

**PERCEPTION OF THE KNOWLEDGE, AWARENESS AND PRACTICES
ON SOLID WASTE MANAGEMENT IN BUGANG SUR,
BILAR, BOHOL**

**College of Agriculture and Natural Resources
BOHOL ISLAND STATE UNIVERSITY
Zamora, Bilar, Bohol**

ROLAND G. ANUB

JUNE 2022

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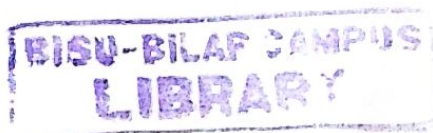
**PERCEPTION OF THE KNOWLEDGE, AWARENESS, AND PRACTICES ON
SOLID WASTE MANAGEMENT IN BUGANG SUR, BILAR, BOHOL**

**A Thesis
Presented to the Faculty of the
College of Agriculture and Natural Resources
BOHOL ISLAND STATE UNIVERSITY
Zamora, Bilar, Bohol**

**In Partial Fulfillment
of the Requirements for the Degree
Bachelor of Science in Environmental Science**

ROLAND G. ANUB


June 2022





APPROVAL SHEET


This thesis entitled "PERCEPTION OF THE KNOWLEDGE, AWARENESS, AND PRACTICES OF SOLID WASTE MANAGEMENT IN BUGANG SUR, BILAR, BOHOL", prepared and submitted by ROLAND G. ANUB, in partial fulfillment of the requirements for the degree Bachelor of Science in Environmental Science has been examined and recommended for acceptance and approval for oral defense.

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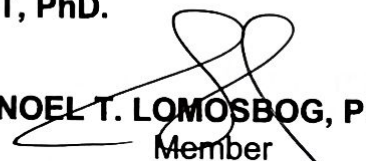

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**RISU-BILAR CAMPUS
LIBRARY**

ACKNOWLEDGMENT

The researcher extends his most profound gratitude to our Almighty Heavenly Father as a source of everything, for giving her the courage, good health, knowledge, and wisdom in gathering the information of this endeavor.

The researcher genially gives his heartfelt thanks, sincere appreciation, gratitude, and indebtedness in the realization of this work to the following people:

Dr. Marietta C. Macalolot, Campus Director, Bohol Island State University Bilar Campus, for her support and approval of the manuscript;

Dr. Noel T. Lomosbog, Dean of the College of Agriculture and Natural Resources, for his suggestions and support of the study;

Mrs. Nathalie T. Bordios, Thesis Adviser, for her guidance in imparting her knowledge and expertise and providing answers to the problems encountered in the study;

Dr. Reizl P. Jose, Technical Expert, for her support, professional guidance, and suggestions for the accomplishment of the study;

Mr. Dennis O. Polinar, Thesis Editor, for spending his effort in making constructive criticism and correcting the research manuscript;

Dr. Severino B. Salera, Thesis Statistician, for imparting this knowledge in analyzing data, professional guidance, and for always accommodating our questions;

The Local Government Unit of Bilar, Municipal Mayor, and Barangay Captain in Bugang Sur, study site authorities, for their permission to conduct the survey;

To his parents, Papa Anselmo and Mama Elena, for all the support, unconditional love, care, patience, and encouragement, and to the rest of his family, Elvira, and Julius, for their love, constant support, encouragement, and always believing in his;

To all his friends who supported him in his financial needs, Lord Vince Cruda, Ivan, Fel, Liezel, Gerlie, Jeramie, Arlene, EL, Dianna, Tonton, Zaldy, Jongjong, Raymond, Zero, Vincent Jomel Ariel, Yoyong, Arjay, and the last but not the least Kimberly Diliman the owner of the laptop, that for their support and assistance during the letter signing and conduct of the study.

To all FESD Department Instructors and Faculty, classmates, and co-researchers, for being part of my college life and giving me lessons in class and life lessons.

“Bulagaw”

ABSTRACT

The main objective of this survey was to determine the perception of the knowledge, awareness, and practices on solid waste management in Bugang Sur, Bilar, Bohol. The study used a stratified purposive sampling, where the quantitative structured questionnaire was given to 134 determined household heads. The findings revealed that sex and educational attainment were significant with knowledge. Moreover, gender was found to be significant in awareness and practices. The correlation implied that awareness and practices were found to be correlated. The study concluded that households were knowledgeable, aware, and practicing solid waste management. The findings of this survey would serve as a reference for further modification of the existing local ordinance amendment to strengthen the ordinance itself.

TABLE OF CONTENTS

TITLE PAGE.....	i
APPROVAL SHEET.....	ii
ACKNOWLEDGMENT.....	iii
ABSTRACT.....	v
TABLE OF CONTENTS.....	vi
LIST OF TABLES.....	ix
LIST OF FIGURES.....	x

CHAPTER

1	THE PROBLEM AND ITS SCOPE	
	Rationale.....	1
	Literature Background.....	2
	THE PROBLEM	
	Statement of the Problem.....	8
	Significance of the Study.....	9
	RESEARCH METHODOLOGY	
	Design.....	10
	Environment and Participants.....	10
	Determination of Sample Size and Respondents.....	11
	Instrument.....	12
	Data Gathering Procedure.....	12
	Statistical Treatment.....	13
	OPERATIONAL DEFINITION OF TERMS	17
2	PRESENTATION OF DATA AND ANALYSIS OF FINDINGS	
	Demographic Profile of the Respondents.....	19
	Knowledge of Ecological Solid Waste Management...	21
	Self-Awareness on Ecological Solid Waste Management.....	23
	Self-Assessment on Ecological Solid Waste Management Practices	25

	Statistical Result on Significant Difference.....	27
	Statistical Result on Significant Relationship.....	29
3	SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS	
	Summary of Findings.....	30
	Conclusions.....	31
	Recommendations.....	32
	REFERENCES.....	33
	APPENDICES.....	35
	Appendix A Transmittal Letter.....	36
	Appendix B Survey Questionnaire.....	39
	Appendix C Analysis of the Significant Difference in Knowledge, Awareness, and Practices.....	44
	Appendix C-1 Analysis of the Significant Difference in Knowledge on Waste Management when Grouped According to Profile of the Respondent.....	44
	Appendix C-2 Tukey's Test on Knowledge on Waste Management when Grouped According to Profile of the Respondents.....	44
	Appendix C-3 Analysis of the Significant Difference in the Awareness of waste Management when Grouped According to Profile of the Respondent.....	45
	Appendix C-4 Analysis of the Significant Difference in the Practices in Waste Management when Grouped According to Profile of the Respondent.....	45
	Appendix C-5 Tukey's Test on practices on Waste Management when	

	Grouped According to Profile of the Respondents.....	46
Appendix C-6	Analysis of the Relationship Between Awareness and Practices.....	46
RESEARCHER'S BIODATA.....		49

LIST OF TABLES

Tables		Pages
1	Descriptive Interpretation Level.....	15
2	Demographic Profile of the Respondents.....	20
3	Respondents' Level of Knowledge on SWM.....	22
4	Respondents' Level of Awareness of SWM.....	24
5	Respondents' Level of Practices in SWM.....	26
6	Analysis of the Significant Difference between Knowledge, Awareness, and Practices on SWM when Grouped According to Profile of the Respondents	28
7	Analysis on the Significant Relationship between the Respondents' Awareness level and their Practices.....	29

