

UNIVERSITY OF EDUCATION, WINNEBA
DEPARTMENT OF SOCIAL STUDIES EDUCATION

THE ATTITUDES OF STUDENTS AND STAFF OF ASAMANKESE SENIOR HIGH
SCHOOL TOWARDS ENVIRONMENTAL SANITATION



VIVIENNE AKOSUA DZIFA SESSI

2014.

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VIVIENNE AKOSUA DZIFA SESSI

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Submitted to the School of Graduate Studies, University of Education, Winneba in
partial fulfillment of the requirements for award of the Master of Philosophy, (Social
Studies) degree.**

OCTOBER, 2014.

DECLARATION

STUDENT'S DECLARATION

I Vivienne Akosua Dzifa Sessi declare that this Thesis, with the exception of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my own original work, and it has not been submitted, either in part or whole, for another degree elsewhere.

SIGNATURE.....

DATE.....

SUPERVISOR'S DECLARATION

I hereby declare that the preparation and presentation of this work was supervised in accordance with the guidelines for supervision of Thesis laid down by the University of Education, Winneba.

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DEDICATION

I dedicate this thesis to my loving husband, Godwin Kwasi Tordzro, my lovely kids: Benedict Tordzro, Dominic Tordzro and Louisa Tordzro as well as my dear parents, Mr. James Kwasi Sessi and Mad. Regina Dziege.



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LIST OF ABBREVIATIONS

| Abbreviations | Full Meaning |
|----------------------|--|
| AMA..... | Accra Metropolitan Authority |
| DFID..... | Department For International Development |
| EE..... | Environmental Education |
| EMS..... | Environmental Management Systems |
| EPA..... | Environmental Protection Agency |
| ESM..... | Environmental Sanitation Management |
| ESP..... | Environmental Sanitation Policy |
| GDP..... | Gross Domestic Product |
| IRC..... | International Rescue Committee |
| MDGs..... | Millennium Development Goals |
| MEST..... | Ministry of Environment, Science and Technology |
| MLGRD..... | Ministry of Local Government and Rural Development |
| MUDHRD..... | Ministries of Urban Development & Human Resource Development |
| MWRWH..... | Ministry of Water Resources, Works and Housing |
| NTI..... | National Teachers' Institute |
| RSA..... | Republic of South Africa |
| TPB..... | Theory of Planned Behaviour |
| TRA..... | Theory of Reasoned Action |
| UNICEF..... | United Nations International Children's Education Fund |
| WHO..... | World Health Organization |

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ABSTRACT

Environmental Sanitation is fundamental to health, survival, growth and development. Having a healthy school environment sets a school on track for development. Asamankese Senior High School is currently experiencing poor environmental sanitation. The main objective of the study is to examine the attitudes of students and staff of Asamankese Senior High School towards Environmental sanitation. The study adopted the descriptive sample survey. The main instruments used for gathering the data for the study were questionnaire and observation. This enabled the researcher to capture as closely as possible, the attitudes of students and staff towards environmental sanitation. The sampled population for the study consisted of 300 students and 30 teachers from Asamankese Senior High School in the Eastern Region of Ghana. Data collected were analyzed using frequency counts and percentages. The study revealed differences in attitude towards environmental sanitation among students and teachers. However, the general environmental sanitation condition in Asamankese Senior High School is not up to expectations. The research findings also showed that both students and teachers consider water shortage and littering as major environmental problems in Asamankese Senior High School. The study again found out that, inadequate dustbins accounts for the reasons why students and teachers litter. To ensure good environmental sanitation in schools, the study recommended that, there is the need to train teachers with suitable sanitation strategies while they are still at the Universities Colleges of Education. This will ensure that, by the time they come out, they are already acquainted with sanitation issues and strategies for their promotion and the roles they have to play to bring about effective sanitation practices in our schools.

