

**AWARENESS, ATTITUDE, AND PRACTICES OF STUDENTS ON WASTE  
MANAGEMENT IN SAN MIGUEL TECHNICAL VOCATIONAL  
SCHOOL (SMTVS)**

**College of Teacher Education  
BOHOL ISLAND STATE UNIVERSITY  
Zamora, Bilar, Bohol**

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**June 2022**

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A Thesis  
Presented to the Faculty of the  
College of Education  
BOHOL ISLAND STATE UNIVERSITY  
Zamora, Bilar, Bohol

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In Partial Fulfillment  
of the Requirements for the Degree  
in Bachelor in Secondary Education

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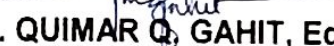
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This thesis entitled "AWARENESS, ATTITUDE, AND PRACTICES OF STUDENTS ON WASTE MANAGEMENT IN SAN MIGUEL TECHNICAL VOCATIONAL SCHOOL (SMTVS)", was prepared and submitted by Cheryl M. Orioque, Jezabel B. Pogio and Marlyn B. Idul in partial fulfillment of the requirements for the degree Bachelor of Technology and Livelihood Education Major in Agri-Fishery Arts, has been examined and recommended for acceptance and approval for oral defense.

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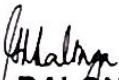
  
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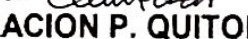
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## ABSTRACT

The aim of this study was to assess the awareness, attitude, and practices of students in San Miguel Technical Vocational School (SMTVS). Specially, it sought to determine the following: the profile of the respondents in terms of gender and age; the types of waste generated; the methods of waste disposal; the level of awareness on waste management; how influential is attitude towards the process of waste management; and the level of waste practices. The study used descriptive survey method to achieve the objectives of the study. The data gathered were statistically interpreted using percentage and weighted mean. In the fulfillment of the study, the respondents were the students in San Miguel Technical Vocational School (SMTVS), acquired from a purposive random sampling with the number of student given by the school principal of the school mentioned, and there were 179 respondents. Based on the findings, sharing information with other students" help in honing the attitude of students in participating towards waste management. Students mostly rated the attitude on waste management as "very influenced". However, the school is promoting awareness on waste management in its premises. Students rated all the awareness on waste management as "very aware". In addition, the findings also revealed that the level of waste practices in secondary school rated as fully practiced. Based on the result, "composting waste", "incineration of waste", and "designated areas of trash bins are accessible" are the waste practices which are moderately practiced, while the other waste practices were rated as "fully practiced". Based on result of the study, showed that awareness, attitude and practices are important determinants of waste management. The study revealed that the respondents have a good level of awareness, attitude and practices towards waste management. Awareness helped the students to understand and promote waste management in school premises. Majority of the respondents had a positive attitude towards waste management. With this, they can influence other students to actively involve on waste management and it was found out that waste management in school was fully practiced by most of the respondents. And anchored from the conclusions, the researchers recommend the following: local authorities/ government agencies assigned to waste management should fully implement the information dissemination awareness of the people not only to the schools but also to the community and introduce solutions to the problem. The school should come up with environmental topics and educate on the effects of environmental pollution, putting proper signage among others. The school may conduct programs/seminars/workshop on waste management. The researchers also recommend that the school should provide posters, labels, flyers on proper waste disposal or labeling of waste materials to be disposed in the bins.

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## Chapter 1

### THE PROBLEM AND ITS SCOPE

#### Rationale

A waste crisis is clearly evident in the Asia and Pacific region, fuelled by rising quantities of waste and changing consumption and production patterns, on the one hand, and poor regulation and limited resources on the other. Due to a combination of urbanization, demographic growth and economic development, every year sees more waste produced in the towns and cities of Asia and the Pacific. According to World Bank data, the total daily waste generation rate in Asia-Pacific is expected to more than double from current levels, to around 2.4 million tons daily in 2025. The emerging waste crisis threatens to overwhelm the resources and capacity of local governments and communities alike.

A waste-to-resource approach can help cities and towns turn the crisis into an opportunity and sustainably manage their solid waste. This approach is built on the principles of 3R (reduce, reuse, recycle) and aims at making the most of a range of recycling opportunities. ESCAP and its partners are committed to helping cities and towns in the region to seize this opportunity, there by bringing a wide range of benefits across a number of sectors, including green job creation, better health, cost savings, improved food security and climate change mitigation.

Like other developing countries, waste management has become a major problem in the Philippines for the past decades. The rapid population growth, urbanization and modernization in the country have resulted in the significant

increase of waste generated especially in urban cities. This condition has created both environmental and health problems due to the inability of both local and national governments to implement proper waste management primarily because of scarce financial, human and technical resources.

Waste management is essential in today's society. Due to an increase in population, the generation of waste is getting doubled day by day. Moreover, the increase in waste is affecting the lives of many people. Waste management is the managing of waste by disposal and recycling of it. Moreover, waste management needs proper techniques keeping in mind the environmental situations. Furthermore, these methods are much useful in disposing of the waste without causing any harm to the environment. Waste collection and rubbish disposal play an extremely important role in the global cleanliness and sustainability drive, with people's health and the conservation of resources being the responsibility of every government.

The researchers are interested to conduct an assessment and to know about the awareness, attitude and practices on waste management in secondary school in San Miguel as perceived by students. In relation to this, the researchers recognize waste management as a major environmental concern which should be properly addressed by government authorities to ensure the protection of public health and the environment. Also, the researchers believe that this study can contribute to the immediate community to which the school belong.

## Literature Background

The Theory of Waste Management represents a more in-depth account of the domain and contains conceptual analyses of waste, the activity upon waste, and a holistic view of the goals of waste management. Waste Management Theory is founded on the expectation that waste management is to prevent waste causing harm to human health and the environment. The proper definition of waste is crucial to constructing a sustainable agenda of waste management. It is largely the case that current legislation attends to existing waste. Definitions emerging from this condition may, however, conflict with the goals of waste prevention, because something that already exists cannot be prevented from arising. When material is assigned the label of 'waste', it will be treated as such.

Consequently, despite its explicit wish of waste prevention, implicitly, legislation essentially amasses waste. The inherent philosophical implication of such definitions is that they are not able to facilitate a sustainable waste management system. Therefore, new, dynamic definitions for waste and waste management must be sought, which can explain why waste is created and can offer an intrinsic solution for the problem. A radically new approach, based on an object-oriented modelling language, is presented to define the key concepts of waste management.

Waste management has to be planned within restrictive limits, where the choice of options is generally pre-specified. It is expected that the insight that the theory of waste management would give to the domain would greatly contribute to

achieving the goals of waste management: resources conservation and environment protection. The practical values of Waste Management Theory thus are: Giving answers to conceptual questions by explaining waste and concepts, providing a guide for choosing waste management options, providing a foundation for how and when to select and integrate waste management options, predicting the outcomes of the use of waste management actions aiding legislation in how to prescribe activity for/upon waste.

