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Waste Disposal Practices of The Canteen Managers: Basis for School Environmental Protection Guidelines

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ABSTRACT

This study aimed to determine the Waste Disposal Practices of The Canteen Managers: Basis for School Environmental Protection Guidelines. The researcher selected ten (10) different school canteens in the Division of Malolos, where the ten (10) canteen managers were chosen to participate in the study. The researcher documented, categorized, counted, and tabulated the information received from the questionnaire. It was studied and evaluated to formulate reliable conclusions. To find out more about the participants' hurdles and other essential aspects, the study used a questionnaire and a set of interview guide questions written by the researcher. As statistical tools, frequency count, percentage, and weighted mean were utilized.

Results showed that waste reduction, waste disposal, and recycling are properly practiced inside the institution based on the school canteen managers. Communities across the country are facing mounting solid waste disposal problems. More than ever, reducing waste and recycling are intelligent tactics to incorporate into school canteen policies. School canteens can do a lot to minimize these potential cost increases by incorporating simple recycling and waste reduction programs and procedures to eliminate much of the waste otherwise thrown away. This will help the school's money, extend landfills' lives, and save valuable energy and natural resources. The data also reveal that the school canteen managers practiced the implementation of 3R's (Reduce, Reuse, Recycle) often. The school canteen managers are ever-increasingly aware of and more willing to embrace solutions to today's many environmental challenges.

The study came to the conclusion that recycling is one of the most visible, measurable, and enforceable environmentally friendly initiatives that a school can implement. Since the school put up garbage bins with the proper labeling, school canteen managers are regarded as role models by the members of the institution. When it comes to waste management practices, especially in terms of garbage reduction, school canteen managers are focused on utilizing

various ways and highlighting the need for waste reduction. The researcher also believes urging students to recycle even at home so they may understand the significance and the scope of rubbish collection at home. Schools play a special role in society by educating the nation's future, thus canteen managers must adhere to sustainable waste management. Additionally, the school has created programs to raise students' knowledge of garbage and environmental problems and teach them how to act in an environmentally responsible manner. Students had access to programs designed to help them embrace sustainable environmental practices and actively improve their attitudes and behavioral intentions. As long as they can apply and understand the knowledge and turn it into encouragement through education and awareness on managing solid waste in schools, the involvement and exposure of the students and the organization will considerably enhance their level of awareness regarding garbage disposal.

Keywords: 3 R's, School Canteen Managers, Waste Reduction, Waste disposal

INTRODUCTION

There are activities to be carried out in schools implementing the DepEd Order no. 58, s.2017 on the prohibition of littering and waste burning, the avoidance of single-use disposable products and packaging materials like plastic bags, straws, spoons, forks, and paper cups and plates. It also includes the promotion of trash-free "snacks", the establishment of a composting system to process biodegradable wastes, and the use of recyclables as seed beds in the nursery or garden. In view of this, the government mandated the different agencies like the Department of Environment and Natural Resources (DENR), Technical Education and Skills Development Authority (TESDA), Department of Education (DepEd), and the Commission of Higher Education (CHED) to include ecological solid waste management in the school system at all levels. This involves school administrators, both teaching and non-teaching staff, as well as students in school-wide waste management.

Subsequently, there are practices conducted by canteen managers, such as waste reduction, waste disposal, and waste recycling. These emphasize that properly reducing waste material, not giving a little thought to its starting point indicates that once the regular property has been used, and waste material is created resulted to lost assets in both of this convenience and monetary value. Meanwhile, the three primary types of waste are liquid, solid, and gaseous waste. Any substance that is unwanted has been thrown or discharged by its owner is defined as waste (Ministry for the Environment, 2002). Waste can accumulate over time and take on new forms.

The process of collecting and removing waste and transporting it to a location where it can be recycled is known as waste disposal. Typically, it refers to materials created by human activity, and the procedure is carried out to lessen the negative impact on human health and the environment. Waste management differs from resource recovery, which aims to slow down the rate at which natural resources are depleted. Waste management, on the other hand, is a critical component of a company's capacity to retain its quality.

Garden and kitchen garbage, demolition and construction waste, industrial and commercial waste, sludge, sewage, mining, and quarry tailings, waste from food processing, and agriculture are all examples of solid waste. Moreover, liquid waste is characterized by household-used water (bathroom and laundry waste, and liquid kitchen waste), used oil, industrial process waste, and storm water. Lastly, gaseous wastes are the small particles and gases discharged from incinerators, open fires, cars, and gases created by industrial and agricultural activities. The impacts of these particles and gases in the atmosphere are difficult to control, and air quality is difficult to measure.

In the previous few decades, environmental issues have been a topic of debate. People are becoming more concerned about environmental issues, and some have responded by engaging in pro-environmental behaviors such as recycling, energy conservation, and water conservation. It has been proven, however, that the prevention of waste material creation, also known as waste reduction, is an important strategy for waste management.

Food waste and other organic waste disposed of in landfills generate greenhouse gas emissions that are more hazardous than carbon dioxide. Hence, it is very important to conduct further and in-depth studies about food waste management to reduce pests, and, odors, increase workplace efficiency, and enhance environmental performance. Regarding waste hierarchy (Path, 2008), 3R is vital to attaining the success of food waste management. This is a further explanation of the approaches, starting with the most beneficial, and moving to the least attractive to food service industries.

Food reduction is considered the most powerful and effective dimension that businesses can do to manage waste. Usually, this is the first step in managing food waste. By designing systems and policies to prevent, minimize, or avoid waste in the first place, the business could save food and labor costs while making the largest positive impact on the environment. When a business prevents waste, it is not spending money on raw materials that would otherwise go in the garbage. At the same time, business is saving money on labor cost and cost associated with handling or processing these materials.

Decreasing food waste and other causes of waste drastically reduces environmental impact and save more money. (Journal of Management Studies, 2013)

Reusing food waste is believed to obtain value from an item that would otherwise be lost. In food service, the most usual reuse opportunities include redeploying overproduced foods and also giving them to a food recovery program and other charities.

Recycling is described as using the used materials (waste) to process them into new products to prevent the waste of possibly useful materials (Kaewkuekool and Laemlaksakul, 2007). Thus, the research found that recycling or composting the diverted waste from the landfill or elsewhere in the solid waste stream will be beneficial to ongoing value when the item is converted into something useful. If the food wastes are no longer edible, the company may sell (or donate) the food waste to a commercial composting company, which will combine these wastes with other organic material to make a soil amendment (Macy, 2008). Furthermore, there are specialized recycling services that are available for materials like grease, cooking oil, and butcher scraps. Recent developments in the international scene have led to believe that food waste has become an important target in managing domestic and international food and material cycles from the viewpoint of environmental preservation and resource utilization.