List of Figures

Figure		Page
1	Location of the Study Site.....	11
2	Distribution of Survey Questionnaire.....	14

Chapter 1

THE PROBLEM AND ITS SCOPE

Rationale

Environmental issues have sparked global interest. People are becoming more educated and aware of various topics such as global warming, air, water, and land pollution. Most of the environmental problems may arise due to man-made pollution, which not only harms natural resources but also has a negative impact (Desa et al., 2011). Among the problems that man has imposed on the earth system, man's waste significantly affects the global environment. As UNEP (United Nations Environmental Programme) mentioned, an estimated 11.2 billion tons of solid waste are generated by man every year, and the organic proportion of solid waste has contributed to global greenhouse gas emissions. It also added that an estimated 11.2 billion tons of solid waste generated yearly ended in the environmental media, which poses directly and indirectly to the environment. Thus, the extent of waste generation should not be tolerated and has to be aided by some suitable means.

In the Philippines, solid waste management was anchored on the Ecological Solid Waste Management act of 2000 (Republic act 9003). Ecological Solid Waste Management is the "systematic administration of activities that provide segregation at source, segregated transportation, storage, transfer processing, treatment, and disposal of solid waste, and all other waste management activities that do not harm

the environment." (Castillo and Otama, 2013). They also added that despite the existence of his laws, the prevalence of waste cluttering is present.

Solid waste management of a particular household or an individual may be affected by environmental knowledge, awareness, and perception (Jeremias & Felliazar, 2019). Gambro (1996) also stated that it is an ability to comprehend and assess society's impact on the ecosystem. And thus, once an individual has processed and acknowledged the factors, practices would push through to address the observed phenomena.

Perception of the knowledge, awareness, and practices on solid waste management is the primary concern that drives this study. The acquired result would help infer or answer the main problem, which will help fortify existing laws or practices in the area of concern.

Literature Background

The following are the related readings that justify the conduct of the study:

Ecological Solid Waste Management Act of 2000 or RA 9003 is 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, therefore, and for other purposes.

Chapter1. Section 2 Declaration of policies. - it is hereby declared the policy of the state to adopt a systematic, comprehensive, and ecological solid waste

management program which shall promote national research and development programs for improved solid waste management and resource conservation techniques, more effective institutional arrangement, and indigenous and improved methods of waste reduction, collection, separation, and recovery

Moreover, Ordinance No. 3 Series of 2018 of the Sangguniang Pambarangay of Bugang Sur is a resolution adopting the municipal ordinance establishing the ecological solid waste management of Barangay of Bugang Sur, Bilar Bohol, providing the necessary organizational structure, prescribing fees for solid waste management services, declaring certain acts that are prohibited, and providing penalties.

Further, Article 8, Public education and information 25th segment Implementation of the IEC program during the first two years of planned implementation, the MESWM board and the TWG will execute an intensive IEC program to encourage trash segregation and minimization, as well as orderly waste collection. The IEC program must follow the guidelines and tactics outlined in the MESWA strategy.

Section 26. Key message and target audience Residents, ambulant sidewalk sellers, market vendors, wholesalers, common purchasers, customers, and possible allies or change agents who can aid with information distribution will be targeted by the information and education campaign. These will also include authorities from the barangay, religious leaders, school administrators or instructors, PTA officers, and the president of the institution, as well as NGOs. The messages in the IEC campaign materials will center on aspects of segregation,

recycling, and waste reduction, as well as the need for a materials recovery facility and penalty restrictions.

Section 27. Conduct yearly refresher or training courses. To sustain enforcement, yearly refresher or training courses on ESWM shall be performed among business establishments, institutions, and the barangay. To ensure that the program is implemented, all establishments that seek a business permit must provide a refresher or training certificate.

In addition, EC development/production/distribution is covered in Section 28. The MTWO's IEC committee will create, manufacture, distribute, and print items in the local dialect, such as flyers, billboards, streamers, posters, and news releases.

Section 29, participation in school-sponsored activities The LGU, through its MESWM board, will advocate for effective waste management in collaboration with school officials. The implications of poorly managed solid wastes, the importance of waste segregation and reduction at source, what's why's and how's of reuse, recycling, composting, and other related themes will be introduced into the curricula of local schools.

The following related literature provided background information to this research:

Solid waste refers to a broad spectrum of rubbish materials abandoned as undesired and worthless due to human activity. Solid waste is generated in a specific region as a result of industrial, residential, and commercial activity, and it

can be treated in various ways (RA 9003). In addition, according to World Health Organization (2021), solid waste pertains to non-liquid wastes like rubbish or garbage, which causes a significant impact on the living environment.

Furthermore, plastic, paper, glass, metal, and organic garbage are some of the different types of waste. Radioactive, flammable, infectious, toxic, or non-toxic wastes may be classified according to their hazard potential. The origin of the garbage, whether industrial, home, commercial, institutional, or building and demolition, may also be classified (Leblanc, 2020).

Reduce, reuse, recycle is the flagship project of the Philippines, which aims to reduce both traditional wastes (paper, plastic, scrap metal, kitchen waste) produced and even the second-generation waste (hazardous waste) that has been enshrined by the Ecological Solid Waste Management Act of 2000 (Antonio, 2009). Reduce pertains to minimizing the waste generated by an individual, reuse relates to the use of the item again before entering waste circulation, and recycle pertains to creating a product out of recyclable materials instead of throwing recyclable items away (Solar Schools, n.d.)

Raising public knowledge about municipal solid waste management is integral to waste management success. It's critical that key stakeholders are aware of a city's waste management activities and comprehend the advantages of proper solid waste management. Although numerous obstacles exist when raising awareness about solid waste management, they can be addressed through various communication approaches (Wahid, 2015).

The following related studies justified the conduct of this study:

A study by Mrayyan and Handi (2006) on waste management approaches in industrialized zones in Jordan revealed that education and awareness do not only pertain to industries involved in the study but, in the end, consume their product as well. They also added that achieving such. It would play substantially in accomplishing sustainable industrial waste management. They also elucidated that public awareness of waste management can cause waste segregation. Thus, it reduces solid waste emissions.

Debrah et al. (2021) reviewed raising awareness on solid waste management through formal education for sustainability, which collects solid waste from developing countries. Their review had concluded that waste sustainability and environmental sustainability could be achieved in developing countries when environmental knowledge, attitude, and awareness were integrated with education curricula in each country where the achievements were collected. They also added that high awareness and positive attitudes did not influence participation in environmental issues. However, these issues on their previous elucidation can be eased through practical education, motivation, or incentives to their intended learners for environmental sustainability.

Desa et al. (2012) studied waste education and awareness strategy for solid waste management programs in Malaysia. Their study stressed that education, particularly solid waste management education, must be taught to children in their younger years to linger their understanding throughout their research. It also revealed that the respondents of their study had shown a high level of behavior

and practice in that they engage in waste management. This means they value cleanliness and mitigate the probable transfer of diseases. Thus, they are fully aware of solid waste management.