It was argued that Waste Management Theory is to be built under the paradigm of Industrial Ecology, and their side-by-side advancement can greatly contribute to the development of a sustainable agenda of waste management. The Theory of Waste Management is based on the considerations that waste management is to prevent waste causing harm to human health and the environment, and application of waste management leads to conservation of resources. However, Industrial Ecology successfully combines waste minimization and resources use optimization measures, and ensures that resources are effectively circulated within ecosystems.

Another theory is Waste Management Hierarchy Theory which indicates an order of preference for action to reduce and manage waste and is usually presented dramatically in the form of a pyramid. The hierarchy captures the progression of a material or product through successive stages of waste management and represents the latter part of the life-cycle of each product. The aim of waste hierarchy is to extract the maximum practical benefits from products

and to generate the minimum amount of waste. The proper application of the waste hierarchy can have several benefits. It can help prevent emissions of greenhouse gases, reduces pollutants, saves energy, conserves resources, and creates jobs and stimulates the development of green technology (European Parliament and Council, 2008).

The waste hierarchy refers to the "3Rs" reduce, reuse and recycle, which classify waste management strategies according to their desirability in terms of waste minimization. The waste hierarchy remains the cornerstone of most minimization strategies (Baker, 2013).

Another theory by Paul Palmer "Zero Waste Theory" refers to waste management and planning approaches which emphasize waste prevention as opposed to end-of-pipe waste management. It is a whole systems approach that aims for a massive change in the way materials flow through society, resulting in no waste. Zero waste encompasses more than eliminating waste through recycling and reuse, it focuses on restructuring production and distribution systems to reduce waste. Zero waste is more of a goal or ideal rather than a hard target. Zero waste provides guiding principles for continually working towards eliminating waste.

Zero Waste Theory means designing and managing products and processes to systematically avoid and eliminate the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them. It is a goal that is ethical, economical, efficient and visionary, to guide people in

changing their lifestyles and practices to emulate sustainable natural cycles, where all discarded materials are designed to become resources for others to use (Palmer, 1970).

According to Perez (2011), segregating the waste is also doing a part in waste management. Avoidance of having trash is one way of lessening the garbage problem in the country. Using materials that are environmental friendly minimize and solve the garbage problems of the Philippines. On the other side, the focus on economic growth has led as to take environmental management for granted. Solid waste became the most visible environmental problem in the country that has remained so for years.

A management to that can help planners study objectively and make rational decisions as to the best alternative strategic options of managing, recovering and utilizing the vast quantity of solid waste is a very important investment (Guzman, Paningbatan, and Alcantara et.al, 2010).

Republic Act 9003 known as the "Ecological Solid Waste Management Act of 2000." an act providing for an ecological solid waste management program, creating the necessary institutional mechanisms and incentives, declaring certain acts prohibited and providing penalties, appropriating funds therefor, and for other purposes. The law was crafted in response to the looming garbage problems in the country. RA 9003 declares the policy of the state in adopting a systematic, comprehensive and ecological solid waste management program that ensures the protection of public health and the environment and the proper segregation,

collection, transport, storage, treatment and disposal of solid waste through the formulation and adoption of best environmental practices. Moreover, it illustrates the potentials and benefits of recycling not only in addressing waste management problems but also in alleviating poverty.

RA 9003 describes solid waste management as a discipline associated with the control of generation, storage, collection, transfer and transport, processing, and disposal of solid wastes. The manner by which these activities are conducted shall be in accord with the best principles of public health, economics, engineering, conservation, aesthetics, other environmental considerations, and public attitudes. The Act provides for a comprehensive ecological solid waste management program by creating the necessary institutional mechanisms and incentives, appropriating funds, declaring certain acts prohibited, and providing penalties.

The Federal Solid Waste Disposal Act, as amended by the *Resource Conservation and Recovery Act* (RCRA), was adopted in 1976 to combat the problems associated with the unregulated land disposal of hazardous wastes. Its primary goals are to protect human health and the environment from hazards posed by waste disposal, conserve energy and natural resources through waste recycling and recovery, reduce or eliminate as expeditiously as possible the generation of hazardous waste, and ensure that wastes are managed in a manner that is protective of human health and the environment.

The most important feature of RCRA provides "cradle-to-grave" management of "hazardous waste" from the point of generation through

transportation and its treatment, storage, and disposal. RCRA requires generators to characterize their wastes, properly manage their wastes on site, and then to manifest all wastes sent off-site for disposal. Transporters of hazardous waste are required to fill in their portion of the manifest, comply with RCRA and federal Department of Transportation placarding requirements, and must deliver the hazardous waste to an approved "Treatment, storage and disposal facility." Those facilities must meet strict performance standards and must control their air emission. They must also monitor and prevent discharges to groundwater. RCRA also prohibits land disposal of certain untreated hazardous wastes.

Likewise, the Local Government Code (RA 7160) developed the responsibility of environmental laws on cleanliness and sanitation, waste management and other environment matters to the Local Government Units. However, the latter are still at a loss in coping with the problem. The government has adopted measures and taken steps to address the problem. While it is true that such responses are admittedly inadequate because of limitations, whether technical, administrative or policy and financial attempts, and endeavors towards an effective, efficient environmentally friendly program can be coordinated and harmonized (Environmental Management Bureau, 2007).

Wastes have adverse effects on the environment as well as public health, thus, necessitating the need to management and control wastes historically. Hilburn, (2015) reveals the long-lived convoluted waste control and management history. The waste management systems originated from the ancient times, with

the first attempt to manage wastes by Greeks taking place in A.D, 4th century. The challenges the Greeks faced encompasses high population growth, limited space, hygienic complexities among others making the waste management system alignment difficult. As Narayana, (2009) highlights, collection and transportation of wastes form the basic practices in waste management. With the rapid urban development and corresponding escalation in population size, the sanitation conditions worsened as garbage wastes formed the dangerous threat on human health as well as the environmental hygiene to the inhabitants of these places. In the 14th-16th century, vermin perpetrated the plagues in Europe, especially in urban unsanitary environments. At around this time, development of waste management approaches occurred as Nathanson, (2015), reveals, with the aim of combating disease spread despite the political and social limitations during the time.

In addition, the total wastes generated by health-care organizations, 10%-25% are biomedical wastes, which are hazardous to humans and the environment and requires specific treatment and management. For decades, incineration was the method of choice for the treatment of such infectious wastes. Incinerator releases a wide variety of pollutants depending on the composition of the waste, which leads to health deterioration and environmental degradation. The significant pollutants emitted are particulate matter, metals, acid gases, oxides of nitrogen, and sulfur, aside from the release of innumerable substances of unknown toxicity. This process of waste incineration poses a significant threat to public health and the environment. The major impact on health is the higher incidence of cancer and

respiratory symptoms; other potential effects are congenital abnormalities, hormonal defects, and increase in sex ratio. The effect on the environment is in the form of global warming, acidification, photochemical ozone or smog formation, eutrophication, and human and animal toxicity. Raman Sharma et al. (2013).