In today's world, almost everything is considered disposable. Reportedly, an increasing number of businesses are developing goods that assist in a pro-environmental lifestyle. Everything from cutlery, straws, lunch boxes and cleaners is designed to be environmentally friendly. Reusing secondhand items, repairing broken items instead of buying new, designing products to be refillable or reusable (cotton instead of plastic shopping bags), encouraging consumers to avoid using disposable products (disposable cutlery), removing any food/liquid remains from cans, packaging, and other containers are all the identified ways to reduce waste. These goods aid in the conservation of water, energy, and other valuable natural resources while also reducing pollution. The ease with which these goods can be used, makes living reliably easier and environment friendly. If garbage is not properly managed, it can kill many people. People will not only suffer from illnesses and ailments caused by waste, but they will also lose money as a result of it.

Waste is material that has been discarded in the wrong places. However, solving this pressing problem starts in realizing that every single material is helpful in some way. Additionally, there is no any content that is created out of nothing. Man feels that some things are useless while others are useful because of his ignorance. Along with the evolution of waste types, attitudes toward garbage must also change. People need to understand that trash could be exploited as a resource rather than discarded. Some of these unwanted materials pose a risk to human health and cannot be directly reused. More so, it is advised that a Materials Recovery Facility be established inside the school. This facility would serve as a place to store waste that can still be repaired and used, a collection point for recyclables like bottles, cans, and plastic containers, and temporary storage space for non-recyclable and non-compostable waste. Environmental

sensitivity and awareness will be instilled in young learners through the successful implementation of ecological solid waste management in academic institutions.

Over the years, waste disposal has become a more widespread issue. Environmentally friendly practices are growing more popular with consumers. Meanwhile, it is worthy to note that waste stream was significantly influenced by food scraps, recyclables, disposables, regular trash, leftover food, bottles, cans, food service packaging, and non-recycled wastes. Filling our fields with all of these wastes poses a severe threat to the ecosystem as well as human health. To resolve the country's garbage issue, the DENR is taking a series of actions. RA 9003 Section X mandates that waste collection and segregation for biodegradable, compostable, and reusable garbage take effect at the barangay level. The law was enacted to address the issue of waste segregation, and Section XVII states that the community is responsible for ensuring 100% collection efficiency from residential, commercial, industrial, and agricultural sources. The school, as the principal educational institution, can play an important role in resolving such environmental issues. Administrators, teachers, and other school workers can teach children how to care for, preserve, and conserve the environment fundamentally and straightforwardly.

In 2018, the Waste and Resources Action Program (WRAP) published a report on the types and amounts of waste created by English schools. Food waste was found to be a significant component of garbage from schools, accounting for nearly half of waste from elementary schools and nearly a third of waste from secondary schools in the Philippines, according to the study. It is quite alarming that a substantial amount of waste generated by public schools comes from food waste deriving from canteens inside the school. The sheer number of students translates to a lot of solid waste being generated. Thus, control measures need to be placed to curb the incessant production of food waste in the school. This is happening despite the implementation of various proper waste disposal policies prescribed by DepEd by requiring schools to provide separate garbage cans for dry waste, wet waste, and hazardous waste. DepEd also advocates practices on proper waste management at home, school, and in the community.

The Alliance of Concerned Teachers (ACT) DepEd and Training School Canteen Accreditation is recommended for school canteens. By taking a whole-school approach to excellent nutrition, schools with approved canteens serve as a model of best practice. Students, teachers, and selected staff are the prime targets of the canteens. Therefore, it is dependent on the food that they provide. If the pupils are satisfied, there is a chance that they will purchase their goods. If not, people will seek out food sources that are both economical and capable of satisfying their needs.

In light of this, the study aimed to determine the waste disposal practices of the Canteen Managers as basis for awareness and school environmental protection guidelines. It also focused on the socio-demographic profile of the canteen managers. It also aimed to understand

the practices of selected school canteen managers with regard to waste management, whether the canteen managers practice waste reduction, practices of waste disposal, and recycling.

Since students' knowledge of waste recycling begins at home, the study examined how educational institutions, as well as students' homes, communities, and communities in general, might benefit. The researcher's inspiration for this work came from these observations. The assessment of the canteen managers' waste management procedures as the foundation for the establishment of school environmental guidelines in a few selected school canteens in the City Division Schools of Malolos, Bulacan, was another opportunity for learning.

3R's Waste Heirarchy

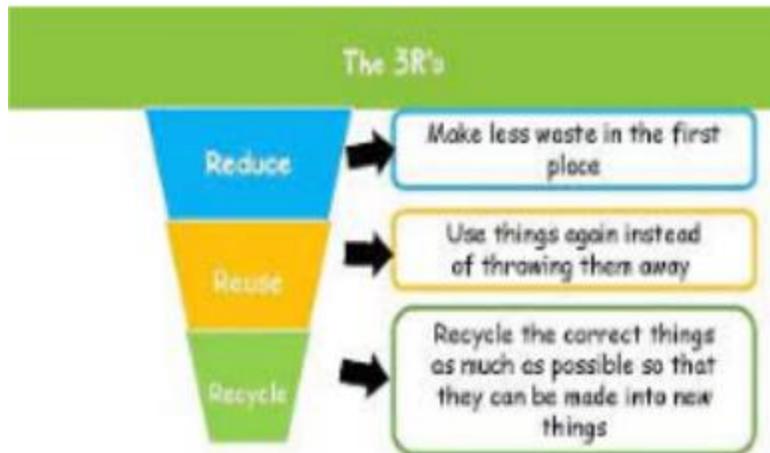
The "Reduce Reuse Recycle" Waste Hierarchy consists of the three elements, "Reduce," "Reuse," and "Recycle" (also known as the Three 'R's). "Reduce" means to decrease consumption and the quantity of waste generated. This involves buying and consuming less, as such also dumping less. "Reuse" is simply the act of making use of an item again and again in its original form. Reusing items reduces the need to reprocess materials (whether it is for disposal or for recycling). "Recycle" means to give outdated or used things a new lease of life, by making a new thing out of the old objects.

The "Reduce Reuse Recycle" hierarchy was utilized to minimize waste as well as sustain natural resources and separate the most out of already produced goods. The Three 'R's line up into a hierarchy to explain the most efficient plan of action for waste management practices.

Decreasing consumption and waste production is the first and most effective action about producing less waste (consuming less certainly products less waste). However, there are times when consumption is necessary, in these cases, reuse as much as probable before recycling any residual materials.

