MIJRD Multidisciplinary International Journal of Research and Development

Multidisciplinary International Journal of Research and Development

Volume: 03 / Issue: 05 / 2024 - Open Access - Website: www.mijrd.com - ISSN: 2583-0406

Solid Waste Management Awareness and Practices in Baguio Central University: Provision of a Functional Solid Waste Management Program

Marilou A. Dela Peña[1], Jolly B. Mariacos[2], and Lorelie S. Malit[3]

[1]Research Director, Baguio Central University

[2]Faculty, Baguio Central University

[3]University Property Custodian and Occupational and Safety Officer, Baguio Central University

Abstract— The study aims to determine the respondent's Solid Waste Management Awareness and Practices in Baguio Central University. The study seeks to assess the different solid waste management practices as to segregation, waste reduction, waste recycling and reuse, and waste disposal, and the level of awareness of solid waste management. The survey questionnaire was used as the main data-gathering instrument for this study. The respondents were the second-year college students. The descriptive method of research was used. The researchers employ various data gathering procedures such as observations, the use of questionnaires, and pure research in gathering data. Various statistical measurements were used such as frequency distribution, percentage distribution, and weighted mean. Based on the consolidation of the result of the study the following findings were drawn: the level of agreement of the respondents as to the practices of solid waste management in terms of, segregation, waste reduction, waste recycling and reuse, and waste disposal is highly agreed, and the level of awareness of the respondents on solid waste management practices is much aware. Based on the findings the following conclusions were drawn: The respondents agreed on the solid waste management practices in segregation in terms of waste reduction, waste recycling and reuse and waste disposal. And the respondents are aware of the different solid waste management practices, and the results revealed that the respondents have a knowledge on various practices of waste management and to sustain progress and strengthen the knowledge of the student respondents a program where developed.

Keywords— awareness, biodegradable, community, economic growth, information, management, modernization, organizations, training, skills.

I. INTRODUCTION

Countries over time experience development with the growth of industrialization and globalization. Thus, a discussion has been developed if this development is sustainable. "Development practitioners have focused on sustainable development as an environmental concept placing the emphasis on intergenerational equality focus on future development of the world" (Carter, 2001). According to World Conservation Strategy (WCS) development depends on environmental conservation (Adams, 2009). Sustainable use of the environmental resources and services are very important for sound environmental development. Thus, the human way of life has placed a lot of pressure on the environment because of their high consuming behavior which is accelerating simultaneously with economic development. This matter has raised awareness of sustainable development which integrating the natural world and the human social world towards future prosperity. Therefore, development

practitioners, policy makers and international organizations realize the point that there must be a harmonious co-existence among human society, development and environment in order to achieve sustainable development.

Solid waste management is one of the challenges faced by many countries. Poor solid waste management will lead to various problems in health, environment, and socio-economic aspects. Since, the educational institution is an agent of change and through R.A. No. 9003, solid waste management concepts are being integrated into science education.

In Sri Lanka, the recent development activities have challenged the environment in various ways. According to the National Environmental Action Plan (NEAP), management of solid waste has been identified as one of the major challenges for sound environmental development in Sri Lanka. The Ministry of Forestry and Environment introduced the National Strategy for Solid Waste Management (NSSWM) to provide the overall guidance for the management of solid wastes. However, the management of solid waste in Sri Lanka is rather chaotic and the required framework for developing an appropriate waste management system has been in place for quite a while in the country (Bandara, 2008).

Sections 55–56 of the Philippine Republic Act the Ecological Solid Waste Management Act, often known as 9003 contains a requirement that the national government in Department of Education (DepEd) cooperation Technical Training and Skills Improvement the Commission on Higher Education; Information on education (CHED) in the Philippines. The agency (PIA) ought to organize a continuous education and a solid waste information campaign administration and improve the integration of School-related environmental issues (Paghasian, 2017 as cited by Bautista, P. R., 2019).

The Philippines, being one of the developing countries in the Southeast Asia, has a dynamic and rapid economy due to increasing urbanization, growing middle class and it has a large and young population (World Bank, 2020). According to World Bank (2019), there will be an increase on waste generation annually all over the globe by 70% from 2.01 billion tons in 2016 to 3.40 billion tons by 2050. Thus, solid waste management is vital.

In the 1987 Philippines Constitution, Article II, Section 16, emphasizes that the state shall protect and advance the right of the people to a balance and healthful ecology in accordance with the rhythm and harmony of nature. In response to this, there have been several methods to address the emerging waste management problems.

Philippines is an archipelagic country located in the Southeast Asia. It has a dynamic and rapid economy due to increasing urbanization, growing middle class and it has a large and young population (World Bank, 2020). Given this condition, solid waste production in the Philippines also increases (Castillo & Otoma, 2013). Republic Act No. 9003 (Ecological Solid Waste Management Act of 2000) defined solid waste as all discarded household, commercial waste, non-hazardous institutional and industrial waste, street sweepings, construction debris, agriculture waste, and other non-hazardous/non-toxic solid waste. It is also evident that in other places, solid waste production is increasing.

In the study of Gequinto (2016), the extent on solid waste management practices among college students from different state universities and colleges in CALABARZON were determined. Of which, waste collection got the

Volume: 03 / Issue: 05 / 2024 - Open Access - Website: www.mijrd.com - ISSN: 2583-0406

highest composite mean particularly on the promotion of 3Rs (reduce, reuse, recycle) while waste recycling and waste treatment obtained the lowest composite mean.

The Ecological Solid Waste Management (Solana et al., 2016) in the Philippines also referred to as Republic Act 9003 is one of the national programs mandated to address the issue on solid waste management. Solid waste management mainly refers to the complete process of collecting, treating and disposing solid wastes.