In most developing countries, the urban authorities, such as municipalities are responsible for waste management. Waste management is one of the most visible urban services whose effectiveness serves as an indicator for good local governance, sound municipal management and successful urban reforms. In the African context, the waste management in urban centres has for a long time been centralized, with the use of imported refuse truck (Rotich, et al., 2006; Liyala, Okot-Okumu & Nyenje, 2011) that collect waste from sources or transfer point and deliver to designated waste dumps.

However, according to the United Nations Environment Programme (2012), there is a dire need of creating environmental education and awareness, practices, and knowledge in high schools with aim of enhancing environmental monitoring and management in the country for both present and future periods. This will go a long way in enhancing education on environment in an attempt to reorienting education so as to restore environmental competence owing to its basic aim of attaining personal and social competence (Shobeiri et al., 2007). This will augur well by establishing the difference between knowledge/ awareness and practices in managing the environment on one hand, and students' attitude and level of education on the other hand.

According to the study of Crompton and Kasser (2009), environmental education encourages the development articulation of literacy in the citizens whose own environmental concerns are shared regarding their own benefit and the good of those to come in the future generations. There is a striking connection between the learners' level of education and the environment management, of which its establishment will resolve the complicated problems of the environment by integrating Environmental Education at all levels. Ultimately this education will impose a positive change in behavior and attitude which is required for effective participation in managing the environment. However, it will call for considerable efforts on the part of both the government and school management in their bid to arrange for students', teachers' and administrators' workshops and seminars that will facilitate efficient sensitization on the problems associated with environment alongside their consequences (Li, 2016).

In addition, on the impact and influence of waste on environmental and human health highlighted the sources of types, amount, disposal methods, and adverse effects of poor waste management on health. The liquid, excreta from community and households forms the dangerous health threats from wastes that contribute to causes and spread of infectious infections in the society as the findings illustrates. Alam and Ahmade (2013).

Alam and Ahmade (2013), researched on the implications of waste on human and environmental health, identified components of waste, types and quantity, disposal methodology of wastes, and the improper waste management

effect on health. The results indicated infections and the risks that come with the wastes in the society and on human as well as environmental health.

Biodegradable wastes can be transformed into fertilizer or soil conditioner in the form of compost. Compost is a humus-like material that usually results from the aerobic biological stabilization of the organic materials in solid wastes. The operation includes preparing the refuse and degrading organic matter by aerobic microorganism. The refuse is presorted to remove materials that might have a salvage value cannot be composted, then it is ground to improve efficiency of the decomposition process. This can be a soil conditioner to and a fertilizer for flower heads, vegetables gardens, trees and shrubs (Guzman et al., 2010)

In the Philippines, recycling is well established. It is slowly taking-off in the more parts of Asia. Two of which are in the remote village of Looc in Panglao Island in the Philippines. Locals now collect plastics for recycling to supplement their income. Also, schemes are under way to recycle plastic bottles and cans. The collected material is send to Cebu City by barge. There, the bottles can are processed. It is important to note that the motivators for this recycling initiate are mostly financial rather than environmental. These rural communities are still living in a severe poverty, with the proceeds of sale used to buy basic foods staples (Alan, 2011). There are two types of recycling: One is direct in the sense of materials are reused directly like bottles and refillable beverage containers. The indirect way is when the waste materials will undergo processing like aluminum

cans. With recycling, new materials are formed out of wastes (Guzman & Reyes, 2003 as cited in Anito, 2011).

Lack of education and awareness of effective waste management practices is one of the major issues in developing countries. A study in Gaborone, Botswana, shows that although citizens were aware of recycling and other sustainable waste management techniques, it does not necessarily translate into involvement in beneficial environmental activities such as recycling, as stated by McAllister (2015) as cited by Enssuman (2017). Meanwhile, Enssuman gathered data through a descriptive survey method, using a questionnaire, an interview, and an observation out of two hundred forty-two (242) respondents from three (3) coastal communities in Ghana, wherein the results showed that despite the respondents knowing what the implications of waste are, no action was taken in the communities to lessen improper dumping of waste.

According to Adelou et al., (2014), state that students' awareness can be increased through education. Not only will the introduction or integration of waste concepts and themes through school curriculum at all levels improve the student's understanding about waste management, but it will more likely change their negative attitude and practice involving waste management.

Madrigal and Oracion (2018), states that the excessive attitude of respondents regarding waste management can favorably influence their solid wastes disposal at home and in school. However, despite this, the respondents' practices on waste management do not match their high-level of awareness.

According to Baula & Bussala (2010), the participation is the key when the students are involved in the waste management program of the school, an effective and sustainable implementation of the waste management practices is achieved. The support of the school's administration to the waste management is also critical. One of the issues discovered by Barrows and Griffin (2010) in their study was the lack of documentation on the part of the school regarding the implementation of the waste management practices such as recycling. For this reason, researchers in the past had difficulty obtaining full and accurate data. Barrows and Griffin asserted that the first step to improving waste management in schools is to improve their accountability, and similarly, the regulations placed on them.