CHAPTER ONE

INTRODUCTION

1.0. Overview

The chapter contains a brief discussion of the background to the study which has been motivated by the fact that the issue of environmental sanitation is a major concern for obvious reasons. This study investigates attitudes of students and staff towards environmental sanitation. The chapter also touched on statement of the problem and the need to embark on the study, i.e. the purpose of the study as well as the objectives of the study. The educational significance of the study as well as research questions which has been addressed by the study has been dully tackled in this chapter. Four research questions have been chosen to guide the study. It is hoped that findings of the study will be of value to all stakeholders in education in particular and in general the entire Ghanaian public.

1.1. Background to the Study

The World Health Organization defines environmental sanitation as “the control of all those factors in man’s physical environment, which exercise or may exercise a deleterious effect on his physical development, health and survival”. The issue of environmental sanitation can be a major concern of everyone for obvious reasons. Firstly, mankind has to realize that the health and good living of the individual and the community anywhere on this globe is inextricably tied to good environmental sanitation. Next is the fact that the beauty of any earthly environment might not depend on only nicely constructed houses but more importantly, on the cleanliness of their surroundings.

Another reason for so much importance being given to good sanitation emanates from the vital role it also plays in promoting economic growth of a nation. This assertion is based on

the fact that tourist attraction in any country, region or town can greatly be influenced by the quality of prevailing sanitation conditions.

Environmental deterioration, extinction, or pollution in many vital earth systems, such as air, water, soil, forest, and biological diversity have required countries to develop policies for protecting and developing the earth and promoting global cooperation on these issues (Tecer, 2007). Environmental problems have become globalized and have reached the stage where they present a threat to life on Earth. This situation has led to the review of people's relationships with nature, their attitudes and behaviours towards the environment, the duties and responsibilities assumed by the individual towards nature, and the redefinition of ecological culture and environmental awareness (Atasoy, 2005).

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. 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.

Maintaining a sound and healthy environment has always been a challenge to man (Akintola, 1978). For example, the different inputs from anthropogenic activities include energy generating heat, uncontrolled sound turning into noise, and other land using agencies that causes spoliation of the physical environment. Various human activities that

requires planning and coordination demands a comprehensive and deliberate effort to keep the physical environment fit for the total man to function well.

Hence, the management of built environment is determinant to the quality of man at any given time. Where this is undermined, there is bound to be poor physical conditions and the consequence is poor human output. Of particular interest is the school environment. The physical outlook of the school environment is very important in contributing to healthy academic exercise. It forms the fulcrum on which other activities revolve. This is because it creates an atmosphere of the mind for study.

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. Unsafe water and poor sanitation result in countless deaths among children and a huge burden of disease such as diarrhoea, dysentery, malaria, and other parasitic illnesses. Poor sanitation is a conduit for these diseases.

Achieving the MDGs and the eradication of poverty remain the highest priority of the government of Ghana. The impact of poor environmental sanitation in cities, communities and in schools threaten the achievement of the MDGs. MDG 7 (Ensuring Environmental Sustainability) is precisely about linking environmental protection to poverty reduction through sustainable development. Ghana's National Environmental Sanitation Policy

(MLGRD, 1999) spells out the guidelines and gives power to District Assemblies to promulgate bye-laws to address environmental issues in their locality in an effort to reduce environmental pollution. It also gives power to the Judiciary to establish and empower Community Tribunals to prosecute offenders against sanitary bye-laws and regulations, but the enforcement of these environmental bye-laws to regulate the activities of the inhabitants have been largely unsuccessful. Hence, some schools still face the challenges of poor environmental sanitation resulting from poor or unhygienic habits and practices. Thus, the deteriorating environmental quality in some schools calls for solutions in order to reduce its impact on the health of the students.

1.2. Statement of the Problem

There have been considerable sanitation problems in institutions such as schools, but the problems seem to have received less attention. Despite the efforts that have been directed towards addressing the issue of poor sanitation in 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.

In Asamankese Senior High School, everywhere is littered with filtered water sachets, pieces of paper and broken furniture, etc. 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' etc. All of these can affect the health of the students in the dormitories.

Management of waste materials and substances is a problem. Solid waste materials like pieces of papers, pack from wrappings, tins, wood, etc littering the environment and classrooms. Where attempts are made to sweep, heaps of refuse are uncontrollably dumped haphazardly and jumbled up together unsorted with both degradable and non-degradable materials which mixes up and causing mind-blighting stench; harboring mosquitoes and pests such as rats, cockroaches, and eyesores.