A study was done by Jeremias and Felliazar (2019) on the relationship between socio-demographic characteristics and environmental knowledge, awareness, and perception of the solid waste management practices of the respondent households in Sorsogon City Sorsogon. It showed that educational attainment has a moderate correlation to solid waste management practices, and it also revealed that age and household size strongly correlate to solid waste management practices. In contrast, no relationship had formed between the total monthly household income and the solid waste management practices. Thus, the study concluded that the level of environmental knowledge, awareness, and perception of households does not imply solid waste management. It stressed the need to enforce information, education, and communication campaign.

A review made by Atienza (2011) on the waste management system in the Philippines consists of reviews on the policies in cohort to waste management from 1938 to 2001, including the Ecological Solid Waste Management Act. It presents the potential of recycling in addressing both waste management issues and improving poverty issues. Thus, the study concluded that the application of good governance, active participation of various stakeholders, robust awareness campaign, and promotion and the utilization of innovative and appropriate technologies are needed to achieve feasible waste management and sustainable industry of recycling.

THE PROBLEM

Statement of the Problem

This study aimed to determine the perception of the knowledge, awareness, and practices of solid waste management in Riverside, Bilar, Bohol. Specifically, it sought to:

1. What is the profile of the respondents in terms of?
 - 1.1 age;
 - 1.2 sex;
 - 1.3 highest educational attainment;
 - 1.4 seminars, training and any activities attended related to environmental protection and conservation?

2. What is the respondents' level of perception of the knowledge on solid waste management of the respondents?

3. What is the level of the respondents' awareness of proper solid waste management in the following aspects:
 - 3.1 reduce;
 - 3.2 reuse; and
 - 3.3 recycle?

4. What is the extent of the respondents' practices on solid waste management in the following dimensions:
 - 4.1 economic;
 - 4.2 environmental;
 - 4.3 health; and
 - 4.4 social dimension?

Students. The study would be helpful to the students as it would serve as their reference or guideline for conducting another study on solid waste management.

Health impacts. With the accumulated results of this study, health measures attuned to developments would help the community towards a healthy and sound environment

RESEARCH METHODOLOGY

Design

This study utilized the descriptive-correlation research design, which is used to relate two or more variables. This research design was used to find a significant relationship between the level of knowledge and the respondents' awareness and practices on solid waste management. The profile of the respondents was correlated with their view or perception of the knowledge, awareness, and practices of solid waste management.

Environment and Participants

The study was done at Bugang Sur, Bilar, Bohol (Figure 1). It is an agricultural barangay dealing with problems with solid waste management. With borders in Barangay Cabacnitan to the west, -Cansumbol to the East, and Barangay Cambigsi to the north.

The research locale has 991 residents, with a total number of households being 202. The barangay is an agricultural barangay that deals with the problem related to solid waste management. Further, the area was composed of plains and grasslands with minute terrains.

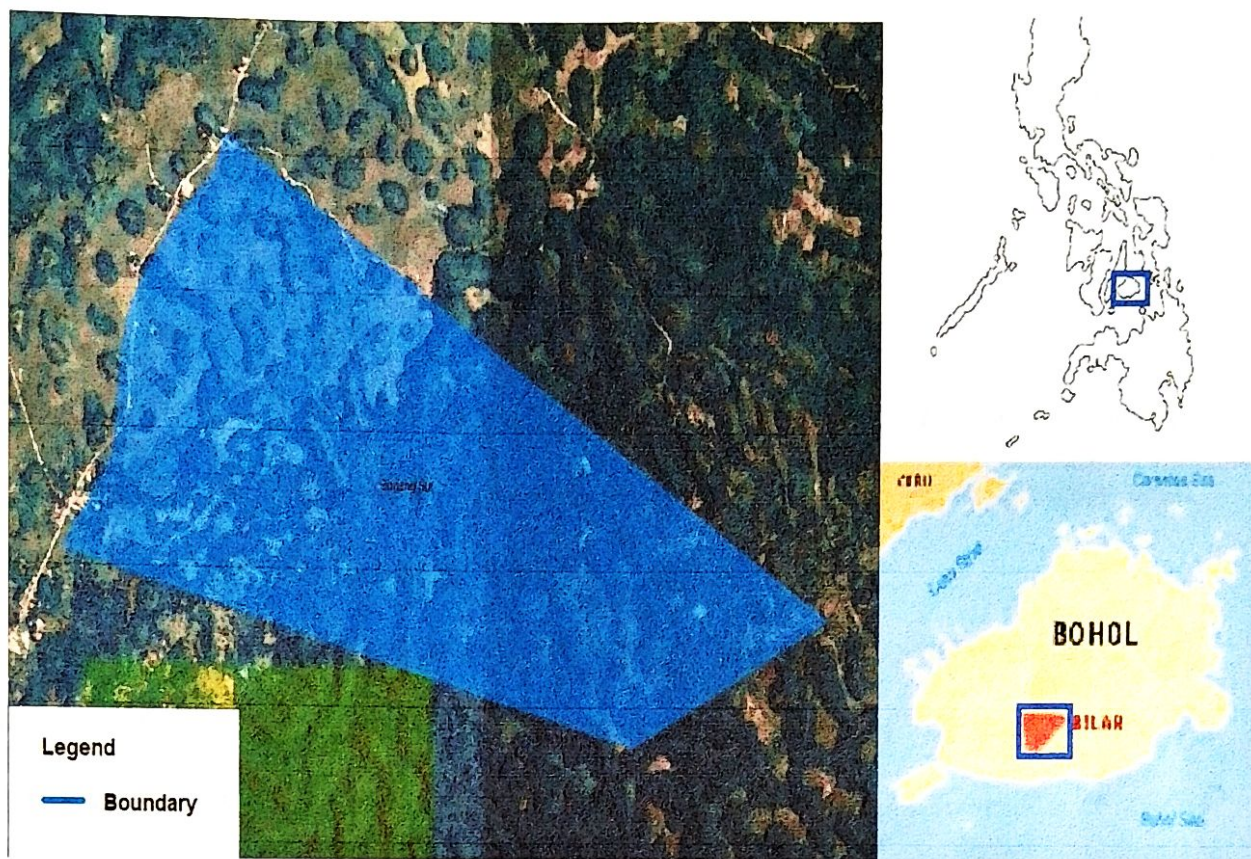


Figure 1. Location Map of the Study Site

Determination of Sample Size and Respondents

The study involved 134 purposively selected household heads of Bugang Sur, Bilar, Bohol as research participants. A stratified purposive sampling technique was made basis. They were tasked to answer a survey questionnaire about the level of their awareness and practices on proper waste management. The researcher used Slovin's Formula in computing the sample size.

The formula is shown below:

$$n = \frac{N}{1 + Ne^2}$$

Where:

n = sample size

N =population size

e =margin of error (5%/0.05)

Instruments

The main instrument used in gathering data was a revised survey questionnaire with four parts. The revised self-made survey questionnaire was adapted from different research studies.

The first part of the questionnaire focused on the demographic profile of the respondents. The second part was adapted from Abulucion (2012) and Madrigal (2018), which has 25 statements concerning the respondents' knowledge of solid waste management. The third part focused on assessing the respondents' awareness of proper waste management in the following aspects: reduce, reuse, and recycle. The last part focused on determining the extent of waste management practices in the four (4) dimensions such as economic, environmental, health, and social.