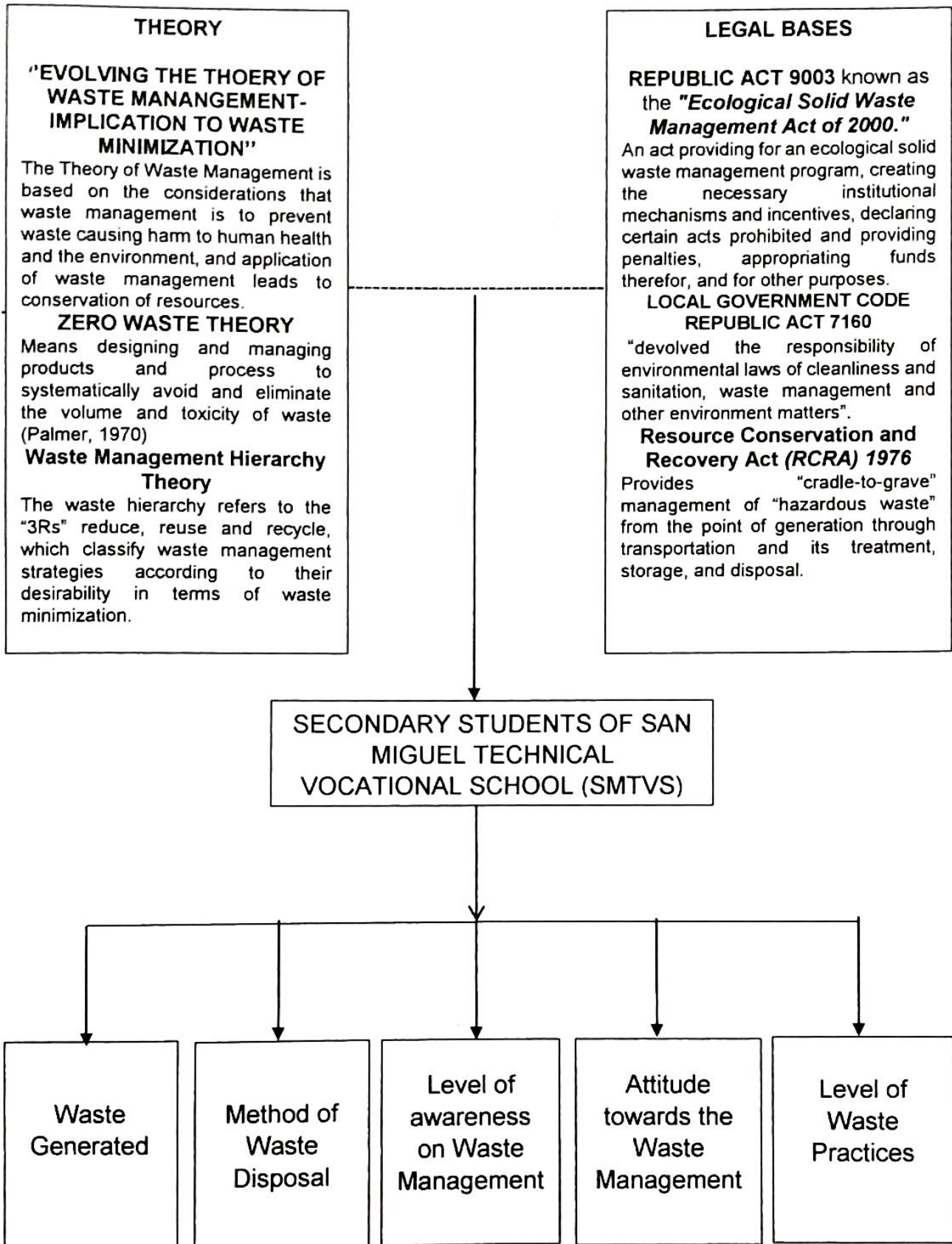


Figure 1. Theoretical and Conceptual Framework of the Study

## THE PROBLEM

### Statement of the Problem

The main thrust of the study was to assess the awareness, attitude and practices on waste management in secondary school in San Miguel Bohol.

Specifically, the study aimed to determine the following:

1. What is the profile of students in terms of:
  - a) Sex
  - b) Age
2. What are the types of waste generated?
3. What are the methods of waste disposal?
4. What is the level of awareness on waste management?
5. How influential is attitude towards the process of waste management?
6. What is the level of waste management practices?

### Significance of the study

The results of the study would be useful to the following concerns:

**Schools.** The results of the study would help the teachers, students and administration to mold their attitude towards waste management. Thus, the administration should implement programs for more improvement.

**Students.** The results of the study would help the students to be aware of their responsibility to manage their waste in school. Thus, they must be aware.

**Future Researchers.** This study would hopefully serve as basis for the future researchers who would be conducting related study. The researchers suggest that challenges on the implementation of waste management be conducted.

## RESEARCH METHODOLOGY

### Design

The researchers utilized a descriptive survey method. A research approach adapting a survey technique to assess awareness, attitude, and practices on waste management in secondary school in San Miguel, Bohol.

### Environment and Participants

The study was conducted in Poblacion, San Miguel, Bohol.

The respondents of the study were the students in San Miguel Technical Vocational School (SMTVS) Poblacion, San Miguel Bohol acquired from a purposive random sampling. The respondents of the study were selected through random sampling and there were 179 respondents.

### Instrument

The study utilize an adapted questionnaire from Grace Uwamwezi "Knowledge, Attitude and Practices on Waste Management in Selected Secondary Schools in Westland Sub-Country, Nairobi County". The data gathering tool was divided into five (5) parts. The first part is the socio-demographic profile of the

respondents. The second part are the type of waste generated. The third part are the methods of waste disposal. The fourth part, how influential is attitude towards the process of waste management. And the fifth part is the level of waste practices.

### **Data Gathering Procedures**

The researchers sent a letter to the Dean of the College of Education requesting for the approval of the study. Furthermore, permission was secured from the School Principal/School Heads of San Miguel Technical Vocational School, San Miguel Bohol. With the permission, the researchers proceed to conduct survey. After gathering all the information and data needed in the study the researchers will proceed to the evaluation of the data.

Questionnaires were personally distributed to the selected respondents in the research locale. The study was done in an organized manner in coordination with the administration of the school.

### **Statistical Treatment**

To determine the profile of the respondents, to get the frequency of methods of waste disposal, a simple percentage was used using the formula:

$$P = \frac{F}{N} \times 100$$

Where:

P= percentage

F= frequency

N= number of respondents

To assess the typed of waste generated on waste management in secondary school in San Miguel, Bohol, weighted mean scoring was used:

$$WM = \frac{1 (FVLA) + 2 (FLA) + 3 (FN) + 4 (FHA) + 5 (FVHA)}{N}$$

Where:

WM= weighted mean

N= number of respondents

FVLA = Frequency of respondents (Very Low Amount)

FLA = Frequency of respondents (Low Amount)

FN = Frequency of respondents (Neutral)

FHA = Frequency of respondents (High amount)

FVHA= Frequency of respondents (Very High Amount)

Range	Descriptive Interpretation
4.20-5.00	very high amount.
3.40-4.19	high amount.
2.60-3.39	neutral.
1.80-2.59	Low amount
1- 1.79	very low amount

To assess on respondents' level of awareness on waste management in secondary school in San Miguel, Bohol, weighted mean scoring was used:

$$WM = \frac{1 (FSDA) + 2 (FDA) + 3 (FN) + 4 (FA) + 5 (FSA)}{N}$$

Where:

WM= weighted mean

N= number of respondents

FSDA = Frequency of respondents (Strongly Disagree)

FDA = Frequency of respondents (Disagree)

FN = Frequency of respondents (Neutral)

FA = Frequency of respondents (Agree)

FSA = Frequency of respondents (Strongly Agree)

Range	Descriptive Interpretation
4.20-5.00	strongly agree (extremely aware)
3.40-4.19	agree (Very aware)
2.60-3.39	neutral (moderately aware)
1.80-2.59	disagree (slightly aware)
1- 1.79	strongly disagree (not all aware)