However, in the past 22 years of its implementation, solid waste management tend to be ignored (Masood, Barlow, & Wilson, 2009) and there has been little transformation in solid waste management. A major environmental challenge in cities nowadays is the generation of municipal solid waste (MSW) (Pattnaik & Reddy, 2010).

Commission on Higher Education (CHED) and other national agencies to carry continuing education and information dissemination program on solid waste management. The education and information dissemination should focus on a.) develop public awareness on the will – effects and community – based solution to the solid waste problem; b.) provide feasible activities which will have greatest impact on solid waste problem; and c.) encourage the public to patronize environmentally friendly products. Furthermore, R.A. No. 9512 (Environmental Awareness and Education Act of 2008) requires the mentioned agencies to integrate environmental education in the school curricula at all levels, whether public or private schools.

The research gap in solid waste management knowledge and practices refers to areas that require further research and analysis to improve our comprehension of particular waste management elements. There may be certain research gaps in this field, such as: Public awareness and education:

The significant of the study will impart the Reduce, Reuse, Recycle (3Rs) by limiting consumption, reusing goods, and recycling materials rather than disposing of them in landfills, individuals and communities are encouraged to reduce waste output. These procedures have a big impact on sustainable development, resource conservation, pollution reduction, and efficient solid waste management.

The study will benefit the following multiple stakeholders can gain from the research of solid waste management understanding and practices.

Municipalities and local governments can adopt more efficient waste management systems, resulting in cost savings and better environmental outcomes, with a better awareness of the community's waste management practices (Bank Group 2018).

Local communities: Raising people's awareness and knowledge of effective waste management methods can encourage them to adopt sustainable habits, making their communities cleaner and healthier.

Institution and other Agencies Institutions can spread awareness among the populace of the value of trash minimization, recycling, and appropriate waste disposal techniques. Promoting awareness campaigns and offering instructional materials can influence people's behavior to adopt more environmentally friendly garbage disposal techniques (United Nations Environment Programme 2018).

Volume: 03 / Issue: 05 / 2024 - Open Access - Website: www.mijrd.com - ISSN: 2583-0406

Academics and researchers: The study can add to the corpus of research in this area by advancing our understanding of solid waste management. Additionally, it might point out places where present procedures fall short and recommend new research and development directions (Environmental Protection Agency2021).

This study will analyze solid waste management awareness and practices to help improve the community by sharing and utilizing the study's findings.

A. Review of Related Literature

The theories and concept of the study was based from the following: Theory of Planned conduct (TPB): According to TPB, attitudes, subjective norms, and perceived behavioral control all have a significant impact on a person's conduct. This theory stresses understanding human attitudes and beliefs about waste reduction, social norms influencing waste management behaviors, and the perceived control people feel they have over their waste management behaviors in the context of solid waste management (Ajzen, I. (1991). Solid waste management is one of the world's greatest development challenges. Not only does poor solid waste management damage the environment and health, but it also inhibits the nation's progress towards sustainability. Schools are among the major garbage generators in any city or country.

According to the Social Learning Theory (SLT), people pick up new behaviors through modeling, imitation, and observation. It implies that social norms in one's immediate area and seeing the habits of others, such as family, friends, or neighbors, might have an impact on one's waste management practices (Bandura, A. 1977).

The Theory of Sustainable Behavior (TSB) is concerned with how individuals' decision-making processes might be influenced by environmental values, beliefs, and norms. With ideas like environmentally conscious attitudes, recycling habits, and waste reduction measures, it addresses the broader context of sustainability (Lorenzoni, et al 2007).

Waste Management Theory (WMT) has been introduced to channel environmental sciences into engineering design. WMT is a unified body of knowledge about waste and waste management. It is an effort to organize the diverse variables of the waste management system as it stands today. WMT is considered within the paradigm of Industrial Ecology, and built side-by-side with other relevant theories, most notably Design Theory. Design Theory is a relatively new discipline, still under development. Following its development offers valuable insights about evolving technical theories. According to Love (2002), it is crucial to theory development to integrate theories from other bodies of knowledge, as well as the clarification of the definitions of core concepts, and mapping out key issues, such as domains, epistemologies and ontologies. At the present stage of WMT development, scientific definitions of key concepts have been offered, and evolving of WMT under the paradigm of Industrial Ecology is in progress (Pongracz, 2014).

Concept of the study for solid waste management typically involves various elements that guide the process of waste management: trash Generation and Segregation: Understanding the factors influencing trash generation rates and patterns are often included in the study for solid waste management. encouraging the separation of

garbage at the source to make recycling and correct disposal easier as stated by (Troschinetz, A. M., & Mihelcic, J. R. 2009).

Transportation and Collection: Setting up effective collection methods based on the kind and volume of waste. Reducing the cost and environmental impact of transportation routes (Medina, M. et al 2011).

Treatment and Disposal: Identifying appropriate treatment technologies such as composting, recycling, or waste-to-energy. - Ensuring proper disposal of residual waste in environmentally sound facilities (Cointreau, S. J. 2006).

Objective of the Study

The objectives of the study were the following: Assessing the level of awareness among individual college students about solid waste management practices, Identifying the gaps or areas of improvement in current waste management practices, and understanding the existing practices and behaviors related to waste reduction, segregation, waste recycling, and waste disposal. These goals direct the study process, allow for sustainable interventions, and enhance solid waste management procedures.

Statement of the Problem

The study aims to find out the solid waste management awareness and practices in Baguio Central University. Specifically, it sought to answer the following questions;

1. What is the level of agreement of the respondents as to the practices on solid waste management?
2. What is the level of awareness of the respondents on solid waste management practices?