Reduce. Among the three components - reduce, reuse, recycle- "reducing" (consumption and waste production) is the most effective way to maintain resources and produce less waste.

By acquiring much more than what is needed, everyone, little by little, feeds the culture of consumerism. In turn, it fuels the driving force for manufacturers to manufacture more and more, thus using more supplies and generating more waste. Luckily, even in today's climate of consumerism, there are modest ways to decrease consumption and as such reduce waste. At the grocery store, there is a need to lessen excessive packaging. Purchase items that will have a longer life cycle and then take care of those items to get the most out of them. Keep away from disposable items where possible and buy cleaning products in concentrated forms to get the most out of the packaging that may be necessary.



Source: Taken from: <https://bit.ly/3HchDsd>

Figure 1. Waste Reduction Hierarchy

Reuse. Next in line in the hierarchy is “reusing.” Reusing products, where possible, is even better than recycling because the item does not need to be reprocessed before it can be used again. There are other ways of reusing things. When buying products, look for the ones that have eco-friendly packaging such as glass jars. Other common sense means of reusing contain wearing and passing on clothing, acquiring used items such as household items and books, and reinventing items that no longer serve their initial purpose.

Recycling. The last component in the is “recycling.” Various items in the environment can be recycled, and in various places, there are already systems in place for these items to be recycled. However, as one may appreciate after reading the factors for recycling to be sustainable, recycling only benefits the world if there is a need for recycled materials. Recycling campaigns, even though well intended, lead consumers to believe that if they send their junk for recycling, the world will be a greener place. The three R's have become a cornerstone of sustainable landfill waste management efforts because of rising garbage creation rates, rising processing costs, and diminishing landfill space. (ElHaggar, 2007, Seadon, 2006, Tudor et al.,2011). To prevent the development of garbage and reduce the toxicity of waste that is produced, the notion of waste reduction, also known as waste disposal, entails redesigning items or altering societal patterns of consumption, usage, and waste generation.

The researcher believed that waste management using the 3Rs method has an impact on improving business performance, waste management using the 3Rs method has an impact on protecting the environment, and waste management using the 5Rs method has an impact on achieving community engagement. The 3R's was used to reduce waste, preserve natural resources, and select the most useful materials from already manufactured things. The hierarchy of the 3R's explains the best course of action for trash management procedures. The first and most effective step in producing less trash (consuming less definitely results in less

garbage) is to reduce consumption and waste creation. Consumption is occasionally required, though; in these circumstances, reuse as much as you can before recycling any leftover items.

Conceptual Framework

This study was guided by a Coomb’s System approach utilizing the input, process and output model. The first frame presents the inputs of the study, which are the information gathered from canteen managers regarding waste disposal in selected school canteens in the City of Malolos, Bulacan and their 3Rs practices, waste disposal practices of the school canteen managers and problems encountered by the school canteen managers. The second frame indicates the process involved: construction and validation of questionnaire checklist, administration of the questionnaire checklist, data gathering, statistical treatment of the data and the analysis and interpretation of the data.

The expected output presents the output, which is the proposed waste disposal management programs for school canteens and as an action plan that is designed to ensure the implementation of the promotional strategies among the schools.

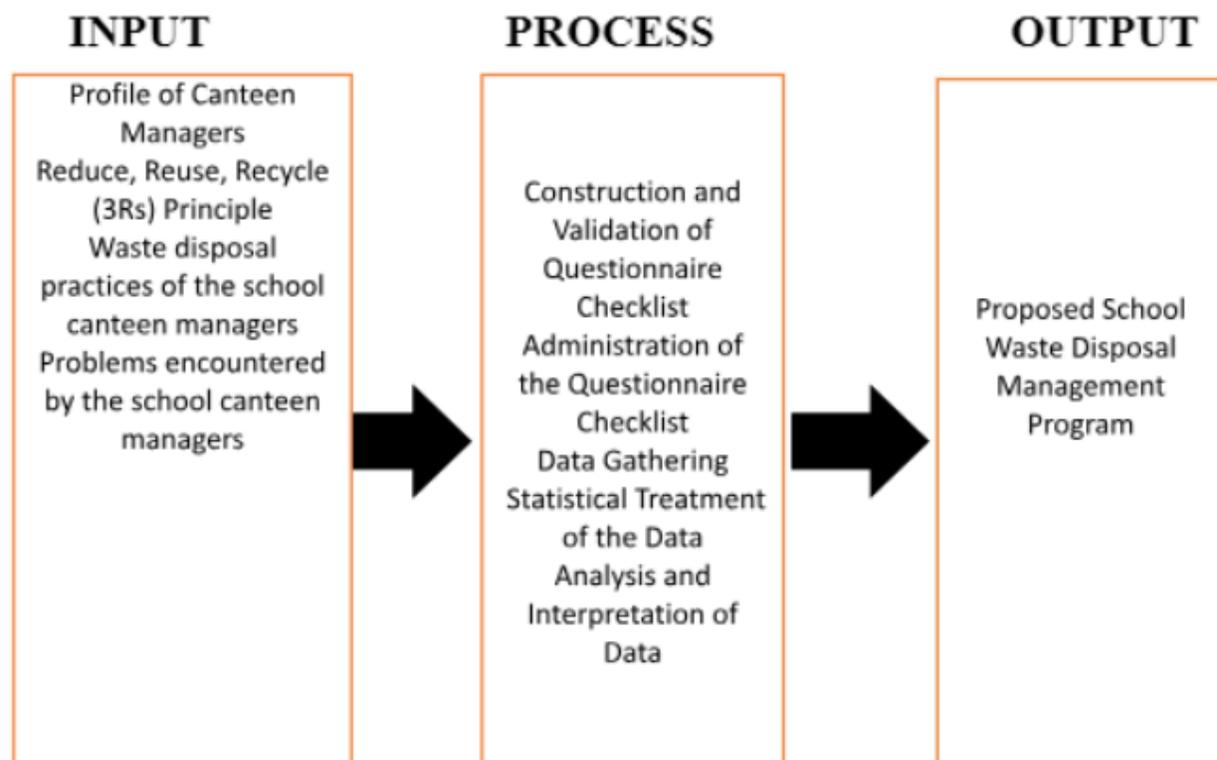


Figure 2. Paradigm of the Study

METHODOLOGY

Design

This study has been conducted utilizing the convergent parallel, a mixed-methods design to acquire a thorough understanding of the topic. Both qualitative and quantitative methods can be used to represent the research process. In applying convergent parallel design in the present study, the researcher conducted both quantitative and qualitative aspects, weighed the approaches equally, analyzed the two components independently, and interpreted the results together. According to Kennedy (2017), the concurrent convergent-parallel strategy involves the simultaneous collecting of qualitative and quantitative data (often with an emphasis on both QUAL and QUAN), combining, and comparison of these various data sources (i.e., the two methods are ultimately merged). The gathering of various, complementary facts on the same phenomenon is what this method entails. It is used to combine quantitative and qualitative data before interpreting it.