To assess on how influential is attitude towards waste management in secondary school in San Miguel, Bohol, weighted mean scoring was used:

$$WM = \frac{1 (FSDA) + 2 (FDA) + 3 (FN) + 4 (FA) + 5 (FSA)}{N}$$

Where:

WM= weighted mean

N= number of respondents

FSDA = Frequency of respondents (Strongly Disagree)

FDA = Frequency of respondents (Disagree)

FN = Frequency of respondents (Neutral)

FA = Frequency of respondents (Agree)

FSA = Frequency of respondents (Strongly Agree)

Range	Descriptive Interpretation
4.20-5.00	strongly agree (totally influential)
3.40-4.19	agree (Very influential)
2.60-3.39	neutral (fairly influential)
1.80-2.59	disagree (slightly influential)
1- 1.79	strongly disagree (not influenced)

To assess the level of waste management practices in secondary school in San Miguel, Bohol, weighted mean scoring was used:

$$WM = \frac{1 (FSDA) + 2 (FDA) + 3 (FN) + 4 (FA) + 5 (FSA)}{N}$$

Where:

WM= weighted mean

N= number of respondents

FSDA = Frequency of respondents (Strongly Disagree)

FDA = Frequency of respondents (Disagree)

FN = Frequency of respondents (Neutral)

FA = Frequency of respondents (Agree)

FSA = Frequency of respondents (Strongly Agree)

<b>Range</b>	<b>Descriptive Interpretation</b>	
4.20-5.00	strongly disagree	(extremely practiced)
3.40-4.19	agree	(fully practiced)
2.60-3.39	neutral	(moderately practiced)
1.80-2.59	disagree	(slightly practiced)
1- 1.79	strongly disagree	(not practiced)

## Definition of Terms

For a better understanding of the study, the following terms are defined in the context of this research.

**Attitude.** It is a mental or neutral state of readiness organized through experience influencing dynamically or directly the individuals' response to all objects and situations with which it is related. Operationally, attitude refers to the students' behavior in SMTVS towards waste management.

**Awareness.** It is commonly used in reference to public knowledge or understanding of social or political issues. Operationally, awareness refers to the knowledge of students in SMTVS on waste management.

**Composting.** The process of converting decomposable organic waste into useful stable products.

**Disposal.** It refers to the discard, accumulation, dumping, spilling, leaking or placing of any solid waste into or on any land or structure.

**Incineration.** The high- temperature burning of a waste/ simply the burning of garbage.

**Landfills.** It refers to an area in which waste materials are buried under the ground.

**Practices.** These are the acts by the selected respondents in secondary school in San Miguel Bohol in managing and treating their solid waste.

**Recycling.** Collecting, sorting and processing recyclable materials into raw materials such as fibers, and then manufacturing these raw materials into new products, as well as purchasing recycled products.

**Respondents.** They are the participants of this study.

**Solid Waste.** It is a non- liquid waste found in the school that comes from food/ kitchen reuse, tin cans, empty plastic bags/ container/ bottles, Styrofoam, broken glasses/ utensils, and others.

**Waste Generation.** The weight or volume of materials and products that enter the waste stream before recycling, composting, landfilling or combustion takes place. Also, can represent the amount of waste generated by a given source or category of sources.

**Waste Management.** It is the collection, transportation, processing, recycling, disposal and managing and monitoring of waste materials. Also, the process and actions required to manage waste from its inception to its final disposal.

## Chapter 2

### Presentation, Analysis and Interpretation of Data

This chapter deals with the presentation, analysis and interpretation of data gathered and collected through questionnaires. It is composed of: demographic profile of the respondents; types of waste produced; methods of waste disposal; attitude on waste management; awareness on waste management; and waste practices and waste management.

**Table 1.1** discussed the socio- demographic profile of the respondents.

**Age.** Data revealed that age were divided into those below 15 years old and those 15 years old and above. About 53.3% of the respondents were 15 years old and above while 44.7% of the respondents were below 15 years.

**Sex.** Data revealed that about 57% of the respondents were female while 43% of the respondents were male.

Table 1

Profile of the Respondents  
N= 179

Category		Frequency	Percentage
Sex	Male	77	43%
	Female	102	57%
	<b>Total</b>	<b>179</b>	<b>100%</b>
Age	Below 15 years old	80	44.7%
	15 years old and above	99	55.3%
	<b>Total</b>	<b>179</b>	<b>100%</b>

**Table 2** shows the type of waste generated. Based on the results "grass and leaves", were found in high amount in their respective schools. While aluminum and tin cans was found in low amount in their school. The weighted mean value 3.11 interpreted as "average". This implies that grass and leaves are the type of waste that can be always found in school, while aluminum and tin cans are the least waste generated in school premises.

Table 2  
Type of Waste Generated  
N=179

Waste type	WM	DI
1. Aluminum and tin cans	2.52	Low amount
2. Cardboards	2.77	Neutral
3. Food waste	3.23	Neutral
4. Grass and leaves	3.51	High amount
5. Plastic wrapper	3.41	High amount
6. Pens	2.88	Neutral
7. Plastic bags/cellophane	3.06	Neutral
8. Used paper and folders	3.46	High amount
<b>Total</b>	<b>3.11</b>	<b>Neutral</b>

**Indicator:**

4.20-5.00 = very high amount.  
3.40-4.19 = high amount.  
2.60-3.39 = neutral  
1.80-2.59 = Low amount  
1.0-1.79 = very low amount

**Legend:**

WN: Weighted mean  
DI: Descriptive Interpretation

**Table 3** displays the waste disposal method. Based on the results “composting waste” was rated as the highest with 73.74%. This means that composting waste is the most common method for disposing waste and it showed that the school know how to dispose their waste properly. Composting reduces waste and is one of the natural processes of recycling organic matter into valuable fertilizer and composting is good for the environment while “incineration of waste” was rated as the lowest with 8.38%. Incineration of waste or burning of waste is harmful to the environment, because these materials release toxic chemicals that pollute our air. Polluted air can be inhaled by humans and animals, and deposited in the soil and surface water and on plants. It coincides with the study of (Raman Sharma et al. Rev Environ Health. 2013), this process of waste incineration poses a significant threat to public health and the environment.

Table 3

Waste Disposal Method  
N=179

Waste Disposal Method	Frequency	Percent %
1. Composting waste	132	73.74
2. Open burning of dry waste	47	26.26
3. Incineration of waste	15	8.38
4. Dust bins	59	32.96
5. Dump pits	42	23.46
6. Municipal buckets	35	19.55
7. Landfill site	21	11.73
8. Recycling	74	41.34

Similar to the study of Guzman et al., 2010 Biodegradable wastes can be transformed into fertilizer or soil conditioner in the form of compost. Compost is a humus-like material that usually results from the aerobic biological stabilization of the organic materials in solid wastes. The operation includes preparing the refuse and degrading organic matter by aerobic microorganism. The refuse is presorted to remove materials that might have a salvage value cannot be composted, then it is ground to improve efficiency of the decomposition process.

