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WASTE DISPOSAL MANAGEMENT PRACTICES IN SELECTED SENIOR HIGH SCHOOLS WITHIN THE WA MUNICIPALITY OF GHANA

Justice Agyei Ampofo^{1,2}

¹University for Development Studies, Tamale (Ghana)

²University of Education, Winneba (Ghana)

*Corresponding Author: Justice Agyei Ampofo

Corresponding Author Email: papajusty@gmail.com

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ABSTRACT

Waste disposal management is an issue of concern among stakeholders responsible for waste management. The purpose of this study was to examine waste disposal management practices in three selected Senior High Schools (SHS) within the Wa Municipality of the Upper West Region of Ghana. The study adopted a mixed method explanatory sequential approach with both qualitative and quantitative data collection and analysis. The tools used to capture the required data includes; questionnaires, interview schedules and observation. The study respondents were students, teachers and school management of selected Senior High Schools within the Wa Municipality of the Upper West Region of Ghana. The study respondents were one hundred and twenty-two (122) respondents comprising 45 students, 45 teachers, 30 school management officials, 1 education officer and 1 waste management officer. The study found out that different kind of solid wastes are generated in Senior High Schools within the Wa Municipality of the Upper West Region of Ghana. The study found out that the commonest types of solid waste generated in these schools were food waste, rubbish, and ashes. Again, it was found out that waste is being disposed off in open spaces in Senior High Schools within the Wa Municipality. The study further revealed that, students, teachers and school management are worried about the waste disposal situation in senior high schools within the Wa Municipality. It also emerged from the study that there are no proper waste dump sites in Senior High Schools within the Wa Municipality. The study also found out that waste is being thrown away without separation in senior high schools within the Wa Municipality. It also emerged from the study that waste management practices are very important to students. Based on the findings of the study, the study recommends the provision of adequate dustbins

in Senior High Schools within the Wa Municipality. The study further recommends regular collection of waste in Senior High Schools within the Wa Municipality by the institutions responsible. At least, waste should be collected once in every week in Senior High Schools within the Wa Municipality. The study further recommends regular monitoring of waste collection by the Wa Municipal Assembly. This will keep the place constantly clean and prevent any possible outbreak of communicable diseases such as cholera and typhoid.

Keywords: Waste Disposal Management Practices, Senior High Schools, Wa Municipality, Ghana.

INTRODUCTION

The relationship of humans to the environment is reciprocal, in that, the environment has profound influence on humans and at the same time, humans extensively alter the environment to suit their needs and desires. Some of these changes created new hazards (Wilson, 2007). The attitudes of humans towards the environment are still negative and are contrary to the concept of sustainable development, which recognizes that economic growth and environmental protection are inextricably linked and that the quality of present and future life rests on meeting basic human needs without destroying the environment on which all life depends (Gamble, 2012).

The Millennium Development Goals (MDGs) recognize the fact that environmental sustainability is part of global economic and social well-being. However, achieving the fourth goal (reducing child mortality), the fifth goal (improving maternal health) and part of the sixth goal (to halt and begin to reverse by 2015, the incidents of malaria and other major diseases), of the Millennium Development Goals (MDGs) largely depends on the country's efforts to ensure a clean and healthy environment (Kumah, 2007; Post, 2012; Owusu, 2015).

Maintaining a sound and healthy school environment has always been a challenge to man (Owusu, 2015). The problem under investigation in this study is the poor waste disposal management practices in senior high schools found in the Wa Municipality of the Upper West Region of Ghana. Poor waste disposal management practices in Senior High Schools continue to be a major challenge to school management throughout the world particularly in the rapidly growing cities of the developing countries like Ghana. As the population of student's increases and demand for goods and services augments persistently, it necessitates the production of goods and services by firms and industries to meet the demands of the teeming population (Kumah, 2007; Yurttas, 2010).

Despite the efforts that have been directed towards addressing the issue of poor waste management practices in Senior High Schools in Ghana through the Ministry of Education encouraging and providing guidelines for sanitation in schools, little is known about promoting environmental sanitation through environmental education in the Ghanaian Senior High Schools. Senior High Schools within the Wa Municipality, everywhere is littered with filtered water sachets, pieces of paper and broken furniture. In the dormitories, there are problems of littering, exposure to used sanitary pads, students urinating around the dormitories, students defecating in polythene bags normally referred to as 'fly away'. All of these can affect the health of the students in the dormitories.

Poor institutional framework and low capacities as well as lack of resources; both human and capital have put waste management and sanitation conditions in many schools of the developing World, particularly in Africa, in a very deplorable state (Owusu *et al.*, 2014). Poor waste management practices in Senior High Schools in the Wa Municipality are not different from other towns and cities in Ghana. According to the UN Habitat (2010), while decision-makers in most developing countries (including sub-Saharan Africa) recognize the need to put up proper waste management policies, achieving this has been difficult in practice.