According to Bhandari (2020), in quantitative research, researchers collect information from existing and potential clients by using sampling techniques and distributing online polls, questionnaires, and other data gathering tools, the results of which can be expressed statistically.

Gall and Borg cited by Tolentino (2015), expound quantitative method as research that is based on the concept that aspects of the social environment and constitutes an objective reality that is relatively constant across time and settings. The prevailing methodology is to describe and elucidate features of this reality by collecting numerical data on observable behaviors of sample and subjecting these data to statistical analysis. Quantitative research was utilized in this study intending to show the frequency and percentage of the profile, the 3Rs practices in the handling and waste disposal practices of the school canteen managers and problems encountered by the school canteen managers.

Tisdell and Merriam (2016) defined qualitative research particularly focuses on discovery, insight, and understanding from those being studied and, therefore offers the greatest promise of making a difference in people's lives. Hence, the qualitative research method involves going beyond data that can be measured and leads to a better understanding of a problem's nuances. The quantitative method of the study consists of the profile, the 3Rs practices, waste disposal practices of the school canteen managers and problems encountered by the school canteen managers.

The qualitative method was used in this study since another important reason from carrying out this research is to describe and validate outcomes of the canteen managers.

The study employed the purposive sampling technique to gather the respondents for the study. This sampling technique is characterized by choosing the respondents based on their similarities in attributes and characteristics. The respondents of the research were the canteen managers from selected educational institutions. The ten (10) canteen managers were chosen from the

ten (10) different school canteens in the School Division Office (SDO) of Malolos, which was the research locale of the study.

They were deliberately chosen since they are the most knowledgeable regarding the school canteen's daily operations and management.

Study Site/ Participants

Presents the number of respondents from the study. There were ten canteen managers (10) respondents in the study, each from the following schools: Malolos City High School Bungahan, Bungahan Elementary School, Santa Isabel Elementary School, Ligas Elementary School, City of Malolos High School Canalate, Sumapang Bata Elementary School, Sumapang Matanda Elementary School, Caniogan Elementary School, City of Malolos Integrated School-Catmon, and Dakila Elementary School.

The study employed the purposive sampling technique to gather the respondents for the study. Purposive sampling, also known as judgmental, selective, or subjective sampling, is a type of non-probability sampling in which researchers choose members of the population to participate in their surveys based on their own judgment. (Alchemer, 2021). This sampling technique is characterized by choosing the respondents based on their similarities in attributes and characteristics. The respondents of the research were the canteen managers from selected educational institutions. The ten (10) canteen managers were chosen from the ten (10) different school canteens in the School Division Office (SDO) of Malolos, which was the research locale of the study.

They were deliberately chosen since they are the most knowledgeable regarding the school canteen's daily operations and management. And at the time of the pandemic the researcher had no freedom to pursue larger samples.

Table 1. The Respondents of the Study

Name of School	Number of Participants
1. Malolos City High School Bungahan <i>-Teacher Joanne Postigo</i>	1 Participant per school
2. Bungahan Elementary School <i>-Teacher Leila T. Domingo</i>	
3. Sta. Isabel Elementary School <i>-Teacher Lolita S. Moratillo</i>	
4. Ligas Elementary School <i>-Lotis N. Sunga</i>	
5. City of Malolos High School-Canalate <i>-Teacher Blessie A. Nabong</i>	
6. Sumapang Bata Elementary School <i>-Teacher Franz Ivory Angeles</i>	
7. Sumapang Matanda Elementary School <i>-Teacher Geneva Q. Caparas</i>	
8. Caniogan Elementary School <i>-Teacher Vicky T. Perol</i>	
9. City of Malolos Integrated School Catmon <i>-Teacher Maricel Fajardo</i>	
10. Dakila Elementary School <i>-Teacher Barbara Sebastian</i>	
Total	10

Data Collecting Instruments

In this study, an interview questionnaire was used. In the formulation of questionnaire items, to ensure that respondents understood and answered the question correctly, the researcher utilized simple and clear wording. Furthermore, the researcher formulated the question stimulated by the study of Diaz (2015) and Chantrea (2018). As a mixed-method design, the first and third part of the questionnaire is intended as closed-ended questions whereas the fourth part is devised as open-ended questions. The survey questionnaire used was evaluated and validated by the Schools Division Superintendent Schools Division Office City of Malolos, thesis adviser and critic under of the Graduate School. After the validation, the survey questionnaire was pre-arranged to be imported to Google Form. Survey questionnaire through Google Form is a research instrument that consists of a set of questions used to gain information and insights from a respondent by answering questions on the form to fulfill the objectives and purpose of the study.

The research tool was divided into three parts. The first section described the socio-demographic profile of school canteen managers in terms of age, rank, gender, length of experience as a canteen manager, educational attainment, related waste management training, and environmental protection. The second part aimed to determine the practices of selected school canteen managers in waste management with its sub-variables: communication with waste reduction, waste disposal, and recycling. Here, the respondents were asked to score each object on a 5-point Likert scale, with 5 being the highest and 1 as the lowest. The following scale was used, along with the verbal interpretation. The third part is about the open-ended questions which pertain to the standard operating procedures of canteens in terms of segregation, recycling, and disposal of waste.

Data Collection Procedures

The researcher first made a letter to the Schools Divisions Superintendent of the City of Malolos, Bulacan asking for support and permission to conduct a survey questionnaire via google forms to the canteen managers of the selected schools.

Upon approval of the letter, the researcher asked permission from the principal of selected schools to conduct the questionnaire survey to the canteen managers. Due to the pandemic, it is physically impossible to distribute the questionnaire, the researcher then virtually distributed the questionnaires through a Google form link. The researcher encoded the research questionnaire in an online platform for easier access and to minimize close contact with the respondents. The accomplished questionnaires were retrieved, and the scores were analyzed and interpreted. The results were recorded in Google Spreadsheet with assigned code developed to describe the responses gathered from the survey. Numerical values were assigned

for easy decoding of responses. Interviews were utilized to identify the methods of waste reduction and recycling do canteen managers employed for the proper waste disposal of the school canteen.