Assumptions of the Study

The following are the assumptions of the study that was tested:

1. The level of agreement of the respondents as to the practices of solid waste management described in terms of the following is moderate agree
2. The level of awareness of the respondents on solid waste management practices is moderate agree.

III. METHODOLOGY

This chapter presents the research design, locale and population of the study, data gathering tool, reliability and validity of the research instrument, data gathering procedure and statistical treatment of data.

Research Design

In this study, a descriptive research design was used. Descriptive research aims to accurately and systematically describe a population, situation or phenomenon. A descriptive research design can use a widely variety of research methods to investigate one or more variables of which the researchers does not control or manipulate any of the variables As a survey method, descriptive research designs help researchers identify characteristics in their target market or particular population. These characteristics in the population sample can be identified, observed and measured to guide decisions. Specifically, it will employ descriptive research design. As stated by Vijayamohan (2022), The concluded that the goal of all descriptive studies is to explore the background, details, and existing

Volume: 03 / Issue: 05 / 2024 - Open Access - Website: www.mijrd.com - ISSN: 2583-0406

patterns in the problem to fully understand it. The purpose of quantitative research is to attain greater knowledge and understanding of the social world. Researchers use quantitative methods to observe situations or events that affect people. Quantitative research produces objective data that can be clearly communicated through statistics and numbers (SAGE, 2017).

The quantitative approach of research was used as a method of investigation. According to Creswell, quantitative research is "a means for exploring and understanding the meaning individuals or groups ascribe to a social or human problem. The process of research involves emerging questions and procedures, data typically collected in the participant's setting, data analysis inductively building from particulars to general themes, and the researcher making interpretations of the meaning of the data. The final written report has a flexible structure". In facilitating the gathering of data, the study will utilize descriptive quantitative approach. "Gathering facts about the current existent condition". Some strategies of inquiry that are mainly associated with quantitative research include survey research and experimental research (Creswell, J. W. 2014).

Respondents of the Study

The study was conducted at Baguio Central University, Baguio City. The respondents of the study were college student with a total of 285 students enrolled in different courses offered which are College of Engineering, College of Business Administration, College of tourism and Hospitality Management, College of Teacher Education and Liberal Arts, College of Criminal Justice, and College Nursing and Midwifery, and in the said institution for the academic year 2023-2024 since they already finished their environmental awareness and education in their curricula will participate in the study. Total enumeration will be used in the study.

Research Instrument

A checklist questionnaire was used as the primary gathering tool for the data of this study made by the researchers.

The researcher used a standardized Solid Waste Management Awareness and Practices Questionnaire (SWMAPQ) developed by Gantang (2022). The questionnaire has two parts. Part 1 deal on the level of agreement of the respondents on the practices of solid waste management and Part 2 on the level of awareness of the solid waste management practices.

Validity and Reliability of the Instrument

Before the questionnaire was finalized, it was pretested to ten (10) college students in Baguio Central University who were not included in the final administration of the questionnaires. The researchers personally distribute and retrieved the questionnaire from the try-out respondents.

The reliability of the questionnaire was tested by using the Kuder-Richardson Formula 21 for calculating the reliability. The coefficient reliability was 0.85 which highly reliable computed which was interpreted below by (Subong, 2006).

Kuder-Richardson 21 instrument reliability equation

Volume: 03 / Issue: 05 / 2024 - Open Access - Website: www.mijrd.com - ISSN: 2583-0406

rK-R21= $\frac{NS^2 - m(N-m)}{S^2(N-1)}$

Where:

N = number of items in the questionnaire

m = mean

s2 = variance

x = number of items in the questionnaire answered by each respondents.

To establish the validity of the questionnaire, content validity was used to determine what each specific problem requires an answer. Based on the analysis of the problem, the questions were formulated. The formulated questions were critically analyzed by the researchers to ensure the congruency of the formulated questions and the specific problem.

Data Gathering Procedure

The researchers notified the respective deans to distribute the questionnaires. The study's aims were explained to the chosen respondents to ensure accuracy of data and answers. The researchers will ensure 100% retrieval of the questionnaires.

Treatment of Data

The gathered data was tallied and tabulated. Mean, average weighted and the scale was used to assess waste management methods such as segregation, waste reduction, reuse and recycling.

The statistical treatment used in the study were frequency counts and weighted mean.

The frequency count was used in determining the number of responses for each question.

The weighted mean was used to determine the weight of responses. The formula used was (Subong, 2006)

The formula will be used was (Subong, 2006).

WM = $\frac{\sum fn}{N}$

Where: WM= weighted mean

$\sum$ = summation

f = frequency

n= nominal value

The results of the computation were analyzed and interpreted using the five (5) point scale used were as follows:

Multidisciplinary International Journal of Research and Development

Volume: 03 / Issue: 05 / 2024 - Open Access - Website: www.mijrd.com - ISSN: 2583-0406

To answer the problem 1 about the level of agreement of the respondents as to the practices on solid waste management the following statistical limits was employed.

Numerical Value	Statistical Limit	Descriptive Equivalent	Symbol
5	4.21 – 5.00	Very Highly Agree	VHA
4	3.41 - 4.20	Highly Agree	HA
3	2.61 - 3.40	Moderately Agree	MoA
2	1.81 - 2.60	Slightly Agree	SA
1	1.00 - 1.80	Least Agree	LA

For problem 2 the level of awareness of the respondents on solid waste management practices.