Though, a lot have been studied about the health, financial, social, economic and environmental implication emanating from poor waste management practices in schools (Boateng, 2006). There is lack of information on waste management practices or waste disposal management in selected Senior High Schools within the Wa Municipality of the Upper West Region of Ghana and such remains a knowledge gap and a problem that needs an attention. On the basis of the above problems, there is therefore the need for the researcher to examine waste disposal management practices in three selected Senior High Schools within the Wa Municipality of the Upper West Region of Ghana. Specifically, the study sought to:

1. Determine the awareness, knowledge and practices of waste disposal management in selected Senior High Schools (SHS) within the Wa Municipality of the Upper West Region of Ghana.

REVIEW OF RELATED LITERATURE

Definition of Concepts

Waste

As noted by Miller (2004), the term ‘waste’ is frequently left as an undefined primitive in spite of its critical importance” and “frequently, a list of types of waste is substituted for the underlying definition.” Bello (2009), also describes waste as “unwanted or unusable materials that emanate from numerous sources from industry and agriculture as well as businesses and households and can be liquid, solid or gaseous in nature and hazardous or non-hazardous depending on its location and concentration.” Drawing from the views expressed above, the definition of waste as used in this study is any substance (liquid, solid, gaseous or even radioactive) that is discarded into school environment because it is unwanted, which causes significant nuisance or adverse impact on social, economic, financial, environmental and academic. For the purpose of this study, more emphasis would be placed on solid waste.

Solid Waste

Solid waste can be defined as non-liquid and non-gaseous products of human activities, regarded as being useless. It could take the form of refuse, garbage and sludge, (Parker, 2003). To add to this, solid waste is the unwanted or useless solid materials generated from schools in a given area. Waste is burnt in pits, dumped in random locations, or disposed of in uncontrolled dumps without and further management. According to Post (2012), solid waste is any material that is solid and discarded as unwanted dumped in refuse disposal site. Solid wastes are materials with less liquid content, characterized by a reactive and unstable nature when exposed to heat. Some of these include acids or bases that can corrode metal containers, (Owusu, 2015).

Some solid wastes are toxic and harmful when ingested or absorbed. Some can also cause fire outbreaks and explosion when found under certain conditions, (Akpen, 2005). Solid waste is an unavoidable consequence of the consumption and production activities of a society. Proper

management of waste is becoming a very difficult challenge in schools all over the world (Adewusi, 2016). The rapid population growth and income growth has led to changes in the lifestyle of people, thereby changing the composition of solid waste generated in schools (GSS, 2012).

Waste Disposal Management Practices

Waste disposal is the ultimate fate of all solid wastes collected and transported directly to landfill site. Waste Disposal is one of the several methods of solid waste management that have evolved over the years (Gyebi, 2010). According to Gyebi (2010), the most commonly recognized methods for the final disposal of solid wastes were:

- dumping on land, canyons and mining pits (open land)
- dumping in water
- ploughing into the soil
- feeding to hogs
- reduction and incineration.

Some of these unwholesome practices of solid waste identified during the early disposal practices still exist in Senior High Schools in Ghana. Poor disposal of waste on opened land in schools are clearly evident. Burning of dumps is also common in schools in Ghana and in many other less developed countries. A study carried out by Martin (2011), showed that, the methods of solid waste disposal include dumping of waste in unregulated areas or unauthorized dumping sites and burning of wastes on unapproved dumping sites. This has gone to confirm that the practices of solid waste disposal in the 1950s still exist today and the study area is not an exception.

Waste Management Awareness, Knowledge and Practices in Senior High Schools

The past two decades have witnessed a number of studies throughout the world that were conducted on combinations of the awareness, knowledge and practices of schools with regards to waste management (Boadi, 2004; Tsiboe, 2004, Mensah, 2005; Post, 2012). Little studies could however, be found in international and Ghanaian literature where the combination of awareness, knowledge and practices of schools with regards to waste management was studied. The following sub-sections will discuss the literature found in each of the aspects; awareness, knowledge and practice and the relation to waste management.

Awareness and Waste Management

Awareness is the state or ability to perceive, to feel, or to be conscious of events, objects, or sensory patterns. In this level of consciousness, sense data can be confirmed by an observer without necessarily implying an understanding (Gebril, 2010; Gyebi, 2010). Education and awareness are often crucial and a key part of any country's waste management strategy. A number of studies propose that environmental education is an integral part of raising environmental awareness in people and that people should be educated in a way that would raise their environmental awareness and improve their knowledge so that they could make informed and responsible decisions as adults (Agyei, 2009; UN-Habitat, 2010; Zahari, 2017). From International scholarly literature, there is strong evidence which suggests that awareness and attitudes toward waste generation and management are critical to support the human race's endeavor to address poor waste disposal management practices. Literature on the environmental awareness of students, teachers and school management in Senior High

Schools, is not abundant in the case of Ghana studies. Literature is limited to knowledge and education studies as was done by Martin (2011).