Data Analysis

The data that were gathered for the study was analyzed using different statistical treatments. For the researcher to determine the demographic profile of the respondents, the researcher administered the frequency analysis using the percentage formula. To determine the practices of selected school canteen managers in waste management and the standard operating procedures of canteens, the researcher used the weighted mean formula.

Rating	Descriptive Rating	Scale	Numerical
5.00	Always	5	4.21 –
4.20	Often	4	3.41 –
3.40	Sometimes	3	2.61 –
2.60	Rarely	2	1.81 –
1.80	Never	1	1.00 –

Ethical Consideration

Proper consent was secured before the conduct of the data gathering. Participant's convenient time preference was considered. Ethical considerations were observed in this study which is also paralleled to the policy and guidelines of RA 10173 or the Data Privacy Law of 2012. This protects individuals from unauthorized processing of personal information that is private, not publicly available; and identifiable, where the identity of the individual is apparent either through direct attribution or when put together with other available information.

RESULT AND DISCUSSION

This chapter presents analyses and interprets the data provided by the respondents. The collected data were presented using frequency distribution and a weighted mean analysis. This

part of the paper also gives the analysis of the data computed based on the responses of the participants of the study.

Profile of the Canteen Managers

This part of the paper provides the distribution of the canteen managers in terms of civil status, age, rank, length of experience as canteen manager, educational attainment, and related training.

Table 1. Frequency Distribution of the Demographic Profile of the Canteen Managers in terms of Civil Status

Civil Status	Frequency	Percent	Rank
Single	2	20.0	2
Married	7	70.0	1
Widowed	1	10.0	3
Total	10	100.0	

Table 1 shows the frequency distribution of the demographic profile of the Canteen managers in terms of civil status. Concerning the results presented above, the highest number of respondents are from group of people that are married which had a frequency of 7 and a percentage of 70%. While the least number of responses are from the group of people that are widowed which gave a frequency of 1 or 10%.

Table 2. Frequency Distribution of the Demographic Profile of the Canteen Managers in terms of Age

Age	Frequency	Percent	Rank
25 years old and below	1	10.0	2.14
26 - 30 years old	1	10.0	2.14
31 - 35 years old	1	10.0	2.14
36 - 40 years old	2	20.0	2
41 - 45 years old	1	10.0	2.14
46 - 50 years old	1	10.0	2.14
56 years old and above	3	30.0	1
Total	10	100.0	2.14

Table 2 displays the frequency distribution of the demographic profile of the canteen managers in terms of age. Under the data gathered from the participants, the majority of the canteen managers are from the age bracket of 56 years old and above which had a frequency of 3 and a percentage of 30%. Whereas, the minority of the canteen managers are from the age bracket of 25 years old and below, 26 - 30 years old, 31 - 35 years old, 41 - 45 years old, and 46 - 50 years old which produced a frequency of 1 or 10%.

Table 3 presents the frequency distribution of the demographic profile of the canteen managers in terms of rank. As shown in the table above, the highest frequency gained was from the canteen managers with the rank of Teacher III which had a frequency of 7 or 70%.

Table 3. Frequency Distribution of the Demographic Profile of the Canteen Managers in terms of Rank

Rank	Frequency	Percent	Rank
Teacher I	3	30.0	2
Teacher III	7	70.0	1
Total	10	100.0	

While the least number of responses was from the canteen managers which have a rank of Teacher I which had a frequency of 3 or 30%. *Table 4* displays the frequency distribution of the demographic profile of the canteen managers in terms of length of experience as a canteen manager.

Table 4. Frequency Distribution of the Demographic Profile of the Canteen Managers in terms of Length of Experience as Canteen Manager

Length of Experience as Canteen Manager	Frequency	Percent	Rank
1 - 5 years	4	40.0	1
6 - 10 years	1	10.0	4
11 - 15 years	1	10.0	4
26 - 30 years	3	30.0	2
31 - 35 years	1	10.0	4
Total	10	100.0	

Based on the table, the majority of the respondents have an experience of 1-5 years which gained a frequency of 4 or 40%. While the minority of the canteen managers have an experience of 6 - 10 years, 11 - 15 years, and 31 - 35 years which all gained a frequency of 1 or 10%.

Table 5. Frequency Distribution of the Demographic Profile of the Canteen Managers in terms of Educational Attainment

Educational Attainment	Frequency	Percent	Rank
College Graduate	10	100.0	1

Table 5 shows the frequency distribution of the demographic profile of the canteen managers in terms of educational attainment. Based on the responses of the participants of the study, all of the canteen managers are college graduates with a frequency of 10 or 100%.

Table 6. Frequency Distribution of the Demographic Profile of the Canteen Managers in terms of Related Training and Seminars

Related Training and Seminars	Frequency	Percent
None	10	100.0

Table 6 presents the frequency distribution of the demographic profile of the canteen managers in terms of their trainings and seminars concerning waste disposal management. Under the responses of the participants of the study, all of the respondents do not have any related trainings and seminars in waste management.

Extent of Implementation of the Reduce, Reuse, Recycle (3Rs) Principle based on the Waste Disposal Practices of School Canteen Managers

Table 7 presents are the frequency and descriptive measures of the respondents' extent of implementation of the 3Rs regarding the Reduce dimension. The table reveals that among the ten statements describing the implementation of 3Rs regarding Reduction, item numbers, 6 and 8, which is "use natural, biodegradable and non-toxic cleaning products and choose energy efficient electronics, appliances and supplies such as compact fluorescent light bulbs." garnered the highest mean rating of 5.0, with a verbal interpretation of "Always". This is followed by item numbers 2, 7, and 9, which are "Avoiding disposal goods such as plate, glass, spoon, and fork that made of plastic, turn off water faucets tightly and repair leaks and turn off lights and unplug electronics and appliances when not in use" garnered the highest mean rating of 4.9, with a verbal interpretation of "Always". This is followed by item number 1, which is "buying products in bulk to avoid individually packaged items," with a mean rating of 4.8, interpreted as "Always." These findings show that the canteen managers are using natural, biodegradable, and non-toxic cleaning products and choose energy-efficient electronics, appliances, and supplies such as compact fluorescent light bulbs and avoiding disposal goods such as plates, glass, spoons, and forks made of plastic, turn off water faucets tightly and very much aware of the importance of energy and water conservation in their respective business establishments. This is further evidenced by the high mean rating of 5.0 given to the statement referring to using natural, biodegradable, and non-toxic cleaning products and choosing energy-efficient electronics, appliances, and supplies such as compact fluorescent light bulbs. which is essentially interpreted as practiced "Always" by the respondent. The item referring to the use of cloth napkins instead of paper napkins was given the lowest mean rating of 4.0, interpreted as "Often". This is followed by item number 5 which is "use of dishcloth instead of paper towels" with a mean rating of 3.9 and verbal interpretation of "Often." This is quite alarming since these particular items are very critical in the reduction of food waste items, in that school canteens should use cloth napkins instead of paper napkins and use of dishcloth instead of paper towels. According to Xu et al., (2016), school canteen managers can apply different strategies through plans such as lean stock strategies, expanding food time frame of realistic usability, or making use of bundles that enables food to be safeguarded better and straightforwardly advocating the reduction of waste among the people inside the educational institution. Under this, food waste and loss reduction initiatives are effective when implemented by large retailers and their suppliers, who can implement strategies aimed at reducing waste, such as lean stock strategies, extending the time frame for which food can be used realistically, or using packaging that allows food to be protected better and more.