Meanwhile there have been several interventions by the school administration to curb the rate of insanitary conditions in the school, yet students' and staffs' attitudes towards waste disposal have not changed. The behaviour and attitude of the inhabitants towards sanitation do not augment this effort. If appropriate efforts are not made to halt such practices, the school will continue to spend the greater part of its resources in an attempt to ensure good environmental sanitation without success.

The above problems make it clear that the school is unable to cope with the problems. On the bases of the above problems, there is therefore the need for the researcher to investigate and examine the attitudes of the students and staff towards environmental sanitation in Asamankese Senior High School.

1.3. Purpose of the Study

The purpose of this study is to document the environmental sanitation situation and the attitudes of students and staffs towards environmental sanitation in the Asamankese Senior High School. This attempt has become necessary because of the recent upsurge by various bodies such as WHO and UNICEF calling for Environmental Education to enable the individual to improve on sanitation in his or her environment.

1.4. Objectives of the Study

Specifically, this study seeks to:

1. Describe the environmental sanitation situation in the Asamankese Senior High School.
2. Examine factors responsible for the environmental sanitation conditions in the Asamankese Senior High School.
3. Examine the attitudes of students and staff of the Asamankese Senior High School towards environmental sanitation.
4. Outline the effects of the environmental sanitation conditions in the Asamankese Senior High School.

1.5. Research Questions

To carry out this study the following research questions were put forward and addressed:

1. What is the environmental sanitation situation in Asamankese Senior High School?
2. What factors are responsible for the environmental sanitation conditions in Asamankese Senior High School?
3. What are the attitudes of students and staff towards environmental sanitation problems in Asamankese Senior High School?
4. What are the effects of the insanitary conditions in Asamankese Senior High School?

1.6. Significance of the Study

The findings of this study may enable the students and staff in Asamankese Senior High School to better understand and cultivate a habit of maintaining a clean environment. More

so, the findings may help the school management to provide adequate facilities to enable labourers and other people who matter when it comes to cleaning and tidying up of the school environment. Again, the study may enable state agencies dealing with sanitation issues to make additional policies to improve their mode of operation or adopt renewed strategies to tackle the problems of sanitation in schools.

The findings of the study may also serve as a source of reference material to other researchers who will in future be interested in conducting research into other related areas of the problem. Besides, even though the study concerns the school, it is the researcher's expectations that the findings may also be of help to the Municipal Assembly and other schools within the West Akim Municipality seeking remedies to seemingly uncontrollable environmental sanitation problems.

1.7. Limitations of the Study

Geographically, the study is restricted to West Akim Municipality and was conducted in Asamankese Senior High School. The views of students and staff might have some elements of bias and as such, since the findings of the study is based on respondents' opinions; the reliability of the results of analysis may not be completely correct. It was difficult to get respondents to fill the questionnaire items, as most people were not interested in sharing their opinions.

1.8. Delimitations of the Study

Though the issue of environmental sanitation seems to be a major problem in the West Akim Municipality in particular and the whole country in general, the study has

Asamankese Senior High School only as its focus. The study is also limited to only staff and students in the school.

1.9. Organisation of the Study

This research report is presented in five chapters. The first chapter deals with the background to the study, statement of the problem, purpose of the study, research questions and significance of the study, limitations and delimitations of the study, organisation of the study as well as the theoretical framework for the study.

The review of the relevant literature on the study constituted Chapter Two with Chapter Three dealing with the methodology. This comprised the design of the study, population, sample and sampling techniques used, instrument and data collection procedure as well as the procedure for analyzing the data. Chapter Four, deals with the presentation and the analysis of data. The last chapter deals with the discussion of the findings and recommendations.