Knowledge and Waste Management

Knowledge with regards to a specific subject is intimately linked to some form of education in that subject. Education has been recognized to possess the capability to meet these challenges through promoting awareness and knowledge on various environmental issues, changing the attitudes of people, generating critical thinking, actions and working towards achieving sustainable development. Education should also aim to increase public awareness about poor waste disposal management implications and their solutions (Parker, 2003) by providing required skills and knowledge (Miller, 2004).

However, attitude cannot be changed by simple education. Seo (2006) stated that, “acceptance of new attitude depends on who is presenting the knowledge, how it is presented, how the person is perceived, the credibility of the communicator, and the conditions by which the knowledge was received.” Research in social sciences has also shown that knowledge on a selected topic may increase; where people may even change attitudes, but that the step to improved behaviours and practice depends on a complex set of social and psychological factors (Misra & Pandey, 2005; Simon, 2014).

Martin (2011) reported that, people’s environmental knowledge is highly specific to issue and geographic scale and this was supported through research done by PAR (2011). Parker (2003) asserts that one of the reasons for poor decision making in environmental issues is the lack of basic environmental knowledge. Knowledge can therefore be seen as a critical component when determining peoples understanding of environmental issues and therefore, environmental awareness that leads to practice.

Practice and Waste Management

Practice is the actual application or use of an idea, belief, or method as opposed to theories about such application or use (Oxford Dictionary, 2013). In an ideal world, all people on earth should demonstrate high levels of good practices and responsibility regarding environmental matters including waste management. This literature highlighted the awareness and knowledge on poor waste management practices but the critical steps to improve behaviour and practice are dependent on a complex set of social and psychological factors.

It is however, imperative to translate all knowledge, awareness and attitude into practice because, without effective practice actual results will not materialize in the solving of complex and integrated problems such as poor disposal of waste (Gebril, et al, 2010). Therefore, there must be a constant drive to encourage and promote awareness through education towards effective waste management and sustainable environmental practices.

Studies have shown that students, teachers and school management in Ghana in general have poor waste management practices. A number of papers have investigated the link between poor waste management practice and aspects such as awareness, attitude and knowledge (Gebril, 2010; Owusu, 2014).

In most cases, these studies found direct correlations between poor waste management practices and a lack of environmental knowledge and awareness. If word is not put to deed all research efforts will be pointless and poor waste management practices will be a consistent problem of the future human race. This focused approach to turn philosophy from environmental studies into good practice towards sustainable development is also critical for

Ghana. However, to enable this focused approach, the significant gap in lack of research studies on the understanding of Senior High Schools students, teachers, and school management awareness, knowledge and practice of waste management in Ghana will have to be closed.

METHODOLOGY

Research Method

A concurrent mixed method approach was adopted for this study, involving both qualitative and quantitative data collection methods. Quantitative data was collected using questionnaires. These tools captured the required data on awareness, knowledge and practices of waste disposal management in Senior High Schools (SHS) within the Wa Municipality of the Upper West Region of Ghana. Qualitative data was captured using Key Informants Interview (KII) guides with key stakeholders at the Municipal Department of Waste Management Office, Environmental Protection Agency and Director of Education at Wa Municipality. Mixed method approaches were used for this study because it can answer a broader and more complete range of research questions because the researcher is not confined to a single method or approach (Creswell, 2013; Ampofo, 2019).

Research Design

In this study the researcher used a mixed method explanatory sequential design, with both qualitative and quantitative data collection and analysis, but the quantitative data is more than the qualitative. Explanatory sequential design involves the procedure of first collecting quantitative data and then collecting qualitative data to help explain or elaborate the quantitative results (Creswell, 2013). The rationale for this approach is that, the quantitative data and results provide a general picture of the research problem, more analysis, specifically through qualitative data collection, is needed to refine, extend or explain the general picture (Ampofo, 2019).

Importantly, explanatory sequential design does not make causal inferences, but rather describes the distributions of variables for large groups (Creswell, 2013; Ampofo, Amoah & Pephrah, 2020). Ampofo (2020) posited that survey research involves collecting data to answer questions concerning the phenomenon under study, and is used to describe the nature of existing conditions, identify standards against which existing conditions can be compared, and/or investigate the relationships that may exist between events. Creswell (2013) posited that explanatory sequential design may use both questionnaires and interviews to gather information from groups of respondents about their opinions of some issue.

The Study Area

The study was conducted in three selected public Senior High Schools namely Wa Senior High Technical School, Wa Senior High School and Wa Technical Institute all within the Wa Municipality in the Upper West Region of Ghana. A preliminary survey by the researcher in the above three selected public schools, show that waste generation is very high in these schools, as such, this has been an issue of concern among the various stakeholders. The researcher's work experience as a teacher has helped me gain access to the information needed for the successful completion of this study. The schools are within my locality, (Wa Municipal), hence reducing the cost as well as risk involved in travelling. This made the data collection process easy and convenient.