Table 7. Frequency and Descriptive Measures of the Respondents' Extent of Implementation of the Reduction Principle in 3Rs

Reduce	Frequency					Mean	Verbal Interpretation
	5	4	3	2	1		
To what extent does your canteen shall practice the following:							
1. Buying products in bulk to avoid individually packaged items	8	2	0	0	0	4.80	Always
2. Avoiding disposal goods such as plate, glass, spoon, and fork that made of plastic	9	1	0	0	0	4.90	Always
3. Buying durable good ones that are well built since they will last longer, save money in the long run and save landfill space	7	2	1	0	0	4.60	Always
4. Use of cloth napkins instead of paper napkins	3	4	3	0	0	4.00	Often
5. Use of dish cloth instead of paper towels	2	5	3	0	0	3.90	Often
6. Use natural, biodegradable, and non-toxic cleaning products	10	0	0	0	0	5.00	Always
7. Ensure that an efficient school waste management system is in place, aiming to reduce, reuse and recycle.	9	1	0	0	0	4.90	Always
8. Handling school waste efficiently, that can reduce the amount being sent to landfills and therefore be better able to manage school budgets.	10	0	0	0	0	5.00	Always
9. School canteen develop a small income for the school to send some existing waste to local recycling schemes.	9	1	0	0	0	4.90	Always
10. School canteen managers help to reduce single-use plastic in school by encouraging reusable bottles.	7	3	0	0	0	4.7	Always
Total Mean						4.67	Always

Results also showed that the overall mean rating of the respondents regarding the implementation of 3Rs, particularly in Reduction is 3.80, interpreted as "Always." All in all, these tabular results show that the extent of implementation of the 3Rs is often used by the respondents in their respective business establishments.

It cannot be over-emphasized, that of the three components - reduce reuse recycle - "reducing" (consumption and waste production) is the most efficient way to preserve resources and generate less waste. Food reduction is considered the most powerful and effective dimension that businesses can do to manage waste. Usually, this is the first step in managing food waste. By designing systems and policies to prevent, minimize, or avoid waste in the first place, the business can save food and labor costs while making the largest positive impact on the environment. When a business prevents waste, it is not spending money on raw materials that would otherwise go in the garbage. At the same time, business is saving money on labor cost and cost associated with handling or processing these materials. Decreasing food waste and other sources of waste significantly reduces environmental impact and save more money (Journal of Management Studies Vol. 02, No 01, May 2013 ISSN # 2302-8122).

Table 8 presents the frequency and weighted mean values of the assessment of the respondents regarding their extent of implementation of the 3Rs regarding Reuse. As reflected by the overall mean item 6 refers to offering products in reusable or refillable containers/utensils with a mean rating of 4.6, interpreted as "Always". Followed by item number 8 with a mean of 4.8, interpreted as "Always". by donating surplus food or slightly damaged products/ nearing expiration to food banks and charities, particularly regarding Reuse.

Further examination of the table reveals that among the ten indicators, the item referring to the implementation of proper storage and handling procedures of excess foods to prevent food spoilage and very much aware of properly storing products and materials to prevent damage and waste, checking products or materials purchase or delivery and returning immediately damaged goods and reusing products in different ways (I.e.: using a reusable spoon, fork, shopping bags) obtained the highest mean rating of 5.0, interpreted as "Always." This is followed by item number 1, which is "repair broken equipment, appliances and furniture in the canteen to use it again" with a mean rating of 4.9, interpreted as "Always."

Table 8. Frequency and Descriptive Measures of the Respondents' Extent of Implementation of the Reuse Principle in 3Rs

Reuse	Frequency					Mean	Verbal Interpretation
	5	4	3	2	1		
To what extent does your canteen shall practice the following:							
1. Repair broken equipment, appliances and furniture in the canteen to use it again	9	1	0	0	0	4.90	Always
2. Reusing products in different ways (I.e.: using reusable spoon, fork, shopping bags)	10	0	0	0	0	5.00	Always
3. Offer products that are damaged or nearing expiration but still safe for consumption to employees or costumers at reduced price	0	0	0	0	10	1.00	Never
4. Using resealable containers rather than plastic wrap	3	6	1	0	0	4.20	Always
5. Using ceramic coffee mugs, plastic cups instead of disposable paper cups	2	0	5	3	0	3.90	Often
6. Offer products in reusable or refillable containers/utensils	6	4	0	0	0	4.60	Always
7. Checking products or materials purchase or delivery and returning immediately damaged goods so that they do not become your waste	10	0	0	0	0	5.00	Always
8. Donate surplus food or slightly damaged products/ nearing expiration to food banks and charities	6	3	1	0	0	4.50	Always
9. Properly store products and materials to prevent damage and waste	10	0	0	0	0	5.00	Always
10. Implement proper storage and handling procedures of excess foods to prevent food spoilage	10	0	0	0	0	5.00	Always
Total Mean						4.31	Always

These results present that the respondents do not purchase much more than they need, each and every one of them accumulatively feeds the culture of consumerism. This practice of buying more than what consumers need makes producers supply more products. Thus, manufacturers use more resources and create more waste. Even in today's climate of consumerism, there are simple ways to reduce consumption and as such reduce waste. At the grocery store avoid excessive packaging. Purchase items that will have a longer life cycle and then pay attention to those items to get the most out of them. Keep away from disposable items where possible and

purchase cleaning products in concentrated forms to get the most out of the packaging which may be unavoidable.

On the other hand, item number 3, which refers to “offer products that are damaged or nearing expiration but still safe for consumption to employees or costumers at a reduced price”, was given the lowest mean rating of 1.0, with a verbal interpretation of “Never,” This is understandable since it is a big risk on the part of the canteen to donate or offer food products that are nearing expiration. If these food products cause any health problems to the people who accepted these as donations, the school canteens will be liable for this. So, the respondents would prefer not to do these actions, and thus, the results are given.