**Table 4** shows the attitude on waste management. Based on the results "sharing information with other students" got the highest weighted mean of 3.88 interpreted as "very influenced". This means that sharing information with other students was important because it help students to integrate information, and empowers them to own their ideas. It also helps in honing the attitude of the students towards waste management, while the lowest weighted mean of 3.33 fell on item 3 "local authorities is responsible for waste disposal", interpreted as "fairly influenced". The weighted mean value was 3.68 interpreted as "very influenced". This implies that attitude was a determinant of waste management. This was supported by majority of the respondents who agreed that waste management was their responsibility and not only that of the school support staff. The respondents also believed the importance of volunteering in school cleaning activities and that they agreed that improper waste disposal is a threat to environment

According to Madrigal and Oracion, (2018) states that the excessive attitude of respondents regarding waste management can favorably influence their solid wastes disposal at home and in school.

Table 4  
Attitude on Waste Management  
N=179

Statement of Attitude	WM	DI
1. Improper waste disposal is a threat to environment	3.73	Very influential
2. Waste management is one's own responsibility.	3.69	Very influential
3. Local authorities is responsible for waste disposal	3.33	Fairly influential
4. I am responsible for the generation of waste in my school	3.58	Very influential
5. Reminding other students on proper waste disposal	3.68	Very influential
6. Sharing information with other students	3.88	Very influential
7. Importance of volunteering in school cleaning activities	3.85	Very influential
<b>Total</b>	<b>3.68</b>	<b>Very influential</b>

**Indicator:**  
4.20-5.00 = strongly agree  
3.40-4.19= agree  
2.60-3.39 = neutral  
1.80-2.59= disagree  
1- 1.79 = strongly disagree

**Interpretation**  
totally influential  
Very influential  
fairly influential  
slightly influential  
Not influenced

**Legend**  
WM: Weighted Mean  
DI: Descriptive Interpretation

**Table 5** illustrates the awareness of waste management. Based on the results, all of the respondents indicated that they agreed on the level of awareness on waste management that are listed. The weighted mean value was 3.71 interpreted as "very aware". This implies that the school is promoting awareness and they are very aware on waste management in their school premises, especially in having prior knowledge on waste management, importance of protective clothing, aims to reduce, reuse, and recycle waste materials and displaying posters/graphics about waste segregation.

Table 5  
Awareness on Waste Management  
N=179

Awareness Statement	WM	DI
1. Having prior knowledge on waste management	3.86	Very aware
2. Displaying posters/graphics about waste segregation	3.72	Very aware
3. The school aims to reduce, reuse, and recycle waste material	3.79	Very aware
4. Common diseases may spread due to inadequate waste disposal	3.68	Very aware
5. Awareness programmes conducted by school.	3.44	Very aware
6. Knowing the complications of improper waste management	3.69	Very aware
7. Environmental problems	3.67	Very aware
8. Importance of protective clothing	3.82	Very aware
<b>Total</b>	<b>3.71</b>	<b>Very aware</b>

**Indicator:**  
4.20-5.00 = strongly agree  
3.40-4.19 = agree  
2.60-3.39 = neutral  
1.80-2.59 = disagree  
1- 1.79 = strongly disagree

**Interpretation:**  
extremely aware  
Very aware  
moderately aware  
slightly aware  
not all aware

**Legend**  
WM: Weighted Mean  
DI: Descriptive Interpretation

According to Adelou et al. (2014) state that students' awareness can be increased through education. Not only will the introduction or integration of waste concepts and themes through school curriculum at all levels improve the students' understanding about waste management, but it will more likely change their negative attitude and practice involving waste management.

**Table 6** presents the level of waste practices. Based on the results "segregation of waste at source points" got the highest weighted mean of 3.92 interpreted as "fully practiced". This means that segregation of waste is a good options for managing school waste. Segregating waste can reduces the amount of waste that reaches landfills, pollution of air and water and it is also essential that waste is put in separate bins so that it can be appropriately dealt with. The lowest weighted mean of 3.25 fell on item 5 "incineration of waste", interpreted as "moderately practiced". The weighted mean value was 3.63 interpreted as "fully practiced". This indicates that the school are fully practiced on waste management. This was supported that majority of the respondents who agreed that waste collection method are implemented, control of waste at regular basis, recycling are encouraged and implemented, and waste materials are disposed according to prescribed methods.

Similar to the study of Baula, & Bussala, (2010) the participation is the key when the students are involved in the waste management program of the school, an effective and sustainable implementation of the waste management practices is achieved.

Table 6  
Level of Waste Practices  
N=179

Statement	WM	DI
1. Control of waste at regular basis	3.83	Fully practiced
2. Segregation of waste at source points	3.92	Fully practiced
3. Waste collection method are implemented	3.88	Fully practiced
4. Composting waste	3.39	Moderately practiced
5. Incineration of waste	3.25	Moderately practiced
6. Designated areas of trash bins are accessible	3.37	Moderately practiced
7. Recycling are encouraged and implemented	3.72	Fully practiced
8. Waste materials are disposed according to prescribed methods.	3.69	Fully practiced
<b>Total</b>	<b>3.63</b>	<b>Fully practiced</b>

<b>Indicator:</b>	<b>Interpretation:</b>	<b>Legend</b>
4.20-5.00 = strongly disagree	extremely practiced	WM: Weighted Mean
3.40-4.19 = agree	fully practiced	DI: Descriptive Interpretation
2.60-3.39 = neutral	moderately practiced	
1.80-2.59 = disagree	slightly practiced	
1- 1.79 = strongly disagree	Not practiced	

Similar to the study of Baula, & Bussala, (2010) the participation is the key when the students are involved in the waste management program of the school, an effective and sustainable implementation of the waste management practices is achieved.

## Chapter 3

### SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

This chapter presents the summary of findings, conclusions and recommendations that serve as a reference for future researchers and improvement.

#### Summary of Findings

The thrust of this study was to know the awareness, attitude and practices on waste management in secondary school in San Miguel Bohol. The study obtained the following findings:

**1. Profile of the Students.** The findings of the study revealed that majority or 102 (57%) of the students were females. The analysis also revealed that majority or 99 (55.3%) of the students belonged to the age of 15 years old and above.

**2. Type of Waste Generated.** The overall descriptive interpretation of the frequency of type of waste generated (grass and leaves; plastic wrapper; used paper and folders) are the type of waste that can be found always in school premises.

**3. Waste Disposal Method.** The result revealed that composting waste is the most common method for disposing waste in their school.