Data Gathering Procedures

The researcher sought approval from the Chairperson of the Forestry and Environmental Science Department, The Dean of the College of Agriculture and Natural Resources, and the Campus Director of Bohol Island State University-Bilar Campus, asking permission to conduct the study outside the university premises. The same letter was sent to the Municipal Mayor and the Barangay Captain, requesting authorization for the conduct of the study. For ethical consideration,

the researcher sent an Informed Consent Form to the respondents. Enclosed in the letter is the assurance that all responses were treated with the utmost confidentiality. The researcher sought assistance from the Purok-In-Charge for the distribution of the questionnaires. In response to the social distancing protocol, the survey questionnaires were distributed through home visitation (Figure 2). The researcher explained the mechanics of the study to ensure credible and reliable survey results. After retrieving the questionnaire, data are consolidated and interpreted.

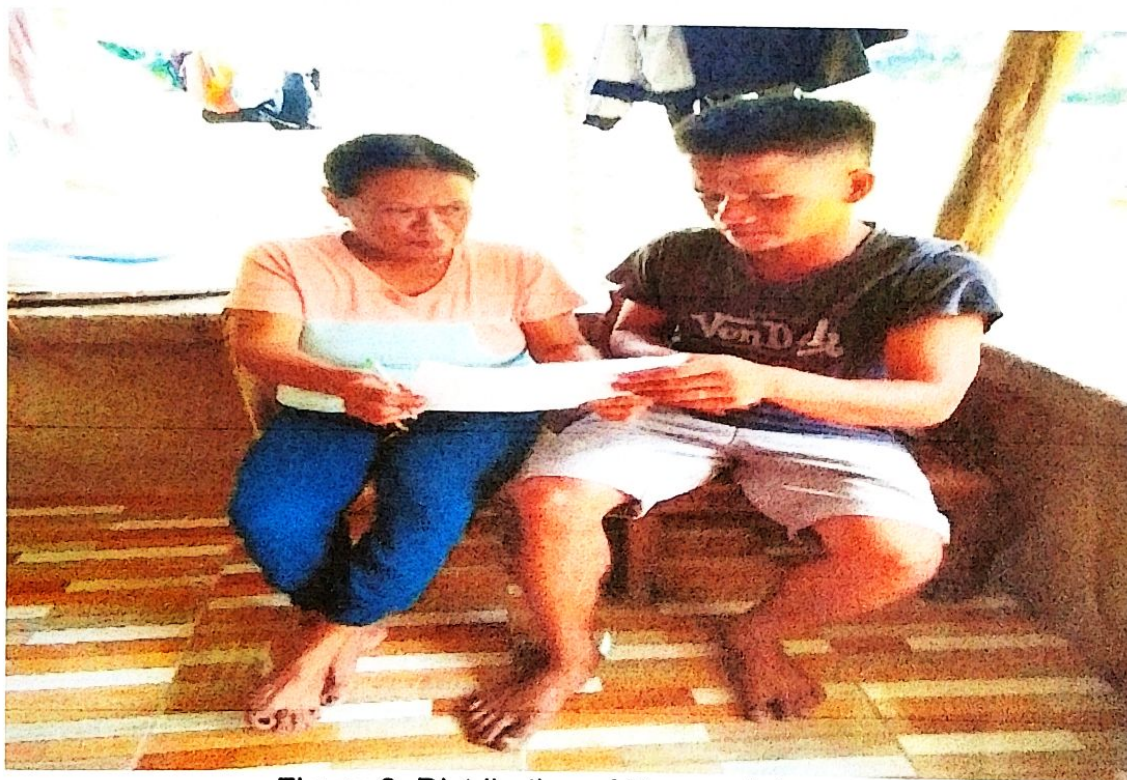


Figure 2. Distribution of Research Instrument

Statistical Treatment

The following tools were used in the analysis of data in this study:

Frequency and percentage were used to determine the demographic profile of the respondents in terms of age, gender, and highest educational attainment.

$$P = \frac{f}{n} \times 100$$

Where:

- P = percentage
- f = frequency of the respondents
- n = number of cases

Weighted Mean, Standard Deviation, and Verbal description were used to determine the level of knowledge, degree of attitude, and practices on solid waste management of the respondents.

$$x = \frac{\sum fx}{f}$$

Where:

- x = weight, i.e. 1, 2, 3
- f = frequency
- $\sum fx$ = summation of weighted means

The researcher used the 5-point Likert Scale. Table 1 presents the nominal values and interpretations.

Table 1
Descriptive Interpretation Level

	Scale	Range	Description	Interpretation
Knowledge	5	4.20-5.00	Excellent	Very Highly Knowledgeable
	4	3.40-4.19	Very High	Highly Knowledgeable
	3	2.60-3.39	High	Moderately Knowledgeable
	2	1.80-2.59	Low	Poorly Knowledgeable
	1	1.00-1.79	Very Low	No Knowledge
Awareness	5	4.20-5.00	Strongly Agree	Very Highly Aware
	4	3.40-4.19	Highly Agree	Highly Aware
	3	2.60-3.39	Moderately Agree	Moderately Aware
	2	1.80-2.59	Slightly Agree	Poorly Aware
	1	1.00-1.79	Disagree	Not Aware
Practices	5	4.20-5.00	Always	Fully Practiced
	4	3.40-4.19	Often	Highly Practiced
	3	2.60-3.39	Sometimes	Moderately Practiced
	2	1.80-2.59	Rarely	Poorly Practiced
	1	1.00-1.79	Never	Not Practiced

The study used a ONE-WAY ANOVA test which tells whether the results are significant overall. After finding out the significant results through ANOVA, the Tukey's HSD was run to determine which groups meant with each other. The Tukey Test (or Tukey procedure), also called Tukey's Honest Significant Difference test, is a post-hoc test based on the range distribution. After running an ANOVA and finding significant results, Tukey's HSD was run to determine which specific group means (compared with each other) were different. The test compares all possible pairs of means. The formula is:

$$HSD = q \sqrt{MSw/n}$$

Where:

q = the standardized range statistic

MSw = the mean square for within groups

n = the number of subjects in each group

Meanwhile, the study used a Pearson Product Moment Correlation Coefficient to determine the significant correlation between the respondents' awareness level and practices on ecological solid waste management practices.

The formula is shown below:

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$

Where:

r = Pearson-product moment correlation coefficient

$\sum x$ = sum of x

$\sum y$ = sum of y

$\sum xy$ = sum of the products between x and y

$\sum x^2$ = sum of x squared

$\sum y^2$ = sum of y squared

n = number of paired observations

OPERATIONAL DEFINITION OF TERMS

3Rs- reduce, reuse, and recycle – all help to cut down on the amount of waste we throw away. They conserve natural resources, landfill space, and energy. Plus, the three Rs save land and money communities must use to dispose of waste in landfills.

Awareness. Concern about and well-informed interest in a particular situation or development.

Questionnaire. The instrument was prepared and distributed to the respondents to collect information necessary for the conduct of the study.