Population

The target population consisted of all the students, teachers and school management in the selected three Senior High Schools within the Wa Municipality. The study population also included the Wa Municipal Assembly officer in charge of Waste Management, some personnel of the Environmental Protection Agency and Wa Municipal Education Director. The students, teachers and school management were the target group because, they are in the schools and as such the implications of poor waste management practices comes to them direct hence they were more likely to have knowledge about the implications of poor waste management practices. Table 1 shows students population distribution for three schools.

Table 1

Target Student Population Distribution for 2017

SENIOR HIGH SCHOOL	STUDENTS POULATION		
	FORM 2	FORM 3	TOTAL
1. Wa Senior High Technical School	600	540	1140
2. Wa Senior High School	560	480	1040
3. Wa Technical Institute	520	560	1080
TOTAL	1680	1580	3260

Source: Field Survey (2018)

Table 2 shows teachers population distribution for the three schools.

Table 2

Teacher Population Distribution for the three Schools in 2017

SENIOR HIGH SCHOOL	TEACHERS POPULATION		
	FEMALE	MALE	TOTAL
1. Wa Senior High Technical School	14	76	90
2. Wa Senior High School	16	70	86
3. Wa Technical Institute	20	75	95
TOTAL	50	221	271

Source: Field Survey (2018)

Table 3 shows the distribution of school management/staff population for the three schools.

Table 3

Distribution of Population of the three Schools' Management for 2017

SENIOR HIGH SCHOOL	SCHOOL MANAGEMENT POPULATION		
	FEMALE	MALE	TOTAL
1. Wa Senior High Technical School	7	6	13
2. Wa Senior High School	5	6	11
3. Wa Technical Institute	9	5	14
TOTAL	21	17	38

Source: Field Survey (2018)

The teachers have a total population of 271, students have a population of 3260 and school management has a population of 38, 1 Municipal Education Officer and 1 Municipal Waste Management Officer. Therefore the total population of this study was 3571. This group of population was selected because, they could provide useful information concerning the study.

Sample Size and Sampling Techniques

Ampofo (2020) explains that, 'it is imperative for you to determine an aspect of population to be involved in your study.' A study may entail a large population unlike others with small population. In such situation, a portion of the entire population may be selected for study and

this is what is termed as sample. In selecting sample for the study, the researcher made use of simple random sampling technique in selecting all the respondents.

Simple random sampling means that each member of the sampling population has an equal chance of being selected. It called for a sufficiently large sample to ensure that the sample reflect the population (Creswell, 2013). In all one hundred and twenty (122) respondents were selected for the study comprising 45 students, 45 teachers and 30 school management officials. Also, 1 education officer and 1 waste management officer were also interviewed. This sample size was chosen for the researcher to be able to manage them.

Instrumentation

Questionnaire and interview guide were used for this study. A questionnaire is a research instrument consisting of series of questions for the purpose of a survey or statistical study. The structured questionnaire type was used. Ampofo, Nassè, Amoah & Peprah (2020) explains that a structured questionnaire is a data collection instrument which contains predetermined standard questions or items meant to collect numerical data that can be subject to statistical analyses.

The questionnaire was both close ended and open ended questions with options like (Strongly Agree, Agree, Disagree, Strongly Disagree and Uncertain). It was divided into two sections which are as follows: Section A, deals with personal data and demographic information of the respondents and Section B, provides questions on the awareness, knowledge and practices of waste disposal management in selected Senior High Schools within the Wa Municipality of the Upper West Region of Ghana. Questionnaires required less time and money compared to other methods like focus group discussions (Ampofo, 2020). On the whole, the respondents responded to thirty (30) questions which were Likert-scale type. However, there were few open ended questions and interviews which allowed participants to share their views that were not captured. This was to combat the negative side of the structured questionnaire.

Pretesting of the Instrument

A pilot study was conducted in Wa Islamic Senior High School in the Wa Municipality of the Upper West Region of Ghana which has the same socio- demographic as that of Wa Senior High Technical School, Wa Senior High School and Wa Technical Institute. The pilot study was done to improve the reliability of the instrument. Changes were made to questions deemed inappropriate after the pilot study.

Validity of the Instruments

A research instrument is said to be valid when it measures what it is supposed to measure. Face validity is in relation to the misunderstanding and misinterpretation of the question. This was checked by way of employing pretesting method. Content validity on the other hand, refers to the capacity of the instrument to prove adequate coverage of a topic. Adequate preparation of the instrument under the guidance of an expert opinion and pre-testing of the question helped establish the content validity.

Reliability of the Study

Reliability has to do with an instrument consistently producing the same result every time it is used. The test retest method was used to test for the reliability of the instrument. The questionnaires were administered to students and teachers of Wa Islamic Senior High School in the Wa Municipality of the Upper West Region of Ghana which has the same socio-

demographic as that of teachers, students and management of the selected three Senior High Schools. The same questionnaires were administered to them after two weeks.