1.10. Theoretical Framework for the Study

Human factors such as knowledge and attitude have monumental effects on the achievement of safe environment. Knowledge of the environment is an independent variable in this study, expected to positively correlate with the dependent variable, attitude towards, environmental sanitation. Human factors such as knowledge and attitude have monumental effects on the achievement of safe environment. Knowledge of the environment is an independent variable in this study, expected to positively correlate with the dependent variable, attitude towards environmental sanitation. This expression is predicted on an implicit assumption of the much referenced Ajzen's Theory of Planned

Behaviour, a resurgence of Ajzen and Fishbein's Theory of Reasoned Action (TRA). Ajzen posited that behaviour is a function of behavioural intentions, which must have been endeared by attitudes and subjective norms. Knowledge is not an explicit element of this model.

However, Ajzen and Fishbein stated that "attitudes are functions of beliefs". Beliefs refer to knowledge in this context. Attitude serves a knowledge function by helping people attain a meaningful, stable and organized view of the world. Hence, it is an expectation that knowledge positively correlates with attitude. Attitude towards a concept can be defined as an individual or group of individuals, general feeling of favourableness or unfavourableness for that concept (Ajzen & Fishbein, 1980).

Many studies of knowledge and attitudes have found a positive and often significant relationship between the two variables. In a study of the effectiveness of a visitor education strategy in raising levels of knowledge and attitudes toward nature conservation, Olson, Bowman and Roth (1984) found a positive relationship between scores on the knowledge test and scores on the attitude test for all concepts measured. The programme was successful in raising both the levels of knowledge and improving attitudes toward environmental management. Similarly, Armstrong & Impara (1991) found that positive attitudes followed exposure to a K-7 environmental education publication on knowledge and attitudes about the environment. Many other studies have used the Theory of Reasoned Action (TRA) and its extension, the Theory Planned Behaviour (TPB), as a framework not only good for understanding, explaining and predicting behaviours, but also to provide a useful guide for designing intervention strategies to change or maintain behaviours.

The theory is based on an assumption that individual behavioural intentions are directly related to their attitudes. The TRA views a person's intention to perform (or not perform) as the immediate determinant of the action. This behavioural intention, in turn, has two determinants. One is the attitude towards the behaviour—a person who believes that performing a given behaviour will lead to mostly positive outcomes will hold a favourable attitude toward performing the behaviour.

The other is the subjective norm which states that person believes that most referents with which he or she is motivated to comply, think he or she should perform the behaviour will perceive the social pressure to do so. The beliefs that underlie a person's attitude toward the behaviour are termed behavioural beliefs, and those that underlie the subjective norm are termed normative beliefs (Ajzen & Fishbein, 1980).

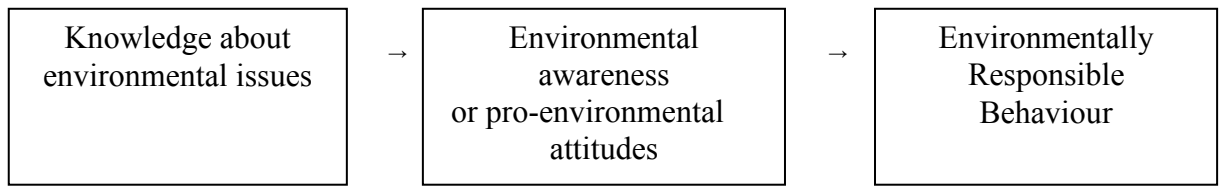
The Theory of Planned Behaviour (TPB) states that what an individual does is determined by personal motivation which is determined by attitude, social support and perceived behavioural control. These factors are grounded by the persons' perception of social, personal, and situational consequences of the specified action (Ajzen, 1985; Maddan, Ellen & Ajzen, 1992; Ajzen & Driver, 1992). TPB allows for a better evaluation of human behavior when participation decisions are voluntary and under an individual control. The Theory of Planned Behaviour has been widely used in environmental behaviour research to predict a person's intent to participate in a specified behaviour (Gamba & Oskamp, 1994; Scott & Willets, 1994; Kuhlemier, Van den Berg, & Lagerweij, 1999; Grodzinska-Jurczak, Agata, & Agata, 2003). TPB has been used successfully empirically and conceptually by

many researchers in environmental behaviour to explore attitudes that trace the correlation of beliefs to behaviour.