Recycle. It is probably the most well-known and well-understood of the 3Rs. You will be familiar with recycling paper if you have recycling pick-up services. Plastic and metal materials.

Reduce. To diminish in size, amount, extent, or number.

Republic Act 9003. An act providing for ecological solid waste management the program, creating the necessary institutional mechanisms and incentives, declaring certain acts prohibited and providing penalties, appropriating funds, and other purposes.

Respondents. These are the key informants of the study living within the area.

Reuse. It is the act of taking old items that you might consider throwing away and finding a new use for them.

Segregation. The action or state of setting someone or something apart from other people or things or being set apart.

Solid waste. The useless and unwanted products in the solid-state are derived from the activities of and discarded by society.

Tukey's (HSD) – also called Tukey's Honest Significant Difference test, determines which groups in the same differ. While ANOVA can tell the researcher whether groups are of the same difference, it cannot tell which group differs. Tukey's HSD can clarify which groups among the sample in specific have significant differences.

Waste Management- a leading provider of comprehensive waste management, offering services such as garbage collection and disposal, recycling, and dumpster rental.

Chapter 2

PRESENTATION OF DATA AND ANALYSIS OF FINDINGS

This chapter deals with the presentation of data gathered from the actual survey interview aided by a qualitative questionnaire to the residents of barangay Bugang Sur, Bilar, Bohol.

Demographic Profile of the Respondents

The demographic profile contained information about the residents' age, sex, highest educational attainment, and seminars/training/activities related to environmental protection. Profiling is essential as an exercise in making generalizations about groups of people.

Table 2 shows that majority of the respondents were 41-50 years old, and High School graduates at about 45.

Table 2
Demographic Profile of the respondents
N= 134

Category	Frequency	Percent %
Age		
30 years old below	31	23.1
31-40 years old	28	20.9
41-50 years old	40	29.9
51-60 years old	27	20.1
60 and above	8	6.0
Sex		
No Response	18	13.4
Female	69	51.5
Male	47	35.1
Educational Attainment		
No. response	3	2.2
Elementary graduate	42	31.3
High school graduate	61	45.5
College graduate	24	17.9
Others (College level)	1	0.8
(High School level)	2	1.5
(Elementary level)	1	0.8

Knowledge on Ecological Solid Waste Management

Table 3 presents the respondents' level of knowledge of Solid Waste Management. The respondents' knowledge of laws and regulations on solid waste management was stated mostly as highly knowledgeable. Most respondents were moderately knowledgeable in Republic Act 9003; however, on its dimensions, the respondent was highly knowledgeable. Based on the demographic profile of the respondents in terms of educational attainment, the fraction of the high school student graduates consists of 45.5, which implies that the knowledge of solid waste management was basic and did not get into the technicality of the law itself but the respondents of the study had educational attainment, which explains that they were knowledgeable on solid waste management policies. This also explains that the respondents knew about solid waste management since the barangay had a local ordinance that accords with the RA 9003 but was adapted as a local ordinance. Since the law itself, these matters were not discussed in the local ordinance, which revealed to be moderately knowledgeable on the data tabulation. After graduating high school, solid waste management was integrated into the educational curriculum, which contributed to their knowledge in solid waste management, which explained that they were highly knowledgeable on solid waste management.

Table 3
Respondents' Level of Knowledge on Solid Waste Management

Category	Weighted Mean Score	Descriptive Interpretation
1 Republic Act 9003	3.10	Moderately knowledgeable
2 Solid Waste Management (SWM)	3.61	Moderately knowledgeable
3 Policies on SWM program	3.65	Highly knowledgeable
4 Purpose of the management in implementing SWM at barangay	3.79	Highly knowledgeable
5 Importance of SWM	3.82	Highly knowledgeable
6 Practicing SWM saves money and energy	3.94	Highly knowledgeable
7 The roles and responsibilities of the community toward the SWM program	3.86	Highly knowledgeable
8 Implementation will be successful and effective if concerned people will participate	4.12	Highly knowledgeable
9 Proper disposal of garbage	3.96	Highly knowledgeable
10 Discipline on SWM matters a lot	4.07	Highly knowledgeable
11 Possible illnesses that you can get whenever trashes are not properly disposed	4.16	Highly knowledgeable
12 Before throwing garbage, it is a must to read those trashcan label for segregation	4.11	Highly knowledgeable
13 Importance of recycling	4.16	Highly knowledgeable
14 Identification if biodegradable from non-biodegradable	4.18	Highly knowledgeable
15 Importance of segregation	4.11	Highly knowledgeable
16 Waste minimization practices like reuse, recycle, and reduce	4.05	Highly knowledgeable
17 Barangay orientation on SWM program	4.00	Highly knowledgeable
18 Practices on SWM implemented in school	3.96	Highly knowledgeable
19 Advantage and disadvantages of SWM	3.92	Highly knowledgeable
20 SWM program is a big help in environment	4.01	Highly knowledgeable
21 Degradation/destruction that wastes can cause to the environment	3.98	Highly knowledgeable
22 "Clean as You Go Policy"	3.95	Highly knowledgeable
23 Composting method for organic waste	3.96	Highly knowledgeable
24 Sanctions for violation of not disposing garbage properly	3.90	Highly knowledgeable
25 Financial resource which can be generated from wastes	3.91	Highly knowledgeable

Self-Awareness of Ecological Solid Waste Management

Table 4 presents the respondents' self-awareness level on ecological solid waste management. The data gathered revealed that most were highly aware of reusing, reducing, and recycling—the educational attainment of the respondents matters on this part. Most of the respondents were high school graduates, meaning that the awareness that the respondents acquired on reuse, reduce, and recycle was developed in the crucial years of learning since the fundamental years of learning solid waste management were in the high school years. On the other hand, on the gender basis, females were revealed to be dominant, which means that females, on the other hand, displayed applied the reuse, reduce, and recycle in their day-to-day activities since they were highly aware of it. Thus, gender is essential since gender-based participation in solid waste management, especially in the reuse, reduce, and recycle revolution, really matters as each gender has a different level of awareness, especially on 3Rs revolutions. This would somehow reflect on their practical application of what they have seen or being learned.