Legend:

Numerical Value	Statistical Limit	Descriptive Equivalent	Symbol
5	4.31 – 5.00	Very Highly Agree	VHA
4	3.41 – 4.30	High Agree	HA
3	2.61 – 3.40	Moderately Agree	MoA
2	1.81 – 2.60	Slightly Agree	SA
1	1.00 – 1.80	Least Agree	LA

RESULTS AND DISCUSSION

This chapter presents the results of the data gathered from the field. The data were subjected for statistical treatment, interpretation and analysis of data.

The Level of Agreement of the Respondents as to the Practices on Solid Waste Management in terms of, Segregation, Waste reduction, Waste recycling and reuse, and Waste disposal

It displays the respondents' agreement levels regarding practices in solid waste management based on enumerated indicators. Segregation received the highest rating of 4.12, indicating strong agreement and implementation of solid waste management ordinances by local government units and institutions. Following closely was waste reduction at 4.10, signaling a high level of awareness and agreement on segregation practices. Waste disposal received a mean of 4.00, while reuse and recycling had the lowest mean of 3.98, all indicating a high level of awareness. These results suggest consistent but not fully applied solid waste management practices within the institution. (Bussala 2010) highlighted that involving students in waste management programs leads to effective and sustainable implementation. Additionally, faculty play a crucial role as promoters and leaders in the school's waste management initiatives, influencing students to follow suit.

MIJRD Multidisciplinary International Journal of Research and Development

Volume: 03 / Issue: 05 / 2024 - Open Access - Website: www.mijrd.com - ISSN: 2583-0406

The Level of Agreement of the Respondents as to the Practices on Solid Waste Management in terms of, Segregation, Waste reduction, Waste recycling and reuse, and Waste disposal

1. Segregation	5	4	3	2	1	TWP	WM	DE
1.1 I separate biodegradable (paper, banana peels, cardboard, and vegetables) and non-biodegradable (plastic toys, glass, steel, rubber) wastes at school	178 890	72 288	32 96	3 6	0 0	1280	4.49	VHA
1.2 I separate recyclable wastes (paper, cardboard, plastic bottles) from non-recyclable (food wastes, leaves, twigs) wastes at school.	121 605	97 388	66 198	1 2	0 0	1193	4.19	HA
1.3 I separate non-harmful wastes from toxic and hazardous wastes such as pentel pens, laboratory chemicals, ink, cell batteries and others.	92 460	116 464	77 231	0 0	0 0	1155	4.05	HA
1.4 I mix all the garbage in one garbage container.	66 330	87 348	78 234	34 68	20 20	1000	3.51	HA
1.5 I segregate recyclable items for collection.	74 370	98 392	61 183	52 104	0 0	1049	3.68	HA
1.6 I am reading the waste bin label before throwing garbage.	116 580	81 324	66 198	22 44	0 0	1146	4.02	HA
1.7 I observe the proper waste segregation.	115 575	119 476	45 135	6 12	0 0	1198	4.20	HA
1.8 I only practice proper segregation if someone remind me or ask me to do it.	98 490	113 452	67 201	7 14	0 0	1157	4.06	HA
1.9 I practice proper waste segregation in school like the way we are practicing at home.	160 800	120 480	5 15	0 0	0 0	1295	4.54	VHA
1.10 I practice proper waste segregation to serve as a model for others and to influence	165 825	98 392	17 51	5 10	0 0	1278	4.48	VHA
Average Weighted Mean							4.12	HA
2.Waste Reduction								
2.1 I borrow, share, and/or rent things that are needed occasionally.	116 580	144 576	16 48	5 10	4 4	1218	4.27	HA
2.2 I buy only what I need so that I will not end up throwing away extra food.	118 590	121 484	43 129	2 4	1 1	1208	4.24	HA
2.3 I always bring packed lunch in reusable lunchbox.	89 445	145 580	33 99	18 36	0 0	1160	4.07	HA
2.4 I bring water in reusable water containers.	144	116	18	5	2			

	720	464	54	10	2	1250	4.39	VHA
2.5 I am cautious and responsible to every waste I produced.	142 710	111 444	24 72	8 16	0 0	1240	4.36	VHA
2.6 I bring containers for food and bought	117 585	118 472	49 147	1 2	0 0	1206	4.23	HA
2.7 I bring reusable bags and basket whenever I go to market.	112 560	119 476	36 108	18 36	0 0	1180	4.14	HA
2.8 It is more comfortable for me to use available plastics from the vendor.	88 440	112 448	72 216	8 16	5 5	1124	3.95	HA
2.9 It's awkward to bring container when buying cooked food for takeout	56 280	89 356	115 345	25 50	0 0	1031	3.62	HA
2.10 I practice zero-waste initiative to help reduce waste production	88 440	72 288	99 297	23 46	3 3	1074	3.77	HA
Average Weighted Mean							4.10	HA
3. Reuse and Recycling								
3.1 I convert or redesign waste materials into new product.	133 665	118 472	34 102	0 0	0 0	1239	4.35	VHA
3.2 I make decors out of plastic wrappers and other colorful waste materials	156 780	87 348	42 126	0 0	0 0	1254	4.40	VHA
3.3 I ignore the importance of recycling	24 120	34 136	67 201	58 116	102 102	675	2.37	SA
3.4 I initiate generating income out of waste materials	168 840	64 256	23 69	18 36	12 12	1213	4.26	HA
3.5 I re-use plastic bottle container as long as it is still reusable	87 435	102 408	65 195	31 62	0 0	1100	3.86	HA
3.6 I reuse my old materials than buying a new one	76 380	89 365	111 333	9 18	0 0	1087	3.81	HA
3.7 I keep those unfilled papers and use it as scratch.	101 505	123 492	56 168	5 10	0 0	1175	4.12	HA
3.8 I reuse grocery bags.	109 545	121 484	55 165	0 0	0 0	1194	4.19	HA
3.9 I reuse washable food containers.	124 620	104 416	57 171	0 0	0 0	1207	4.24	HA
3.10 I reuse scrap paper into memo pads.	100 500	132 528	53 159	0 0	0 0	1187	4.16	HA
Average Weighted Mean							3.98	HA