The practice of reusing products is even better than recycling them. There are many ways of recycling things. For example, consumers may patronize recyclable containers. Other usual methods of reusing contain wearing and passing on clothing, buying used items such as household items and books, and reinventing items that no longer serve their original purpose.

Table 9 presents the frequency and weighted mean values of the assessment of the canteen manager regarding the extent of implementation of the 3Rs regarding recycling. As reflected by the overall mean of 4.31, the canteen managers deduced that they often practice the 3Rs, particularly regarding recycling.

Table 9. Frequency and Descriptive Measures of the Respondents' Extent of Implementation of Recycle Principle in 3Rs.

Recycle	Frequency					Mean	Verbal Interpretation
	5	4	3	2	1		
To what extent does your canteen shall practice the following:							
1. Buying products made from recycled materials	9	1	0	0	0	4.9	Always
2. Checking collection centers and curbside pickup services to see what they accept, and collecting recyclable materials which may include metal cans, newspapers, paper products, glass, etc.	8	2	0	0	0	4.8	Always
3. Considering purchasing products that contain recycled content or are easily recycled	8	2	0	0	0	4.8	Always
4. Buying products made from materials that are collected for recycling your community	8	2	0	0	0	4.8	Always
5. Using recycled paper or plastic cups, bags and other materials	9	1	0	0	0	4.9	Always
6. Compost organic waste including fruit and vegetable scraps, and coffee sachets or donate organic waste local collection agents	7	2	1	0	0	4.6	Always
7. Attend seminar or meeting regarding the importance of recycle and recycling procedures	0	0	0	0	1	1	Never
8. Follow the rules and regulations of the school regarding the recycling procedure	1	0	0	0	0	5	Always
9. School canteen managers set up bins for the different kinds of waste, and make sure the right bins are used	1	0	0	0	0	5	Always
10. Often do recycle	9	1	0	0	0	4.9	Always
Total Mean						4.47	Always

Further perusal of the tabular values reveals that among the ten indicators, item number 8, which is "Follow the rules and regulations of the school regarding the recycling procedure?" were given the highest mean rating of 5.0, interpreted as "Always." This shows that the canteen strictly follows the policies of the school in so far as recycling procedures are concerned. This is followed by the item referring to the presence of collection bins for the customers to deposit their recyclable materials which were also given a high mean rating of 5.0, with a verbal interpretation of "Always." This finding shows that indeed, the respondents value the importance of recycling in their respective food canteen.

Meanwhile, item number 7, garnered the lowest mean rating of 1.0, interpreted as “Never.” These items refer to all the canteen managers who do not have any related training in waste management.

On the other hand, two indicators, particularly item numbers 2, 3, and 4 garnered a mean rating of 4.8, interpreted as “Always.” These items refer to “Checking collection centers and curbside pickup services to see what they accept and collecting recyclable materials which may include metal cans, newspapers, paper products, glass, etc., considering purchasing products that contain recycled content or are easily recycled and buying products made from materials that are collected for recycling your community” These findings show that the respondents are not aware regarding garbage collection services to see what type of recyclable materials are being collected. It is also interesting to note in item number 6, with a mean rating of 4.6 interpreted as “Always.” the composting organic waste including fruit and vegetable scraps, and coffee sachets or donate organic waste local collection agents generated from their canteens are option for them, much more donating them to local collection agents. Recycling is very significant since many items around can be reprocessed, and in many places, there are already schemes in place for these items to be recycled. However, considering that individuals apprehend after reading the factors for recycling to be sustainable, recycling is only beneficial when sustained. Recycling campaigns, although well intended, manage consumers to believe that if they send their junk for recycling, the world will be a greener place. But, recycling should only be the last resort. Reducing and reusing should come first and foremost. Recycling old stuff into material for new products depends largely on the market for these eco-friendly products.

Respondent Canteen Methods of Waste Reduction and Recycling

Shown in Table 10 are the descriptive measures of the current practices in disposing of waste in the (10) selected school canteens in the City Division of Malolos. For this part, food waste is categorized into two types, namely food waste and packaging waste. A quick perusal of the tabular values shows that dumping using trash cans was the most used method of disposal as well as packaging waste. From produce trimmings (1), bones and fat (1), dairy products (10), baked goods (7), cooking oil (1), paper/cardboard (1), and plastic (1), all of which as disposed of through dumping in trash bins. This is followed by recycling, particularly popular among the respondents as the way to dispose of packaging waste like baked goods (2), cooking oil (2), paper/cardboard (7), plastic (8), and glass (6).

Table 10. Descriptive Measures of the Respondents Methods of Waste Reduction and Recycling

Types of Waste	Burn	Bury	Dump			Garbage Truck	Recycle	Reuse	Com post
			River	Trash bins	Dumping sites				
			1	2	3				
Produce Trimming		3		1	1	4			1
Metal, bones, fat		5		1	1	4			
Dairy products				10					
Baked goods				7			2		1
Cooking oil		4		1	1	2	2		
Paper/Cardboard				1	1	1	7	1	
Plastic				1			8	1	
Metals						7		3	
Glass					1	1	6	2	

On the other hand, the least method of waste disposal was dumping in rivers and burning. This finding is good since it agrees with the idea of caring for our environment, in that it discourages dumping of wastes in rivers so that we will not pollute our waterways and burning of trash that will destroy our ozone layer which will lead to global warming. This finding implies that the respondents truly care for the environment regarding disposing of their waste. Food waste and climate other organic waste disposed of in landfills generate greenhouse gas emissions that are more hazardous than CO₂. Hence, it is very significant to conduct additional and in-depth research about food waste management regarding reducing odors and pests, improving workplace efficiency, and improving environmental performance.

This result agreed with the findings of Verghese et al., (2013) when they understated the fact that food security is a rising challenge for policymakers and manufacturers or producers. The global population is expected to grow to 9 billion and the demand for food by 77% by 2050. Over the same period, food production will be under threat from competing for land uses

climate change, diminishing supplies of clean water, and erosion. In this line, one of the solutions to this problem is to improve efficiency and waste reduction in the food supply chain. This clearly underscores the importance of addressing the problem of reducing food waste in the community. Recent changes in the international scene have led us to believe that food waste has turned out to be an important target in dealing with domestic and international food and material cycles from the viewpoint of environmental preservation and resource utilization.

This suggests that the canteen managers at the school are advising the pupils to recycle not just at school but also at home. This would give the students a daily waste production evaluation, enabling them to recycle some of the waste that is still recyclable.

