systems Perspective. *J. Sci. Teacher Educ.*, 31, 869–893
- Singh, V.K., Solanki, P., & Ghosh, A., (2021). Solid Waste Management and Policies toward Sustainable Agriculture. In: Baskar, C., Ramakrishna, S., Baskar, S., Sharma, R., Chinnappan, A., Sehwat, R. (eds) *Handbook of Solid Waste Management*. Springer, Singapore. [https://doi.org/10.1007/978-981-15-7525-9\\_27-1](https://doi.org/10.1007/978-981-15-7525-9_27-1)
- Sousa, V. D. (2007, June 1). *An overview of research designs relevant to nursing: Part 1: quantitative research designs*. Scielo Brazil. <https://www.scielo.br/j/rlae/a/7zMf8XypC67vGPrXVrVFGdx>