4.Waste Disposal								
4.1 I dispose hazardous/toxic/special wastes such as laboratory leftover (chemicals) or electronic waste in any garbage container.	154 770	120 480	8 24	3 6	0 0	1280	4.49	VHA
4.2 I throw my waste anywhere as long as no one see me.	119 595	78 312	53 159	23 46	12 12	1124	3.94	HA
4.3 I practice waste recycling and re-use for recyclable and reusable materials than immediate waste disposal	97 485	89 356	88 264	11 22	0 0	1127	3.95	HA
4.4 I use aerobic and anaerobic composting for biodegradable waste.	99 495	78 312	98 294	10 20	0 0	1121	3.93	HA
4.5 I practice the separation of wet waste and dry waste disposal.	124 620	124 496	35 105	2 4	0 0	1225	4.30	HA
4.6 I throw waste materials in common open dumps	87 435	92 368	78 234	23 46	5 5	1088	3.82	HA
4.7 I dispose biodegradable wastes into a compost pit.	89 445	78 312	56 168	54 108	8 8	1041	3.65	HA
4.8 I burn waste materials.	78 390	87 348	92 276	24 48	4 4	1066	3.74	HA
4.9 I throw and leave my garbage anywhere.	98 490	75 300	89 267	15 35	8 8	1095	3.84	HA
4.10 I agree if there will be a sanitary landfill in the nearby area for waste disposal and processing.	142 710	87 348	56 168	0 0	0 0	1226	4.30	HA
Average Weighted Mean							4.00	HA

As presented in the table it can be viewed that the respondent rated the I practice proper waste segregation in school like the way we are practicing at home with a weighted mean of 4.54 which interpreted as very highly agree. This means that the respondent fully practiced solid waste management at home and school. Further, it attested that the school stakeholder fully understands the significance of the implementation of proper and order waste disposal practices. Also, the respondents rated the I dispose hazardous/toxic/special wastes such as laboratory leftover (chemicals) or electronic waste in any garbage container and I separate biodegradable (paper, banana peels, cardboard, and vegetables) and non-biodegradable (plastic toys, glass, steel, rubber) wastes at school with both weighted mean of 4.49. This implies that the students practiced fully the feeding of left over foods to pets. Selling of bottles, plastics, cans and other scraps to junkshops; avoiding the use of toxic and hazardous materials and chemicals; collection of garbage by municipal trucks; reuse of reusable materials; segregation of biodegradable from non-biodegradable wastes and acquisition of sanitary landfill is practiced to a moderate level.

Volume: 03 / Issue: 05 / 2024 - Open Access - Website: www.mijrd.com - ISSN: 2583-0406

The finding indicates that students actively engage in feeding leftover foods to pets, selling recyclable materials to junkshops, avoiding the use of hazardous materials, utilizing municipal garbage collection services, reusing materials, and separating biodegradable from non-biodegradable waste.

According to (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.

The high weighted mean of 4.48 for "I practice proper waste segregation to serve as a model for others and to influence" suggests a very high level of awareness and commitment among students. This indicates that students are not only well-educated about proper waste segregation themselves but also actively engage in these practices to serve as role models within their community. They aim to influence and encourage others to adopt similar responsible waste segregation practices. They serve as influential figures within their community by demonstrating and advocating responsible waste segregation. This commitment reflects their aspiration to inspire and motivate others to embrace similar conscientious waste management habits.

I bring water in reusable water containers with a weighted mean of 4.39, I am cautious and responsible to every waste I produced with a weighted mean of 4.36, and the I convert or redesign waste materials into new product with a weighted mean of 4.35 which all interpreted as very highly agree. These scores suggest that individuals are highly inclined to use reusable containers for water, exhibit caution and responsibility in managing their generated waste, and actively engage in repurposing or converting waste materials into new products. This reflects a collective mindset of responsible and eco-conscious behavior toward waste management and sustainability.

This implies that high agreement levels on community or group that is highly conscientious, environmentally aware, and actively engaged in practices that promote sustainability and responsible waste management. This agrees with the view of Ibrahim and Babayemi (2010) who emphasized that education should make young people aware of environmental problems. For this to be done in any significant way, there is the need to collect baseline data on students' understanding while in their teacher training programs. Particularly, their awareness about environmental problems and attitudes toward the solid waste management activities that are part of their learning process.

The least indicators rated by the respondent were the I ignore the importance of recycling with a weighted mean of 2.37 which is interpreted as slightly agree. This implies that the solid waste management ordinance was implemented, and it is not taken for granted in the city so it was observed that it was fully implemented in the institution. This suggests that the solid waste management ordinance implemented in the city is not taken for granted. The institution seems to have successfully enforced and fully implemented this ordinance. The fact that respondents only slightly agreed with ignoring the importance of recycling could indicate a general awareness or acknowledgment of the significance of recycling within the context of the city's waste management initiatives. This recognition might stem from the effective implementation of waste management practices and education within the institution. Recycling information may not be effective without a clear understanding of the stage at which the information should be provided. Previous projects have adopted and introduced specific recycling information, in

particular prompts before and after the introduction of recycling schemes. While information was used before the scheme to create scheme awareness (Vicente, 2008)

The Overall, findings indicate a generally positive attitude and active engagement among respondents towards various aspects of solid waste management. It highlights strong support for segregation and waste reduction, very high agreement on recycling and reuse, and a decent level of consensus on waste disposal practices. This suggests an encouraging foundation for effective waste management initiatives within the surveyed group.