Enhancement of the environmental knowledge of students leads to the development of positive attitudes towards the environment (Uzun & Sağlam, 2006). While some researchers consider that school pupils' participation in environmental courses will increase awareness of environmental problems and promote environmentally responsible behavior amongst students, other researchers indicate that life experiences are a more efficient means of forming environmental attitudes than participation in specific courses (Bradley, Waliczek, & Zajicek, 1999). An individual who has a positive attitude towards an object tends to act positively, approach, show concern for, support, and assist this object.

An individual whose attitude is negative towards an object tends to be indifferent to it or alienate, criticize, or even damage it. Thus individuals, who have negative attitudes towards the environment, will be insensitive to environmental problems and may even adopt behaviours that damage the environment (Aydın, 2000; Uzun & Sağlam, 2006). Traditionally the assumption was that increased environmental knowledge would automatically lead to environmental awareness (perceptions) that would in turn lead to pro-environmental attitudes that will be expressed as overt and responsible environmental behaviour. This simplistic and linear relationship is illustrated in Figure 1.

Figure 1: A Simplistic Linear Model of Environmentally Responsible Behaviour



CHAPTER TWO

LITERATURE REVIEW

2.0. Overview

The chapter discusses some basic concepts related to environmental sanitation. It focuses on environmental sanitation problems in developing countries, more especially in schools discussing the nature, causes and the effects of poor environmental sanitation.

2.1 Concepts in Environmental Sanitation

2.1.1. Defining Environment

Environment (from the French word: to circle or surround) can be defined as the circumstances and conditions that surround an organism or group of organisms, or the social and cultural conditions that affect an individual or community (Cunningham, 2002). The concept of “Environment” is an all-embracing term describing the terrestrial, aquatic and atmospheric systems of the world. In its widest use, it refers to all the biophysical features, organic and inorganic resources and all bio-diversity disposable to humankind.

Environment has been variously conceptualized to include all the natural resources of air, land and water; visible and invisible elements that affect the development of an organism for its lifetime. Environment refers to all the conditions and influences affecting the development of an organism in its lifetime. Man’s total environment includes all the living and non-living elements in his surroundings which could be natural or built (man-made), etc. in a complex network of systems (Okaba and Obong, 2006; Edu, 2006).

It also refers to all natural resources, joint property of many of which one man’s right of use must not adversely affect the right of use of other joint owners (Offiong, 2003; Verla,

2003; Eni, 2005; Obong, 2007b). The current global awareness of the environment and its pivotal role to human endeavours and survival started mounting with the 1972 United Nation's World conference on Human Environment.

As identified by Obong, (2007), three major segments of environment include the natural, built and personal environments. The built and personal environments are what to a large extent determine the conditions of a school environment. As part of the deliberate world created by humans is the school environment that constitutes the learning atmosphere for the young minds. Neglecting to manage this environment is to undermine the future of any society. The particular concern here is that it is the product of anthropogenic activities.

As posited by Eni (2005), human beings have characteristically lived in two worlds. The first is the natural world of nature consisting of plants, animals, soils, air and water that preceded the existence of man by hundreds of millions of years of which humans is an integral and inescapable part. The second is the world of social institutions and artifacts (built world) that humans deliberately created for him/her self, using science, technology, culture, political organization, and so forth.

Definitions of the word environment are very similar in their description of what the word entails. For example, Bell et al. (2001) describe the environment as one's surroundings which include one's social environment, for example the people and groups among which we live; one's physical environment, for example the non-animal aspects of one's surroundings such as the wilderness, cities or one's farmlands; the natural (non-human) and the built (human made) environment.

Willer (1996) sees the environment as ‘the total complex of interrelationships making up the physical, biological and socio-political surroundings.’ physical environment, for example the non-animal aspects of one’s surroundings.’ Barrow, (1995) defines environment as the sum total of conditions within which organisms live. It is the result of interaction between living (biotic) and nonliving (abiotic) parameters.

Drawing from the views expressed above, the definition of environment to be used in this study means the surrounding external conditions influencing development or growth of people, animal or plants; living or working conditions etc. In fact, the concern of all education is the environment of humans. However, humans cannot exist or be understood in isolation from the other forms of life and from plant life.