Table 4
Respondents' Level of Awareness of Solid Waste Management

Awareness of 3Rs (Reuse, Reduce, and Recycle)		Weighted Mean Score	Descriptive interpretation
A. Reduce			
1	I am aware that reducing the use of plastic bags is environmentally friendly.	3.99	Highly aware
2	Using paper bags is a good alternative to using plastic when shopping.	4.00	Highly aware
3	Reducing the use of plastic bottles decreases the stockpile of garbage.	3.92	Highly aware
4	I am aware that reducing waste is beneficial to the community.	3.97	Highly aware
5	At home, I encourage my family to avoid using disposable table wares.	3.89	Highly aware
B. REUSE			
1	Reusing old clothes is cost-saving and practical.	3.91	Highly aware
2	Reusing scratched papers is economically-friendly.	3.95	Highly aware
3	Reusing empty jars for other purposes reduces the generation of non-biodegradable waste.	3.95	Highly aware
4	Repairing usable household cleaning tools help save money and decreases household garbage.	3.94	Highly aware
5.	Keeping old but usable items saves dumpsite space.	3.85	Highly aware
C. RECYCLE			
1	Recycling items is cost-saving.	3.90	Highly aware
2	Recycling is the most commonly-used waste management practices.	3.89	Highly aware
3	It is essential to motivate my family on recycling waste materials at home.	3.92	Highly aware
4	Recycling items provides more opportunities to reduce wastes.	3.92	Highly aware
5	Recycling allows household members to value their belongings and respond to environmental concerns.	3.90	Highly aware

Self-Assessment of Ecological Solid Waste Management Practices

Table 5 presents the level of practices of the respondents on ecological solid waste management. Based on the data gathered, most of the barangay respondents were found to be highly practiced in Solid Waste Management. Based on the observation in barangay, residents usually practiced proper waste sorting based on the waste classification and put their waste in the appropriate bin with adequate labeling. Moreover, it was also observed that residents usually reuse their produce, especially the plastic bags, plastic bottles, and even jars, especially the women in society. Sex and age were vital in the achievement of the practices. Sex, on the other hand, was essential in accomplishing the solid waste management dimension. Since gender-based participation on economic, environmental, and health dimensions substantially impacted the achievement of the practices. As revealed, females were the most common on the respondents' profiles. They are the ones who efficiently and practically practice solid waste that encompasses the four dimensions of solid waste management practices.

Regarding educational attainment, it is revealed to be also significant in achieving solid waste management practices. Educational attainment, regardless of respondents' academic level, was substantially essential. Basic solid waste management practices were taught in the prior years, like basic waste segregation, proper waste processing, etc.

Table 5
Respondents' Level of Practices in Solid Waste Management

SWM Practices on Different Dimensions	WMS	Descriptive Interpretation
Economic Dimension		
1 I refrain from buying disposable products such as food containers, and cellophane among others, instead I bought reusable ones.	3.28	Highly practiced
2 At home, I instruct my children to keep empty bottles and plastic containers and sold them to garbage buyers.	3.21	Highly practiced
3 I utilize empty big plastic containers to be used as trash bins.	3.08	Highly practiced
4 I bring my reusable items to junkshops and sold them at a reasonable price.	3.12	Highly practiced
5 I encourage my family and my neighbors to wise utilization of garbage and make money from it.	3.14	Highly practiced
Environmental Dimension		
1 I do proper waste disposal because it is important for the protection and sustainability of our environment.	3.08	Highly practiced
2 We have a compost pit in our backyard where we properly dispose of all our wastes.	3.13	Highly practiced
3 I prefer burning dried leaves rather than burning plastic and rubberized materials.	3.14	Highly practiced
4 I apply the integrated approach of organic composting of garbage that is used in home gardening	3.17	Highly practiced
5 My family used to dispose of our wastes that minimize environmental damage.	3.01	Highly practiced
Health Dimension		
1 I am equipped with personal protective paraphernalia like gloves, masks, and boots in collecting wastes.	2.83	Highly practiced
2 I dispose of my leftover foods in the right container/receptacle.	2.91	Highly practiced
3 I clean and wash the trash bins or receptacles after garbage disposal to avoid the unpleasant smell.	2.88	Highly practiced
4 I use rubbing alcohol in sanitizing my hands before and after collecting waste.	2.84	Highly practiced
5 I used to dispose of tin cans properly so that no mosquito can thrive and reduce the risk of dengue fever and other illnesses.	2.91	Highly practiced
Social Dimension		
1 I participate in a community-based educational forum on ecological protection and conservation.	2.93	Highly practiced
2 I join waste management programs implemented by the Local Government through the motivation of our Barangay Officials.	2.92	Highly practiced
3 I use to practice "CLAYGO" or "Clean As You Go" wherever I am and encouraged my fellows to do the same.	2.97	Highly practiced
4 I set myself as an example cooperative participation on waste management in our Barangay.	2.94	Highly practiced
5 I share valuable ideas to my neighbors on the positive effects of proper waste management to the community.	2.97	Highly practiced

Statistical Result on Significant Difference

Table 6 shows the significant difference in knowledge, awareness, and practices in solid waste management when grouped according to the profile of the respondents. In terms of knowledge, sex and educational attainment were significant. According to the demographic profile of the respondents, female-dominated the fraction of respondents in the study, which implies that females have excellent participation in solid waste management. Regarding educational attainment, the majority of the respondents were high school graduates, which means that the knowledge that these respondents acquired is sufficient for solid waste management. This instance becomes crucial since solid waste management was necessary. The basics or the fundamentals of solid waste management were taught in high school and integrated explicitly into the educational curriculum, which is why high school graduate has sufficient knowledge of solid waste management. In terms of awareness, gender is revealed to be significant, implying that gender-based participation and awareness are substantial in achieving efficient waste management and are essential in many ways. In terms of perception, age and gender were revealed to be significant in the analysis. It appears that residents who have completed college have a greater understanding of the need to enforce Solid Waste Management laws and regulations. It stated that their educational attainment determines their knowledge level.

Age was significant in this study since the dominating age group is 40-50 years old, which implies that the perception forges strong as the age is way too high. Sex also revealed that gender-based perception and understanding are

essential. This means that gender plays significantly when it comes to perception. Regarding the demographic profile of the respondent, females comprise the majority of the respondents, which implies that females play substantially when it comes to solid waste management. Thus, the null hypothesis (H_{01}) of the study is rejected.

Table 6
Analysis on the Significant Difference between Knowledge, Awareness and Practices on SWM when Grouped According to the Profile of the Respondents

Category (Perceptions)	Tukey's Grouping	Significance
Knowledge		
Sex		.000
HEA- High School Graduate	4.00 ^b	
HEA- Elementary Graduate	3.69 ^a	
HEA- College Graduate	4.14 ^b	
Others	3.94 ^{a,b}	
Awareness		
Sex		.000
Practices		
30 years old below	3.86 ^{b,c}	
31-40 years old	3.76 ^b	.000
41-50 years old	3.97 ^c	
51-60 years old	3.84 ^b	
60 years old above	3.55 ^a	
Gender		.000

Note: superscript (a-c) denotes significant difference

Statistical Results on Significant Relationship

Table 7 presents the analysis of the relationship between the level of awareness and practices. The analyzed result shows a significant correlation between awareness and practices rejecting the null hypothesis (HO2). Practices depend on what the individual has acquired throughout their life. And as observed on the site, respondents practically applied what knowledge they had developed regarding solid waste management, such as doing simple segregation, reusing, and recycling of their waste products, and doing simple composting of their waste.

Table 7

Analysis on the Significant Relationship between the Respondents' Awareness level and their Practices

Category	Mean	Std. Deviation	N	Computed r	Significant level
Awareness	3.92	.349875687455614	131	0.794**	.000
Practices	3.86	.387487351336381	131		

**correlation is significant at the 0.01 level (2-tailed)

Chapter 3

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Summary of Findings

The study was conducted in the residences of Barangay Bugang Sur, Bilar, Bohol, from February to March 2022 to determine the perception of the knowledge, awareness, and practices on solid waste management among the residents of Bugang Sur, Bilar, Bohol. The study utilized the structured qualitative questionnaire as the primary research instrument for data gathering.