The assumption on the level of agreement of the respondents as to the practices on solid waste management described in terms of the following are moderate agree is negated.

The Level of Awareness of the Respondents on:

Solid Waste Management Practices

As to the result an average weighted mean of 3.86, as indicated in the table, suggests a high level of awareness or agreement regarding a particular aspect related to solid waste management. This rating, with a descriptive equivalent of much aware, implies a significant understanding or endorsement of a specific practice or concept within the realm of waste management.

Statements on the Awareness of Solid Waste Management	***VHA***	***HA***	***MA***	***SA***	***LA***			
	5	**4**	**3**	**2**	**1**	**TWP**	**WM**	**DE**
1. I have knowledge about Republic	120	148	12	5	0	285		
Act 9003 or the Ecological Solid	600	592	36	10	0	1238	4.34	VMA
Waste Management Act of 2000								
2. I am aware of the Solid Waste	178	93	14	0	0	285		
Management (SWM) Program	890	372	42	0	0	1304	4.58	VMA
of the school								
3. I am familiar on the policies	87	87	111	0	0	285		
of the school's solid waste	435	348	333	0	0	1116	3.92	MA
management program.								
4. I know the	12	87	80	5	1	185		
Corresponding sanctions	60	348	240	10	1	659	2.31	SA
of any violations of the								
Solid Waste management								
(SWM) program.								
5. I am properly informed	87	93	87	17	1	285		
on the purpose of implementing the Solid Waste Management (SWM)	435	372	261	34	1	1103	3.87	MA
program.								
6. I am knowledgeable on possible	79	84	65	45	12	285		
illnesses that one can get whenever	395	336	195	90	12	1028	3.61	MA
trashes are not properly of disposed.								
7. I am aware that before throwing	134	72	61	10	8	285		
garbage, it is a must to read those	670	288	183	20	8	1169	4.10	MA
trash-can labels for segregation.								
8. I can distinguish and identify	106	92	42	45	0	285		
biodegradable from non-	530	368	126	90	0	1114	3.91	MA

biodegradable.								
9. I am well informed on the	71	109	95	10	0	285		
importance of recycling.	355	436	285	20	0	1096	3.85	MA
10.I practice waste minimization	119	91	75	0	0	285		
practices like reuse, recycle	595	364	225	0	0	1184	4.15	MA
and reduce.								
Average Weighted Mean							3.86	MA

The high mean score signifies a considerable consensus or knowledge level among the respondents regarding this particular aspect, indicating its importance or prominence within the context of the study.

In the Philippines, the Section 55-56 of Republic Act 9003 or The Ecological Solid Waste Management Act stipulates that the national government in coordination with Department of Education (DepEd), Technical Education and Skills Development Authority (TESDA); Commission on Higher Education (CHED) and Philippine Information Agency (PIA), should conduct a continuing education and information campaign on solid waste management and strengthen the integration of environmental concerns in school (Paghasian, 2017).

As to the respondents result, they rated I am aware of the Solid Waste Management (SWM) program of the school with a weighted mean of 4.58 with a descriptive equivalent of very much aware. This score implies that the respondents not only possess comprehensive knowledge of the SWM program but also likely have a deep understanding of its components, objectives, and implementation strategies.

Such a high rating suggests a robust familiarity and active engagement with the SWM initiatives, indicating a strong foundation for effective waste management practices within the school community. indicating that the respondents are mindful and aware that Solid Waste Management requires waste minimization for environmental protection and preservation.

This finding is congruent with Paghasian (2017) confirming that Filipino college students have favorable knowledge of SWM. Likewise, the earlier study by Abne, et al., (2017) found that the level of awareness, perception, and practices of students varied.

Moreover, the table displays the second indicators rated by the respondent as one of their awareness I have knowledge about Republic Act 9003 or the Ecological Solid Waste Management Act of 2000 with a weighted mean of 4.34.

This result suggests that the majority of the respondents are well-informed about Republic Act 9003, demonstrating familiarity with the legislation concerning ecological solid waste management. The high rating implies a significant understanding of the key principles, provisions, and objectives outlined in this Act, indicating a strong grasp of the legal framework for solid waste management practices mandated by the government.

The law provides for a comprehensive ecological solid waste management program by creating the necessary institutional mechanism and incentives, appropriating funds, declaring certain acts prohibited, and providing penalties (Aquino, 2013).

Volume: 03 / Issue: 05 / 2024 - Open Access - Website: www.mijrd.com - ISSN: 2583-0406

The respondent mentioned that practice waste minimization practices like reuse, recycle and reduce with a weighted mean of 4.15 as much aware suggests a deeply informed of awareness and commitment to practices like reusing, recycling, and reducing waste. This indicates a positive attitude towards environmental responsibility and sustainable actions. This implies that they are actively involved in minimizing waste and are likely conscious of the environmental impact of their actions.

In the study of (Catan, and Molina, 2020), Gaining students support and involvement promotes solid waste management practices. These practices include waste segregation, reduction, reuse, recycle and disposal. Table 2 shows the solid waste management practices among students in terms of segregation. Segregation as defined in Article 2, Sec. 3 of R.A. No. 9003, pertains to the process of separating materials from the origin to facilitate recycling, reuse of materials and reduce waste generation.

Other indicators that rated by the respondents

as much aware is the I am aware that before throwing garbage, it is a must to read those trash-can labels for segregation with a weighted mean of 4.10. This rating indicates a strong level of awareness and understanding among the respondents regarding the necessity of correctly sorting their garbage before disposal. This awareness signifies a consciousness about environmental conservation and the importance of individual actions in waste management, fostering a sense of responsibility towards sustainable practices.