**4. Attitude on Waste Management.** The findings indicated that "sharing information with other students" help in honing the attitude of students in participating towards waste management. Students mostly rated the attitude on waste management as "very influenced", however there was only one attitude on waste management rated as "fairly influenced" and that was "local authorities are responsible for waste disposal".

**5. Awareness on Waste Management.** The findings also revealed that the school is promoting awareness on waste management in its premises. Students rated all the awareness on waste management as "Very aware".

**6. Level of Waste Practices.** The findings also revealed that waste practices in secondary school rated as fully practiced. Based on the result, "Composting waste", "Incineration of waste", and "Designated areas of trash bins are accessible" are the waste practices which are moderately practiced, while the other waste practices were rated as "Fully practiced".

## **Conclusion**

Based on the findings, the researchers arrived at the following conclusion:

The result of the study showed that awareness, attitude and practices are important determinants of waste management. The study revealed that the respondents have a good level of awareness, attitude and practices towards waste management. Awareness helped the students to understand and promote waste management in school premises. Majority of the respondents had a positive

attitude towards waste management. With this, they can influence other students to actively involve on waste management and it was found out that waste management in school was fully practiced by most of the respondents.

## **Recommendations**

Anchored in the findings and conclusions of the study, the following recommendations were offered:

1. Local authorities/ government agencies assigned to waste management should fully implement the information dissemination awareness of the people not only to the schools but also to the community and introduce solutions to the problem.
2. The school should come up with environmental topics and educate on the effects of environmental pollution, putting proper signage among others.
3. The school may conduct programs/seminars/workshop on waste management.
4. The researchers also recommend that the school should provide posters, labels, flyers on proper waste disposal or labeling of waste materials to be disposed in the bins.
5. The researchers encourage future researchers to continue this study to monitor the waste management in the school.

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## APPENDIX A

## REQUEST LETTER



Republic of the Philippines  
**BOHOL ISLAND STATE UNIVERSITY – Bilar Campus**  
 Zamora, Bilar, Bohol



*Vision: A premier S & T University for the formation of a world class and virtuous human resource for the sustainable development in Bohol and the country.*

*Mission: BISU is committed to provide quality higher education in the arts and sciences, as well as in professional and technological fields; undertake research and extension services for the sustainable development of Bohol and the country.*

December 14, 2021

**MARIETTA C. MACALOT, Ph.D.**  
 Campus Director  
 Bohol Island State University Bilar Campus  
 Zamora, Bilar, Bohol

Ma'am,  
 Greetings!

The undersigned, BTLEd-AFA IV students of Bohol Island State University – Bilar Campus, Zamora, Bilar, Bohol humbly request from your good office to conduct the research entitled **"AWARENESS, ATTITUDE, AND PRACTICES OF STUDENTS ON WASTE MANAGEMENT IN SAN MIGUEL TECHNICAL VOCATIONAL SCHOOL (SMTVS)"** in partial fulfillment of the requirements for the degree in Bachelor in Technology and Livelihood Education major in Agriculture and Fishery Arts.

In line with this, the researchers would like to ask permission to distribute questionnaires in San Miguel, Bohol as a product of our purposive sampling for direct distribution of questionnaires to the respondents.

Rest assured that Inter-Agency Task Force (IATF) COVID-19 health protocols will be followed and the data gathered will be kept confidential.

Thank you and God bless.

Sincerely yours,  
 (Sgd.) **CHERYL M. ORIOQUE**  
 (Sgd.) **JEZABEL B. POGIO**  
 (Sgd.) **MARLYN B. IIDUL**  
 Student Researchers

Noted:  
 (Sgd.) **ARSENIO B. LEJOC JR.**  
 Thesis Adviser

Recommending Approval:  
 (Sgd.) **MA. QUIMAR Q. GAHIT, Ed. D.**  
 Dean, College of Teacher Education

Approved.  
 (Sgd.) **MARIETTA C. MACALOT, Ph.D.**  
 Campus Director, BISU-Bilar



Republic of the Philippines  
**BOHOL ISLAND STATE UNIVERSITY – Bilar Campus**  
 Zamora, Bilar, Bohol



*Vision: A premier S & T University for the formation of a world class and virtuous human resource for the sustainable development in Bohol and the country.*

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December 14, 2021

**HON. VIRGILIO L. MENDEZ**  
 San Miguel Municipal Mayor  
 San Miguel, Bohol, Philippines

Sir,

Greetings!

The undersigned BTLED- AFA IV students of Bohol Island State University- Bilar Campus, Zamora, Bilar, Bohol humbly request from your good office to conduct the research entitled **“AWARENESS, ATTITUDE, AND PRACTICES OF STUDENTS ON WASTE MANAGEMENT IN SAN MIGUEL TECHNICAL VOCATIONAL SCHOOL (SMTVS)”** in partial fulfillment of the requirements for the degree of Bachelor in Technology and Livelihood Education Major in Agri-Fishery Arts.

In line with this, the researchers would like to ask permission to distribute questionnaires in San Miguel, Bohol to complete the respondents required of the study

Rest assured that Inter- Agency Task Force (IATF) COVID-19 health protocols will be followed and the data gathered will be kept confidential.

Thank you and God bless!

Sincerely yours,

(Sgd.) **CHERYL M. ORIOQUE**  
 (Sgd.) **JEZABEL B. POGIO**  
 (Sgd.) **MARLYN B. IDUL**  
 Student Researchers

Noted:

(Sgd.) **ARSENIO B. LEJOC JR.**  
 Thesis Adviser

Recommending Approval:

(Sgd.) **MA. QUIMAR Q. GAHIT, Ed. D.**  
 Dean, College of Teacher Education

Approved.

(Sgd.) **HON. VIRGILIO L. MENDEZ**  
 San Miguel Municipal Mayor  
 San Miguel, Bohol, Philippines



Republic of the Philippines  
**BOHOL ISLAND STATE UNIVERSITY – Bilar Campus**  
 Zamora, Bilar, Bohol



*Vision: A premier S & T University for the formation of a world class and virtuous human resource for the sustainable development in Bohol and the country.*

*Mission: BISU is committed to provide quality higher education in the arts and sciences, as well as in professional and technological fields; undertake research and extension services for the sustainable development of Bohol and the country.*

---

February 09, 2021

To all respondents,

Greetings!

The undersigned, BTLEd-AFA IV students of Bohol Island State University – Bilar Campus, Zamora, Bilar, Bohol humbly request your cooperation in the conduct of the research entitled **“AWARENESS, ATTITUDE AND PRACTICES OF STUDENTS ON WASTE MANAGEMENT IN SAN MIGUEL TECHNICAL VOCATIONAL SCHOOL (SMTVS)”** in partial fulfillment of the requirements for the degree in Bachelor in Technology and Livelihood Education major in Agriculture and Fishery Arts.

Your cooperation for this matter is exceedingly valuable and appreciated.