CONCLUSION AND RECOMMENDATION

The findings of the study served as a basis for school environmental protection guidelines. Waste management is an important issue that needs governmental action quickly. At present there is very little awareness exists regarding this issue in our society. The practices of bringing forth waste are too risky not only for today but they could be dangerous for future generations. The findings of this study are as follows:

1. How may the canteen managers be characterized in terms of:

1.1 civil status

1.2 age;

1.3 rank

1.4 civil status;

1.5 length of experience as canteen manager;

1.6 educational attainment;

1.7 related waste management and environmental protection trainings?

Concerning the demographic profile of the respondents, it was assessed that the majority of the respondents are married, 56 years old and above, have a rank of teacher III, have experience of 1 – 5 years as canteen managers, are college graduates, and have no related training on handling canteens and managing wastes.

1. How may the extent of implementation of the Reduce, Reuse, Recycle (3Rs) principle be described based on the following wastes disposal practices of school canteen managers: waste reduction, practices of waste disposal, and recycling?

The researcher concluded that school canteen managers focus on using various tactics and applying the 3Rs (Reduce, Reuse, Recycle) often when it comes to their practices in waste management, particularly when it comes to waste reduction.

The researcher concluded that the canteen's garbage bins include too many recyclable items, including paper, cardboard, cans, and bottles, when it comes to waste disposal. When it comes to correctly dispose of rubbish in their suitable bins, the school canteen managers are viewed as role models by the people in the institution since they set up waste bins in the establishment with their appropriate labels. By correctly disposing of these things in the designated recycling bins, it can save money on garbage collection while also benefiting the environment. As a further option for the food leftovers, that won't be able to use, think about composting. To enrich the soil in fruit and vegetable gardens, utilize kitchen waste as compost or as a natural fertilizer in landscaping. By keeping garbage out of landfills, composting has a lower environmental impact (and lower waste collection costs).

According to the researcher's analysis, school canteen managers actively encourage students to practice recycling even at home for them to comprehend its importance and the extent of garbage collection at home collection fertilizer in landscaping. Composting has a lesser environmental impact since it prevents trash from going to landfills (and lower waste collection costs).

3. What are the methods of waste reduction and recycling do canteen managers employed for the proper waste disposal of the school canteen?

The study also discovered that school canteen managers are focused on applying different approaches and stressing the need for waste reduction when it comes to waste management procedures, particularly in terms of garbage reduction. School canteen managers put up waste bins in the facility with adequate labeling and are viewed as role models by the staff when it comes to safely dispose of waste in their designated bins. Recycling, on the other hand, is one of the most visible, measurable, and enforceable environmentally friendly initiatives that a school can implement. It's also vital to commit to sustainable waste management public since schools have a distinct role in society in that they educate society's future decision-makers.

The researcher also concluded that the canteen's garbage bins include too many recyclable items, including paper, cardboard, cans, and bottles, when it comes to waste disposal. School cafeteria managers actively encourage students to practice recycling even at home for them to comprehend its importance and the extent of garbage collection at home collection fertilizer in landscaping. Composting has a lesser environmental impact since it prevents trash from going to landfills (and lower waste collection costs). What waste management program may be proposed to improve the current practices?

The school has developed initiatives to increase students' awareness of trash and environmental issues and to teach them how to behave in an environmentally conscious manner. Additionally, programs were offered to students that worked to change their attitudes and behavioral intentions as well as actively adopt sustainable environmental practices. As long as the students and the organization can digest and comprehend the knowledge and convert it

into impact, the attempt to encourage, via education and awareness on managing solid waste in schools.

When it comes to correctly dispose of rubbish in their suitable bins, the school canteen managers are viewed as role models by the people in the institution since they set up waste bins in the establishment with their appropriate labels. By correctly disposing of these things in the designated recycling bins, it can save money on garbage collection while also benefiting the environment. As a further option for the food leftovers, you won't be able to use, think about composting. To enrich the soil in fruit and vegetable gardens, utilize kitchen waste as compost or as a natural fertilizer in landscaping. By keeping garbage out of landfills, composting has a lower environmental impact (and lower waste collection costs).

CONCLUSION AND RECOMMENDATION

This study represent the demographic profile of the respondents, it was assessed that the majority of the respondents are married, 56 years old and above, have a rank of teacher III, have experience of 1 – 5 years as canteen managers. Majority of the school canteen managers have high General Weighted Average as college graduates, and have no related training on handling canteens and managing wastes.

The researcher concluded that school canteen managers focus on using various tactics and applying the 3Rs (Reduce, Reuse, Recycle) often when it comes to their practices in waste management, particularly when it comes to waste reduction. Recycling is one of the most visible, measurable, and enforceable environmentally friendly initiatives that a school can implement.

The researcher concluded that school canteen managers are viewed as role models by the people in the institution since they set up waste bins in the establishment with their appropriate labels. School canteen managers are focused on applying different approaches and stressing the need for waste reduction when it comes to waste management procedures, particularly in terms of garbage reduction. Also urge students to recycle even at home so they may understand its significance and the scope of rubbish collection at home. Managers of canteens must commit to sustainable waste management since schools play a unique role in society by educating the future of the country. Furthermore the school has developed initiatives to increase students' awareness of trash and environmental issues and teach them how to behave in an environmentally conscious manner.

Programs were offered to students that worked to change their attitudes and behavioral intentions as well as actively adopt sustainable environmental practices. As long as the students and the organization can apply and understand the knowledge and turn it into encouragement

through education and awareness on managing solid waste in schools, their involvement and exposure will considerably raise their level of awareness regarding garbage disposal.

On the basis of the findings and conclusions drawn from the data, the following recommendations are hereby offered:

1. The school should sponsor a seminar, regarding proper waste disposal for faculty, students, canteen managers, and their staff. Their involvement and exposure to the said activities at least once a year will radically upturn their level of awareness regarding food waste. Through pieces of training and seminars of the teachers on environmental education, their involvement and exposure will radically upturn their level of awareness regarding waste disposal and it encourages the students to think critically and to have positive values concerning caring for the environment through proper waste disposal and to become more involved in their communities thus teaches the students about the importance of the environment.
2. Schools should focus on making structural adjustments to their canteen services and integrate healthy eating and cleanliness into their regular curriculum. Considering school canteen managers frequently face a staffing problem, hiring more workers who can support segregation management would be beneficial.
3. To assure the effectiveness and implementation of a planned action plan, may include a larger budget and more expert participation to ensure the quality and the execution of a proposed action plan.
4. Future researchers may include a larger and more varied sample population in order to achieve better results, implications, and understanding of the issues about waste disposal.