In the study of Gequinto (2017), the extent of solid waste management practices among college students from different state universities and colleges in CALABARZON was determined. Of which, waste collection got the highest composite mean particularly on the promotion of the 3Rs (reduce, reuse, recycle) while waste recycling and waste treatment obtained the lowest composite mean.

I am familiar with the policies of the school's solid waste management program with a weighted mean of 3.92 with an interpretation of much aware.

This suggests a commendable level of awareness and understanding among respondents regarding the school's waste management policies, indicating a foundation for responsible waste disposal practices within the institution. Respondents have a good understanding of the policies governing the school's waste management program.

This suggests an engagement exposure to the guidelines established by the institution.

In the research conducted by (Presco and Cubillas, 2022). The result reveals that the stakeholders are very well-informed of the appointment of school representatives to the Barangay Ecological Solid West Management (ESWM) Board. Mostly, school representatives to this Barangay ESWM Board are the school principals or their School ESWM Coordinators.

Through their attendance at the meetings, they can share what the schools are doing with regard to ESWM activities and likewise gain support from the Barangay Local Government Units (BLGU) partners. However, encouraging students to bring "trash-free" baon is less emphasized in schools.

Volume: 03 / Issue: 05 / 2024 - Open Access - Website: www.mijrd.com - ISSN: 2583-0406

This may be due to the unavailability of such items at home and purchasing such items may not be much affordable for the parents and most of the students do not observe such policy is the schools unless there will be corresponding punishments or consequences imposed.

The above-mentioned indicators the respondents display a consistent and robust understanding of different facets related to waste management. This indicates a collective consciousness regarding environmental issues and the importance of responsible waste handling.

In summary, finding much aware responses consistently across different indicators reflects a solid foundation of environmental awareness and understanding. This can serve as a catalyst for implementing more extensive and impactful initiatives towards sustainable waste management and environmental conservation.

Paghasian (2017) got the same results. Paghasian said college students are well-versed in solid waste disposal. College students can recognize biodegradable and non-biodegradable garbage, but not the RA 9003.

Most college students understand the notion of reducing, reusing, and recycling, as well as the proper order to do so (Tiew, Watanabe, Basri, Zain, & Basri, 2013) Students in high school are also aware of garbage segregation, although few are aware of the fines associated with non-compliance (Trodillo et al., 2018).

From the respondents rated the I know the corresponding sanctions of any violations of the Solid Waste Management (SWM) program as the level of awareness on the SWM practices with a weighted mean of 2.31 which interpreted as slightly agree. The rating suggests that some awareness, for improvement in ensuring that individuals have a clearer understanding of the consequences of not adhering to waste management guidelines.

The assumption number 2 on the level of awareness of the respondents on solid waste management practices is moderate agree therefore is negated.

Overall, this rating highlights the need for clearer communication, education, or reinforcement of the consequences associated with violating the Solid Waste Management program. It could be an opportunity for educational initiatives or policy reinforcement to strengthen compliance and improve waste management practices.

In the summary the results, shows that the respondents display commendable awareness in solid waste management practices, highlights opportunities for more detailed education, targeted initiatives, and continuous engagement to further enhance their understanding and implementation of sustainable waste management practices.

IV. CONCLUSIONS

1. The respondents agreed on the solid waste management practices in segregation in terms of waste reduction, waste recycling and reuse and waste disposal. And the respondents are aware of the different solid waste management practices.
2. The results revealed that the respondents have a knowledge on various practices of waste management and to sustain progress and strengthen the knowledge of the student respondents a program where developed.

Volume: 03 / Issue: 05 / 2024 - Open Access - Website: www.mijrd.com - ISSN: 2583-0406

ACKNOWLEDGMENT

The researchers would like to express their profound and sincerest appreciation and thanksgiving to the following who brought together their support, love and understanding from the beginning up to the completeness of the study.

The Creator, God Almighty, the source of life, strength and wisdom, and whose vision of beauty and goodness keeps drowning her closer to Him;

Madam Margarita Cecilda B. Rillera, MBA, President of Baguio Central University, for her untiring, immeasurable love and continued support for students;

Elma D. Donaal, EdD, VP – Academic Affairs for her encouragement in the conduct of the study;

To the Panel of Examiners, chaired by Dr. Lourdes M. Trajano, Dr, Josephine M. Aguirre and Dr. Ma. Remedios O. Laroco, for their additional inputs to improve further the study;

The Bacguio Central University Librarians, for providing the reference and resource needed in this study

Thank you so much!

REFERENCES

[1] Abne K, Anasco J, Dagpin A, Igcalinos J, Lucagbo M, Mandamiento R, Quilang M, Galarpe V. (2017). Awareness, perception, and practices (APP) of undergraduate students towards solid waste management (SWM). Journal of Biodiversity and Environmental Sciences (JBES) ISS: 2220-6663 (Print) 2222-3045 (Online) 11(3), p. 159-168, 2017 http://www.innspub.net Ajzen, I. (1991). The theory of planned behavior. Organizational Behavior and Human Decision Processes, 50(2), 179-211. - Pampel, F. C., &

[2] Aquino, (2013). LGUs are mandated to establish materials.

[3] Bandura, A. (1977). Social learning theory. Englewood Cliffs, NJ: Prentice Hall. Weng, Y., & Lin, C. (2019). Applying social learning theory to explore generational differences in Taiwanese household waste management behavior. Sustainability, 11(20), 5636.