Most respondents were 41-50 years old, female, and High School graduates.

In terms of respondents' level of knowledge on solid waste management, it revealed that most of the respondents were highly knowledgeable about the policies on solid waste management. However, RA 9003 showed that the respondents were moderately knowledgeable. The knowledge was perhaps affected by the educational attainment since the respondents of the study were educated not to the extent of high-level education but sufficient enough to understand the policies being stated by the law and to add the local ordinance present in the locality. Regarding the level of awareness, it revealed that in 3R's the reuse, reduce, and recycle, the respondents were highly aware, which means that they were practically applying or putting into action what they have perceived on solid waste management. Regarding the level of practice, it revealed that the residents were using or always practicing an appropriate approach to processing waste.

Statistical results show that gender and educational attainment were significant regarding knowledge. In awareness and practices, gender is revealed to be substantial. Thus, the null hypothesis (H_{01}) of the study is rejected. The relationship between awareness and practices showed a significant relationship between the two. Thus, the null hypothesis (H_{02}) of the study is rejected. This implied that practices encompass the existence of general awareness.

Conclusions

Based on the findings, most of the respondents who participated were 41-50 years old, female, and attained high school graduates. Respondents' knowledge, awareness, and practices on SWM were highly knowledgeable, highly aware, and moderately practiced. And the survey has found that the respondents' knowledge of Solid Waste management is significant regarding sex and educational attainment. In awareness of the respondents on solid waste management, gender appeared to be substantial. Practices of the respondents on solid waste management, age, and gender were also significant. There is a significant difference between knowledge, awareness, and practices when grouped according to the demographic profile of the respondents. The level of awareness and practices were revealed to be significantly correlated, rejecting the null hypothesis (H_{02}).

The study concluded that the residents of barangay Bugang Sur are knowledgeable in solid waste management. They are aware of the 3Rs of solid waste management - the reuse, reduce and recycle. The residents practice efficient solid waste management in their households and the locality.

Recommendations

1. The local government could continue implementing the existing local ordinance related to solid waste management.
2. Assessment could be done quarterly, so knowledge, awareness, and practices are retained.
3. The younger generation could be educated on the values of proper waste management.
4. Residences could cooperate in maintaining the barangay clean.
5. Barangay officials and leaders could share knowledge about reusing, reducing, and recycling solid waste.

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APPENDICES

APPENDIX A

Transmittal Letter



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

November 11, 2021

DR. MARIETTA C. MACALOLOT
 Campus Director
 Bohol Island State University
 Bilar Campus
 Zamora, Bilar, Bohol

Madam:

Good Day!

I am Roland G. Anub, a fourth-year Bachelor of Science in Environmental Science Student at Bohol Island State University – Bilar Campus.

I am currently working on my undergraduate thesis entitled "PERCEPTION OF THE KNOWLEDGE, AWARENESS, AND PRACTICES OF SOLID WASTE MANAGEMENT IN BUGANG SUR, BILAR, BOHOL". The place is still under your Jurisdiction hence this letter. In line with this, I would like to ask for your approval to allow me to conduct a study starting November 20 – December 20 2021 every 8am – 5pm in Bugang Sur, Bilar, Bohol.

Thank you and God bless.

Respectfully yours,

(Sgd.) ROLAND G. ANUB
 Researcher

Noted:

(Sgd.) NATHALIE T. BORDIOS
 Research Adviser

Recommending Approval:

(Sgd.) NOEL T. LOMOSBOG, PhD
 Dean, CANR

Approved:

(Sgd.) MARIETTA C. MACALOLOT, PhD
 Campus Director



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

November 11, 2021

HON. MANUEL G. JAYECTIN
Municipal Mayor
Bilar, Bohol

Dear Sir,

Good Day!

I am Roland G. Anub, a fourth-year Bachelor of Science in Environmental Science Student at Bohol Island State University – Bilar Campus.

I am currently working on my undergraduate thesis entitled “PERCEPTION OF THE KNOWLEDGE, AWARENESS, AND PRACTICES OF SOLID WASTE MANAGEMENT IN BUGANG SUR, BILAR, BOHOL”. The place is still under your Jurisdiction hence this letter. In line with this, I would like to ask for your approval to allow me to conduct a study starting November 20 – December 20 2021 every 8am – 5pm in Bugang Sur, Bilar, Bohol.

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(Sgd.) ROLAND G. ANUB
Researcher

Noted:

Recommending Approval:

(Sgd.) NATHALIE T. BORDIOS
Research Adviser

(Sgd.) NOEL T. LOMOSBOG, PhD
Dean, CANR

Approved:

Sgd.) MANUEL G. JAYECTIN
Municipal Mayor



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

November 11, 2021

HON. TIMOTEO Q. QUIMPAN
 Barangay Captain
 Bugang Sur, Bilar, Bohol

Dear Sir,

Good Day!

I am Roland G. Anub, a fourth-year Bachelor of Science in Environmental Science Student at Bohol Island State University – Bilar Campus.

I am currently working on my undergraduate thesis entitled "PERCEPTION OF THE KNOWLEDGE, AWARENESS, AND PRACTICES OF SOLID WASTE MANAGEMENT IN BUGANG SUR, BILAR, BOHOL". The place is still under your Jurisdiction hence this letter. In line with this, I would like to ask for your approval to allow me to conduct a study starting November 20 – December 20 2021 every 8am – 5pm in Bugang Sur, Bilar, Bohol.

Thank you and God bless.

Respectfully yours,

(Sgd.) ROLAND G. ANUB
 Researcher

Noted:

Recommending Approval:

(Sgd.) NATHALIE T. BORDIOS
 Research Adviser

(Sgd.) NOEL T. LOMOSBOG, PhD
 Dean, CANR

Approved:

(Sgd.) HON. TIMOTEO Q. QUIMPAN
 Barangay Captain

APPENDIX B

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 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 the professional and technological fields; undertake research and development and extension services for the sustainable development of Bohol and the country.*

DATA GATHERING INSTRUMENT FOR ASSESSING THE PERCEPTION OF THE KNOWLEDGE, AWARENESS, AND PRACTICES OF SOLID WASTE MANAGEMENT

PART I. RESPONDENT'S PROFILE

Direction. Kindly put a check (√) mark on the space provided that corresponds to your personal background.