Data Collection Procedure

The researcher obtained permission from the heads of the selected SHS within the Wa Municipality to seek their approval and access to the school. The participants were told of the purpose, time, venue and how to answer the questionnaires. They were also assured of their confidentiality and anonymity. The researcher self-administered the questionnaires personally in order to clearly issues to the participants. On the whole the researcher spent two week for the collection of the data. All respondents responded to the questionnaire.

Data Analysis Techniques

The data gathered by the above instrument were first coded, categorized and then analyzed using SPSS (version 20). The data analyses include generating the frequencies and percentages upon which the interpretations were made. Frequency counts and percentage were applied to items in section 'A' of the questionnaire which include respondents' demographic information like gender and years of experience. The use of descriptive statistics, notably frequency and percentage were used to analyze the data that was collected from the field on the impacts of poor waste disposal management practices on Senior High Schools within the Wa Municipality. Analysis is applied to see the relationships of students, teachers and school management views as well as the relationship of these scales.

The process of data analysis was done with reference to research objectives. Also, the descriptive analysis was appropriate for this study because it involved the description, analysis and interpretation of circumstances prevailing at the time of study. The use of basic statistical techniques especially the used of frequencies and percentages easily communicate the research findings to majority of readers, (Creswell, 2013). Frequencies easily show the number of subjects in a given category. A number of tables and charts were used to present data findings.

DISCUSSION OF FINDINGS

Demographic Analysis of Respondents

The initial aspect of the data analysis focuses on a summary statistics of the respondents. As explained earlier in the chapter three, the study captured the views of students, teachers and school management of the three selected public Senior High Schools in the Wa Municipality concerning waste disposal management practices. The descriptive analysis therefore implemented on the three classes of respondents. Tables 4 and 5 give a report of the summary statistics of the sampled respondents. It offers demographic information about the respondents' gender, their position, age, experience and highest level of education. Majority of the students who responded to the survey instrument were males (55.56% representing 25 out of the total of 45 students). It is also detected that most of the sampled students (44.44%) are between the ages of 19 - 23years. Meanwhile, the researcher mostly concentrated on all the students (SHS 1, SHS 2 and SHS 3) who were equally represented (33.33%) respectively each as all this group was assumed to possess enough information concerning the implications of poor waste disposal management practices on Senior High Schools within the Wa Municipality of the Upper West Region of Ghana.

Table 4
Demographic Characteristics of Sampled Students

	Details	Frequency	Percent
Gender	Male	25	55.56
	Female	20	44.44
	Total	45	100
Age	14-18	15	33.33
	19-23	20	44.44
	24-28	10	22.22
	Total	45	100
Class	SHS1	15	33.33
	SHS2	15	33.33
	SHS3	15	33.33
	Total	45	100

Source: Field Survey (2018)

Aside the student population, the study also focused on sampling the responses of both teachers and school management. Majority of the teachers and school management/staff are males (66.67% for teachers; and 66.67% for management). It is also revealed that averagely most of the teachers and management staff are 30 years and above with a first degree educational qualification. More than 80% of the teachers and more than 65% of the management staff were also identified to have served their school for more than 5 years.

Table 5
Demographic Characteristics of Sampled Teachers and Management

	Details	Teachers		Management	
		Frequency	Percent	Frequency	Percent
Gender	Male	30	66.67	20	66.67
	Female	15	33.33	10	33.33
	Total	45	100	30	100
Age	24-29	5	11.11	0	0
	30-35	15	33.33	5	16.67
	36-40	10	22.22	10	33.33
	41-45	15	33.33	15	50.0
Educational Level	Total	45	100	30	100
	Masters	10	22.22	5	16.67
	Professional	0	0	5	16.67
	First Degree	30	66.67	10	33.33
	HND	5	11.11	10	33.33
Experience	Total	45	100	30	100
	4yrs - 5yrs	5	11.11	10	33.33
	5+	40	88.89	20	66.67

Source: Field Survey (2018)

The main research question sought to determine the awareness, knowledge and practices of waste disposal management in the three selected Senior High Schools within the Wa Municipality of the Upper West Region of Ghana. The responses are presented below.

One aspect of the questionnaire gathered data from respondents on the types of waste been generated in SHS within the Wa Municipality and all the respondents expressed that different

kind of solid wastes are generated in senior high schools in the Wa Municipality. According to the students, teachers and school management, the commonest types of waste generated in Senior High Schools within the Wa Municipality were food waste, rubbish, and ashes.

One aspect of the questionnaire also gathered data from respondents on where they dump waste in senior high schools within the Wa Municipality and the responses are presented below.