[4] Bank Group. (2018). What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050. Link: https://openknowledge.worldbank.org/handle/10986/30317 3. United States Environmental Protection Agency. (2021). Benefits of Waste Prevention. Link: https://www.epa.gov/smm/benefits-waste-prevention

[5] Bautista, P. R., (2019). Level of awareness and practices on solid waste management (SWM) among college students. Journal of Biodiversity and Environmental Sciences (JBES) ISSN: 2220-6663 (Print) 2222-3045 (Online) Vol. 14, No. 1, p. 131-138, 2019 http://www.innspub.net.

[6] Bandara, N.J.G.J. (2008). Municipal Solid Waste Management – The Sri Lankan Case. Paper Presented at Conference on Developments in Forestry and Environment Management in Sri Lanka.

[7] Busalla, Ann Rochelle (2010) The level of Waste Management Practices in the selected school in Cebu City: Proposed Improvement.

Volume: 03 / Issue: 05 / 2024 - Open Access - Website: www.mijrd.com - ISSN: 2583-0406

[8] Castillo, A. and Otoma, S. (2013). Status of Solid Waste Management in the Philippines. Retrieved from https://www.jstage.jst.go.jp/article/jsmcwm/24/0/24_677/_ article

[9] Cointreau, S. J. (2006). Integrated solid waste management: a lifecycle inventory. The World Bank.

[10] Creswell, J. W. (2014). Research Design: Qualitative, Quantitative and Mixed Methods Approaches (4th ed.). Thousand Oaks, CA: Sage.

[11] Hunter, K. (2020). Environmental factors and waste management behaviors: A test of the theory of planned behavior. Social Science Quarterly, 101(5), 2159-2178.

[12] Ibrahim, F.M., & Babayemi, O.F. (2010). Knowledge and attitude of a Group of Nigerian undergraduates towards environment.

[13] Lorenzoni, I., Nicholson-Cole, S., & Whitmarsh, L. (2007). Barriers perceived to engaging with climate change among the UK public and their policy implications. Global Environmental Change, 17(3-4), 445-459.

[14] Lanzini, P., Cowell, R., Morse, S., & Salvia, A. L. (2015). A theory of sustainable behavior in relation to household waste management. Environment and Behavior, 47(9), 973-994.

[15] McDougall, et al (2018). Integrated Solid Waste Management: A Life Cycle Inventory, John Wiley & Sons.

[16] Medina, M., Hiete, M., Prendes-Gero, M. B., & Sierra, R. (2011). Routing optimization models in solid waste management. Waste Management, 31(10), 2322-2333.

[17] Molina, Romenick Alejandro and Ivee Catan (2020). Solid Waste Management Awareness and Practices among Senior High School Students in a State College in Zamboanga City, Philippines

[18] Paghasian MC. (2017). Awareness and Practices on Solid Waste Management among College Students in Mindanao State University Maigo School of Arts and Trades. Advances in Social Science, Education and Humanities Research, Volume 128. 3rd International Conference on Education and Training (ICET 2017). Retrieved from https://www.innspub.net/wp-content/uploads/2022/04/JBES-V14-No1-p131-138.pdf

[19] Pongracz, Eva , Paul S. Phillips and Riitta L. Keiski, (2014). Evolving the Theory of Waste Management – Implications to waste minimization. Evolving_the_Theory_of_Waste_Management-Implicatio.pdf

[20] Presco, A.A. and Cubillas, (2022). Ecological Solid Waste Management Program of Elementary Schools in Agusan del Norte Divisio Success Stories, Challenges and Prospects

[21] SAGE (2017). Research Methods, Quantitative Research, Purpose of in 2017. https://www.gcu.edu/blog/doctoral-journey/why- quantitative-research-important

[22] Subong, P. and Beldia M. (2005). Statistics for Research, Application in Research.

[23] Taherzadeh, M.; Rajendran, K. (2015) Factors Affecting the Development of the Waste Management: Experience from Different Cultures. In Waste Management and Sustainable Consumption: Reflections on Waste; Estrom, K.M., Ed.; Routledge: Abingdon, UK, 2015. Retrieved from https://www.mdpi.com/2313-4321/6/1/6

[24] Tiew, Watanabe, Basri, Zain, & Basri, (2013). Tiew, K., Watanabe, J, Basri, L., Zain, M., & Basri W. (2013). Level of Recycling Awareness and Responses to On-Campus Recycling Facilities: Case Study- University Kebangsaan Malaysia Students. UNIMAS e-Journal of Civil Engineering, 4(1). Retrieved April 10, 2019, from UNIMAS e-Journal.

[25] Trodillo et al., (2018). Trondillo, M. Amaba, L, Paniza, K, & Cunol, H (2018). A solid waste management survey in Davao del Sur (school and household waste. Retrieved April 10, 2019, from AIP Conference Proceedings: https://aip.scitation.org/doi/pdf/10.1063/1.5022922

[26] Troschinetz, A. M., & Mihelcic, J. R. (2009). Sustainable recycling of municipal solid waste in developing countries. Waste Management, 29(2), 915-923.

[27] United Nations Environment Programme. (2018). Waste Management Outlook for Mountain Regions - Sources and solutions across the Himalayas. Link: https://www.unenvironment.org/resources/report/waste-management-outlook-mountain-regions-sources-and-solutions- across-himalayas. World

[28] Vicente, P. (2008); Reis, E. Factors influencing households' participation in recycling. Waste Manag. Res. 2008, 26, 140–146. https://www.mdpi.com/2313-4321/1/2/271

[29] Vijayamohan (2022). Descritpive research 101: Definition, Methods andExamples. https:// surveysparrow.com/blog/descriptive-research- 101-the-definitive-guide/

[30] World Bank. (2020). The World Bank in the Philippines. Retrieved from https://www.worldbank.org/en/country/ Philippines/overview