Rest assured that Inter-Agency Task Force (IATF) COVID-19 health protocols will be followed and the data gathered will be kept confidential.

Thank you and God bless.

Sincerely yours,

(Sgd.) **CHERYL M. ORIOQUE**

(Sgd.) **JEZABEL B. POGIO**

(Sgd.) **MARLYN B. IDUL**

Student Researchers

Noted:

(Sgd.) **ARSENIO B. LEJOC JR.**

Thesis Adviser

**APPENDIX B**  
**SUMMARY OF FINDINGS**

<b>SEX</b>	<b>Frequency</b>
Male	77
Female	102
<b>AGE</b>	<b>Frequency</b>
Below 15 years old	80
15 years old and above	99
<b>Waste Disposal Method</b>	<b>Frequency</b>
Composting waste	132
Open burning of dry waste	47
Incineration of waste	15
Dust bins	59
Dump pits	42
Municipal buckets	35
Landfill site	21
Recycling	74

<b>Type of waste generated</b>	<b>WM</b>
Aluminum and tin cans	2.52
Cardboards	2.77
Food waste	3.23
Grass and leaves	3.51
Plastic wrapper	3.41
Pens	2.88
Plastic bags/cellophane	3.06
Used paper and folders	3.46
<b>Attitude on waste management</b>	<b>WM</b>
Improper waste disposal is a threat to environment	3.73
Waste management is one's own responsibility.	3.69
Local authorities is responsible for waste disposal	3.33
I am responsible for the generation of waste in my school	3.58
Reminding other students on proper waste disposal	3.68
Sharing information with other students	3.88
Importance of volunteering in school cleaning activities	3.85
<b>Awareness on waste management</b>	<b>WM</b>
Having prior knowledge on waste management	3.86
Displaying posters/graphics about waste segregation	3.72
The school aims to reduce, reuse, and recycle waste material	3.79
Common diseases may spread due to inadequate waste disposal	3.68
Awareness programmes conducted by school	3.44
Knowing the complications of improper waste management	3.69
Environmental problems	3.67
Importance of protective clothing	3.82
<b>Waste Practices</b>	<b>WM</b>
Control of waste at regular basis	3.83
Segregation of waste at source points	3.92
Waste collection method are implemented	3.88
Composting waste	3.39
Incineration of waste	3.25
Designated areas of trash bins are accessible	3.37
Recycling are encouraged and implemented	3.72
Waste materials are disposed according to prescribed methods.	3.69

## APPENDIX C

### QUESTIONNAIRE

Please tick the bracket (s) that correspond (s) to your answer, unless special instructions are given.

#### **Section A: Respondents' Characteristics (Please check as appropriate)**

1. Please indicate your sex
 

Male	[	]
Female	[	]
2. Please indicate your age
 

Below 15 years old	[	]
15 years old and above	[	]

**To Identify Types of Waste Generated and Methods for Waste Disposal**

#### **Section B: Types of Waste Generated**

Please mark (x) in the bracket (s) which best describes the level of amount of waste found in your school.

Rate your response on a 5 point scale, with 1 being **Very Low Amount** and 5 **Very High Amount**.

1- Very Low Amount | 2- Low Amount | 3- Neutral  
4- High Amount | 5- Very High Amount

Waste type	1	2	3	4	5
Aluminium and tin cans	[ ]	[ ]	[ ]	[ ]	[ ]
Cardboard	[ ]	[ ]	[ ]	[ ]	[ ]
Food waste	[ ]	[ ]	[ ]	[ ]	[ ]
Grass and leaves	[ ]	[ ]	[ ]	[ ]	[ ]
Plastic wrapper	[ ]	[ ]	[ ]	[ ]	[ ]
Pens	[ ]	[ ]	[ ]	[ ]	[ ]
Plastic bags/cellophane	[ ]	[ ]	[ ]	[ ]	[ ]
Used paper and folders	[ ]	[ ]	[ ]	[ ]	[ ]

Others: \_\_\_\_\_

#### **Section C: Methods for Waste Disposal**

Among the below methods of waste disposal, which methods do you use? Please put check all that apply.

- |                          |                           |     |
|--------------------------|---------------------------|-----|
| <input type="checkbox"/> | Composting waste          | ( ) |
| <input type="checkbox"/> | Open burning of dry waste | ( ) |
| <input type="checkbox"/> | Incineration              | ( ) |
| <input type="checkbox"/> | Dust bins                 | ( ) |
| <input type="checkbox"/> | Dump pits                 | ( ) |
| <input type="checkbox"/> | Municipal buckets         | ( ) |
| <input type="checkbox"/> | Landfill site             | ( ) |
| <input type="checkbox"/> | Recycling                 | ( ) |
| <input type="checkbox"/> | Don't know                | ( ) |

Others: specify \_\_\_\_\_

### **Section D: Attitude on Waste Management**

Please mark (x) in the box which best describes the extent to which you believe and agree with each of the following statements.

Rate your response on a 5 point scale; with 1 being **Strongly Disagree** and 5 **Strongly Agree**.

**1- Strongly Disagree | 2- Disagree | 3- Neutral  
4- Agree | 5- Strongly Agree**

<b>Statements on Attitude</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Improper waste disposal is a threat to environment.					
Waste management is ones' own responsibility.					
Local authorities is responsible for waste disposal					
I am responsible for the generation of waste in my school.					
Reminding other students on proper waste disposal.					
Sharing information with other students.					
Importance for volunteering in school cleaning activities.					

### **Section E: Awareness on Waste Management**

Please mark (x) in the box which best describes the extent to which you believe and agree with each of the following statements.

Rate your response on a 5 point scale; with 1 being **Strongly Disagree** and 5 **Strongly Agree**.

**1- Strongly Disagree | 2- Disagree | 3- Neutral  
4- Agree | 5- Strongly Agree**

<b>Awareness Statement</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Having prior knowledge on waste management.					
Displaying posters/ graphics about waste segregation.					
The school aims to reduce, reuse, and recycle waste material.					
Common diseases may spread due to inadequate waste disposal.					
Awareness programmes conducted by school.					
Knowing the complications of improper waste management.					

Environmental problems.					
Importance of protective clothing.					

**Section F: Waste Practices**

Please mark (x) in the box which best describes the extent to which you agree with each of the following statements.

Rate your response on a 5 point scale; with 1 being **Strongly Disagree** and 5 **Strongly Agree**.

1- Strongly Disagree | 2- Disagree | 3- Neutral  
4- Agree | 5- Strongly Agree

Statement	1	2	3	4	5
Control of waste at regular basis.					
Segregation of waste at source points.					
Waste collection method are implemented.					
Composting waste.					
Incineration of waste.					
Designated trash bins are accessible.					
Recycling are encouraged and implemented					
Waste Materials are disposed according to prescribe.					

**THANK YOU!!**