Figure 1: Disposal of Solid Waste in Senior High Schools within Wa Municipality

Source: Field Survey (2018)

From Figure 1, majority of the respondents 100 out of 120 representing 83.33% indicated that waste is been disposed off in open spaces in Senior High Schools within the Wa Municipality, followed by 10 out of 120 representing 8.33% indicated that waste is been disposed off in dustbin in Senior High Schools within the Wa Municipality while 5 out of 120 representing 4.17% respectively each indicated that waste is disposed off in dump site and gutters in these schools within the Wa Municipality. The implication of this result means that waste is disposed off in open spaces in Senior High Schools within the Wa Municipality, This resulted in littering and heaping of waste thereby making the environment filthy. Therefore, the possibility of outbreak of cholera and other environmental related diseases is high if such practice continues. This result is consistent with a study by Gyebi (2010) who posited that open dumping remains the simplest and the most commonly used method for disposing solid waste in Senior High Schools in Ghana. The author furthered added that in most low to medium income developing nations like Ghana, almost 100% of generated waste goes to open dumps.

A study carried out by Martin (2011) showed that, the methods of solid waste disposal include dumping of waste in unregulated areas or unauthorized dumping sites and burning of wastes on unapproved dumping sites. This has gone to confirm that the practices of solid waste disposal in the 1950s still exist today and study area is not an exception. This is why Mensah (2012) postulated that while wastes are deposited in open dumps in most of these schools in developing nations.

The study also sought to enquire from respondents on how they are worried about waste disposal in Senior High Schools within the Wa Municipality and this is presented in Figure 2.

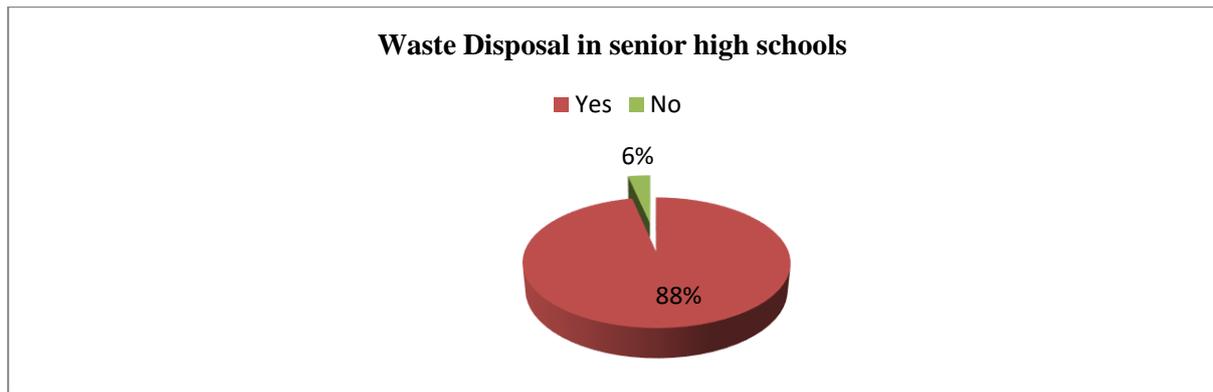


Figure 2: How Respondents are Worried about Waste Disposal Situation in Senior High Schools within the Wa Municipality

Source: Field Survey (2018)

Results from Figure 2 shows that majority of the respondents 115 out of 120 representing 96.0% indicated that, they are very worried about the waste disposal situation in Senior High Schools within the Wa Municipality, followed by 5 out of 120 representing 4.0% who indicated that they are slightly worried about the waste disposal situation in Senior High Schools within the Wa Municipality. The implication of this result means that waste disposal is a serious issue in Senior High Schools within the Wa Municipality.

The study also gathered data from respondents on waste dump sites in Senior High Schools within the Wa Municipality and this is presented in table 6

Table 6

Waste Dump Site in Senior High Schools within the Wa Municipality

Items	Frequency	Percentage
There are a number of proper waste dump site	10	8.33%
There are no proper waste dump site	90	75.0%
There are dump site but not properly constructed	20	16.67%
Total	120	100%

Source: Field Survey (2018)

Results from Table 6, shows that majority of the respondents 90 out of 120 representing 75% indicated that there are no proper waste dump site in Senior High Schools within the Wa Municipality, followed by 20 out of the 120 respondents representing 16.67% who indicated that there are dump sites but not properly constructed in Senior High Schools within the Wa Municipality whiles 10 out of the 120 respondents representing 8.33% who indicated that there are a number of proper waste dump sites. The implication of this result means that there are no proper ways of disposal waste in Senior High Schools within the Wa Municipality. This is graphically shown in plate 1, 2 and 3 below.



Bad Disposal of waste



Good Disposal of waste

Plate 1: Waste Disposal in Wa Senior High Technical School

Source: Field Survey (2018)



Bad Waste Disposal



Good Waste Disposal

: Waste Disposal in Wa Senior High School
Source: Field Survey (2018)



Bad Disposal of Waste



Good Disposal of Waste

Plate 3: Waste Disposal in Wa Technical Institute
Source: Field Survey (2018)

One aspect of the questionnaire also gathered from respondents on waste management activities carried out in Senior High Schools within Wa Municipality and the responses are presented in Table 7.