1. Age: 30 years old and below

31- 40

41-50

51-60

61 and above

2. Sex: Male

Female

3. Highest Educational Attainment:

Elementary Graduate

High School Graduate

College Graduate

Others (Please specify) _____

4. Seminars, training and any Activities attended related to Environmental Protection and Conservation:

PART II. KNOWLEDGE ON ECOLOGICAL SOLID WASTE MANAGEMENT

Direction. Please rate the following statements by putting a check (√) mark in the box provided, which corresponds to your honest answer. Kindly reflect your responses by using the scale below:

Scale	Description	Interpretation
5	Excellent	Very Highly knowledgeable
4	Very High	Highly knowledgeable
3	High	Moderately knowledgeable
2	Low	Poorly knowledgeable
1	Very Low	No knowledge

Description	5	4	3	2	1
1. Republic Act 9003					
2. Solid waste management (SWM)					
3. Policies on SWM program					
4. Purpose of the management in implementing SWM at school					
5. Importance of SWM					
6. Practicing SWM saves money and energy					
7. The roles and responsibilities of the community toward the SWM program					
8. Implementation will be successful and effective if concerned people will participate					
9. Proper disposal of garbage					
10. Discipline on SWM matters a lot					
11. Possible illnesses that you can get whenever trashes are not properly disposed					
12. Before throwing garbage, it is a must to read those trashcan labels for segregation					
13. Importance of recycling					
14. Identification if biodegradable from non-biodegradable					
15. Importance of segregation					
16. Waste minimization practices like reuse, recycle, and reduce					
17. Schools orientation on SWM program					
18. Practices on SWM implemented in school					
19. Advantages and disadvantages of SWM					
20. SWM program is a big help in the environment					
21. Degradation/destruction that wastes can cause to the environment					
22. "Clean as You Go Policy"					
23. Composting method for organic waste					
24. Sanctions for violation of not disposing of garbage properly					
25. Financial resources which can be generated from wastes					

PART III. SELF-AWARENESS OF ECOLOGICAL SOLID WASTE MANAGEMENT

Direction. Please rate the following statements by putting a check (✓) mark in the box provided, which corresponds to your honest answer. Kindly reflect your responses by using the scale below:

Scale	Description	Interpretation
5	Strongly Agree	Very Highly Aware
4	Highly Agree	Highly Aware
3	Moderately Agree	Moderately Aware
2	Slightly Agree	Poorly Aware
1	Disagree	Unaware

Statements	5	4	3	2	1
A. REDUCE					
1. I am aware that reducing the use of plastic bags is environmentally friendly.					
2. Using paper bags is a good alternative to using plastic when shopping.					
3. Reducing the use of plastic bottles decreases the stockpile of garbage.					
4. I am aware that reducing waste is beneficial to the community.					
5. At home, I encourage my family to avoid using disposable table wares.					
B. REUSE					
1. Reusing old clothes is cost-saving and practical.					
2. Reusing scratched papers is economically friendly.					
3. Reusing empty jars for other purposes reduces the generation of non-biodegradable waste.					
4. Repairing usable household cleaning tools help save money and decreases household garbage.					
5. Keeping old but usable items saves dumpsite space.					
C. RECYCLE					
1. Recycling items is cost-saving.					
2. Recycling is the most commonly used waste management practice.					
3. It is essential to motivate my family on recycling waste materials at home.					
4. Recycling items provides more opportunities to reduce waste.					
5. Recycling allows household members to value their belongings and respond to environmental concerns.					

PART IV. SELF-ASSESSMENT OF ECOLOGICAL SOLID WASTE MANAGEMENT PRACTICES

Direction. Please rate the following statements by putting a check (√) mark in the box provided, which corresponds to your honest answer. Kindly reflect your responses by using the scale below:

Scale	Description	Interpretation
5	Always	Fully Practiced
4	Often	Highly Practiced
3	Sometimes	Moderately Practiced
2	Rarely	Poorly Practiced
1	Never	Not Practiced

Economic Dimension	(5)	(4)	(3)	(2)	(1)
1. I refrain from buying disposable products such as food containers, and cellophane among others, instead I bought reusable ones.					
2. At home, I instruct my children to keep empty bottles and plastic containers and sold them to garbage buyers.					
3. I utilize empty big plastic containers to be used as trash bins.					
4. I bring my reusable items to junkshops and sold them at a reasonable price.					
5. I encourage my family and my neighbors to wise utilization of garbage and make money from it.					
Environmental Dimension					
1. I do proper waste disposal because it is important for the protection and sustainability of our environment.					
2. We have a compost pit in our backyard where we properly dispose of all our wastes.					
3. I prefer burning dried leaves rather than burning plastic and rubberized materials.					
4. I apply the integrated approach of organic composting of garbage that is used in home gardening					
5. My family used to dispose of our wastes that minimize environmental damage.					
Health Dimension					
1. I am equipped with personal protective paraphernalia like gloves, masks, and boots in collecting waste.					
2. I dispose of my leftover foods in the right container/receptacle.					
3. I clean and wash the trash bins or receptacles after garbage disposal to avoid an unpleasant smell.					
4. I use rubbing alcohol in sanitizing my hands before and after collecting waste.					

5. I use to dispose of tin cans properly so that no mosquito can thrive and reduce the risk of dengue fever and other illnesses.					
Social Dimension					
1. I participate in a community-based educational forum on ecological protection and conservation.					
2. I join waste management programs implemented by the Local Government through the motivation of our Barangay Officials.					
3. I use to practice "CLAYGO" or "Clean As You Go" wherever I am and encouraged my fellows to do the same.					
4. I set myself as an example of cooperative participation in waste management in our Barangay.					
5. I share valuable ideas with my neighbors on the positive effects of proper waste management on the community.					

APPENDIX C
Analysis of the Significant Difference in Knowledge, Awareness, and Practices

APPENDIX C-1
Analysis of the Significant Difference in Knowledge on Waste Management when Grouped According to Profile of the Respondents

Source	Type II Sum of Squares	Df	Mean Square	F	Sig.
Age	0.277	4	0.069	1.266	.288
Gender	12.644	2	6.322	115.687	0.000
@EQ	1.118	3	0.373	6.817	0.000
Error	5.410	99	0.055		
Total	2050.536	131			
Corrected Total	25.918	130			

APPENDIX C-2
Tukey's Test on Knowledge on Waste Management when Grouped According to Profile of the Respondents

High Educational Attainment	Number of Respondents	Tukey's mean grouping	
		1	2
Elementary graduate	42	3.698095	
others	4	3.940000	3.940000
High school graduate	61		4.006557
Collage graduate	24		4.146667

APPENDIX C-3
Analysis of the Significant Difference in the Awareness of Waste Management when Grouped According to Profile of the Respondents

Source	Type II Sum of Squares	df	Mean Square	F	Sig.
Age	0.136	4	0.034	1.675	0.162
Gender	9.161	2	4.580	226.228	0.000
@EQ	0.042	3	0.014	0.686	0.562
Error	2.004	99	0.020		
Total	2027.449	131			
Corrected Total	15.914	130			

APPENDIX C-4
Analysis of the Significant Difference in the Practices in Waste Management when Grouped According to Profile of the Respondents

Source	Type II Sum of Squares	df	Mean Square	F	Sig.
Age	0.376	4	0.094	3.573	0.009
Gender	11.904	2	5.952	226.348	0.000
@EQ	0.027	3	0.009	0.340	0.796
Error	2.603	99	0.026		
Corrected Total	19.529	130			

APPENDIX C-5
Tukey's Test on Practices on Waste Management when Grouped
According to Profile of the Respondents

Age	Number of Respondents	Tukey's mean grouping		
		1	2	3
61 above	8	3.550000		
31-40 years old	28		3.760714	
51-60 years old	27		3.844444	
30 below	28		3.862500	3.862500
41-50 years old	40			3.997500

APPENDIX C-6
Analysis of the Relationship Between Awareness and Practices

	Mean	Std. deviation	Number of respondents	Computed r	Significant level
Awareness	3.91	.34	131	0.794	.000
Practices	3.85	.38	131		