Table 7:
Waste Management Activities in Senior High Schools Within The Wa Municipality

Items	Yes	No	F	%
a. Separate paper waste	20 (16.67%)	100 (83.33%)	120	100%
b. Separate plastic waste	0 (0.00%)	120 (100.0%)	120	100%
c. Separate glass waste	0 (0.00%)	120 (100.0%)	120	100%
d. Separate organic waste	0 (0.00%)	120 (100.0%)	120	100%
e. Just throw the waste away without separation	120 (100.0%)	0 (0.00%)	120	100%

Source: Field Survey (2018)

Results from Table 7 shows that, majority of the respondents 100 out of 120 representing 83.33% indicated that they do not separate paper waste in waste management activities in Senior High Schools within the Wa Municipality whiles 20 out of the 120 respondents

representing 16.67% indicated that they separate paper waste in waste management activities in Senior High Schools within the Wa Municipality.

Again, all the respondents 120 representing 100% respectively each indicated that they do not separate plastic waste, separate glass waste and separate organic waste in waste management in Senior High Schools within the Wa Municipality. In addition, all the respondents 120 representing 100% indicated that they just throw waste away without separation in Senior High Schools within the Wa Municipality.

The implication of this result means that waste management is a challenge in Senior High Schools within the Wa Municipality hence improper waste management in these schools within the Wa Municipality. This result is consistent with a study by Agyei (2009) who asserted that students, teachers and school management do not seem to have adequate basic knowledge about waste management practices in Ghana.

The implication of this result means that people have different attitude or perception about waste management in Senior High Schools within the Wa Municipality. However majority of the respondents 98.33% believe that waste management is a good practice. Due to the inclusion of some information of solid waste management in the Ghanaian syllabus at the Basic, Secondary and Tertiary Education, most people as such would have gained some knowledge before completing basic education and most of the respondents had basic and secondary education. There is however a lack of appreciation by the public of what is involved in waste management in Senior High Schools within the Wa Municipality. This is why Parker (2003) noted that public understanding and awareness of waste issues is currently very poor.

Another aspect of the study gathered data from respondents on the institutions responsible for waste management in Senior High Schools within the Wa Municipality. All the respondents expressed that the Wa Municipal Waste Management department and Zoomlion Ghana Limited are the institutions responsible for waste management in Senior High Schools within the Wa Municipality. This result clearly suggests that Zoomlion Ghana Limited is responsible for the management of waste in Senior High Schools within the Wa Municipality. This result is consistent with a study by Owusu (2014) in Ghana, the issue of collection, management and disposal of solid waste continues to feature prominently in major towns and cities.

The respondents further expressed that, waste is not properly managed in Senior High Schools within the Wa Municipality. The implications of this result are that management of waste in Senior High Schools within the Wa Municipality is a problem by the institution responsible. This is why Mensah (2005) asserted that many Senior High Schools environment in Ghana are characterised by waste accumulations and poor environmental sanitation.

The result of this study confirms to the study by Martin (2011) who postulated that, there is lack of provision for proper waste management in Senior High Schools in Ghana and the resulting effect is poor environmental conditions. Depicting a similar picture of the problem, Zahari (2017), has estimated that in some cases, up to 60 percent of solid waste generated within some these school environment in poor countries remains uncollected and such refuse accumulates on the school land creating a lot of environmental problems of which those in the Wa Municipality is not an exception.

One aspect of the questionnaire also gathered data on the overall ratings of waste management practices in Senior High Schools within the Wa Municipality and this is shown in Figure 3.

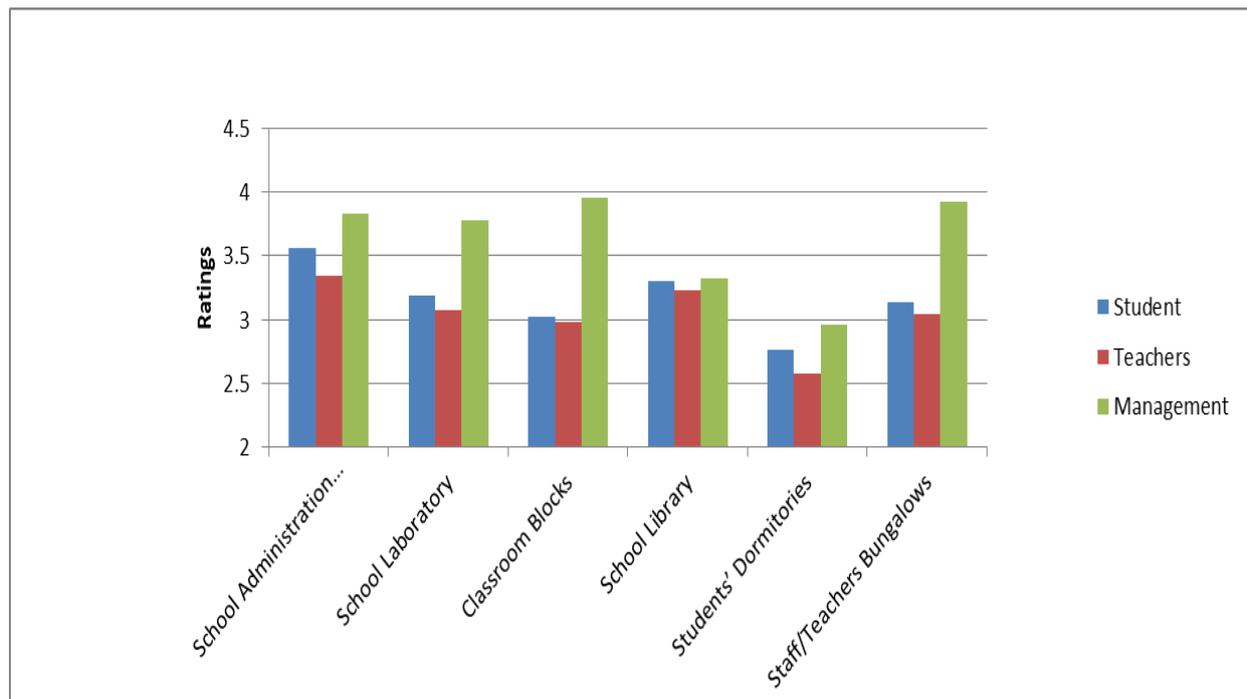


Figure 3: Overall Ratings of Waste Management in Senior high Schools within the Wa Municipality
Source: Field Survey (2018)

It is also obvious that there are differences in ratings with management staff offering high ratings in all categories followed by the students. The students' ratings are relatively close to that of the teachers. This can be explained by the fact that the ratings are likely to be influenced by the social reality which defines the context of each respondent. For instance, the student may be limited by the short time span they may have spent in the school; thereby, may not have adequate historical memory to assess the waste management situation in Senior High Schools within the Wa Municipality; even so their ratings can be considered as statistically not different from that of the teachers. In terms of the differences in assessment of management and teachers, it expected that management although accepting the fact that there is no proper management of waste in Senior High Schools within the Wa Municipality; may naturally provide higher ratings from a viewpoint of defense due to the fact that they are likely to feel obligated to be the engineers of waste management.

SUMMARY OF MAJOR FINDINGS

A descriptive survey was employed for the study. A questionnaire and an interviews guide were used to gather data from three selected public Senior High Schools students, teachers and school management within the Wa Municipal. Respondents were selected through simple random and purposive sampling. The collected data was analyzed in simple percentages. The research question was to determine the awareness, knowledge and practices of waste disposal management in the three selected Senior High Schools within the Wa Municipality of the Upper West Region of Ghana.

The study found out that different kind of solid wastes are generated in Senior High Schools in the Wa Municipality. According to the students, teachers and school management, the commonest types of solid waste generated in these schools were food waste, rubbish, and ashes. Secondly, the study also found out that waste was being disposed off in open spaces in Senior High Schools within the municipality. The study also found out that students, teachers

and school management are worried about the waste disposal situation in Senior High Schools within the municipality. Fourthly, it also emerged from the study that there are no proper waste dump sites in Senior High Schools within the municipality.

The study further found out that waste are been thrown away without separation in Senior High Schools within the municipality. Again, it also emerged from the study that waste management practices is very important to students, teachers and school management. Moreover, the study found out that the Wa Municipal Waste Management department and Zoomlion Ghana Limited are the institutions responsible for waste management in Senior High Schools within the Wa Municipality.

CONCLUSIONS

Conclusions were drawn based on the research findings:

The study concludes that different kinds of solid wastes are generated in Senior High Schools in the Wa Municipality and waste was being disposed off in open spaces in Senior High Schools within the Wa Municipality. Again, the study concludes that students, teachers and school management are worried about the waste disposal situation in Senior High Schools within the Wa Municipality. Also, the study concludes that there are no proper waste dump sites in Senior High Schools within the Wa Municipality. The study further concludes that waste are been thrown away without separation in Senior High Schools within the Wa Municipality.

Recommendations

Based on the findings of this study, the following recommendations could be raised:

First and foremost, there should be more education on best waste management practices in Senior High Schools within the Wa Municipality. The study further recommends the provision of adequate dustbins in Senior High Schools within the Wa Municipality by the Wa Municipal Assembly.

The study recommends to the Environmental Protection Agency in Wa Municipal which is the regulatory authority on sanitation to ensure routine monitoring of management of waste disposal sites in Senior High Schools within the Wa Municipality. The waste disposal sites in Senior High Schools within the Wa Municipality should also be relocated because of its negative environmental impact on the lives of students, teachers and school management.

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Conflict of Interest Statement

No conflict of interest has been declared by the author.

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