The scope of the term Environment has been changing and widening with the passage of time. In the primitive age, the environment consisted of only physical aspects of the planted earth' land, air and water as biological communities. As time passed on, people extended their environment, through their social, economic and political functions. As part of the deliberate world created by humans is the school environment that constitutes the learning atmosphere for the young minds. Neglecting to manage this environment is to undermine the future of any society.

The concept of environment encompasses all the natural resources which interlink in a complex global ecosystem embodying many sub-systems. Disruption in such systems, which is as a result of cumulative indiscriminate degradation which takes place in localized environments such as schools, villages, towns and cities, distort the delicate ecological

balance and have dire consequences for mankind, and thus provide a compelling justification for the preservation of the environment.

2.1.2. Defining Sanitation

The term “*sanitation*” has been given various definitions by different authors and has been used regularly in various aid programs. Yet what exactly is sanitation? The Oxford Advanced Learner’s Dictionary defines sanitation as: “systems that protect people’s health, especially those that dispose efficiently of human waste”. Other dictionaries also mention prevention of transmission of diseases and insurance of public and private health. In the developing world, the term sanitation gained a meaning of excreta disposal facilities. Mensah (2002) define sanitation as the state of cleanliness of a place, community or people particularly relating to those aspects of human health including the quality of life determined by physical, biological, social and psychological factors in the environment.

Schertenleib et al (2002), define sanitation as interventions to reduce people’s exposure to diseases by providing a clean environment in which to live and with measures to break the cycle of disease. This usually includes hygienic management of human and animal excreta, refuse and wastewater, the control of disease vectors and the provision of washing facilities for personal and domestic hygiene. It also involves both behaviours and facilities which work together to form a hygienic environment (World Bank, 2002).

Nyamwaya (1994) also defines sanitation as the proper disposal of human waste, i.e. faeces and urine. It includes keeping the human environment free of harmful substances which can cause diseases. Wherever humans gather, their waste also accumulates. Progress in sanitation and improved hygiene has greatly improved health, but many people still have

no adequate means of appropriately disposing of their waste. This is a growing nuisance for heavily populated areas, carrying the risk of infectious disease, particularly to vulnerable groups such as the very young, the elderly and people suffering from diseases that lower their resistance. Poorly controlled waste also means daily exposure to an unpleasant environment.

Sanitation is therefore a concept explaining activities to ensure safe disposal of excreta, solid waste and other liquid waste and the prevention of disease vectors to ensure a hygienic environment. Taking these factors into account, the following definition is offered as the working definition of sanitation. “Sanitation refers to the proper disposal of human waste, such as urine and faeces. It also involves keeping the human environment free from disease causing vectors through the proper disposal of waste and litter”.

2.1.3. Environmental Sanitation

The concept of environmental sanitation refers to activities aimed at improving or maintaining the standard of basic environmental conditions affecting the well being of people. These conditions include:

- (1) Clean and safe water supply.
- (2) Clean and safe ambient air.
- (3) Efficient and safe animal, human, and industrial waste disposal.
- (4) Protection of food from biological and chemical contaminants.
- (5) Adequate housing in clean and safe surroundings.

Sanitation is also referred to as hygiene (Business Dictionary, 2010).

According to the Ministry of Local Government and Rural Development (MLGRD), (1999) Environmental sanitation refers to efforts or activities aimed at developing and maintaining a clean, safe and pleasant physical environment in all human settlements. It comprises a number of complementary activities, including the construction and maintenance of sanitary infrastructure, the provision of services, public education, community and individual action, regulation and legislation.

Environmental sanitation therefore involves controlling the aspects of waste that may lead to the transmission of diseases. Included in the term waste management are water, solid waste and industrial waste. According to the International Water and Sanitation Centre, the term “environmental sanitation” is used to cover the wide concept of controlling all the factors in the physical environment which may have an impact on human health and well-being (IRC, 2006). In developing countries, environmental sanitation normally includes drains, solid waste management, and vector control, in addition to the activities covered by sanitation (DFID, 1998).

2.1.4. Sanitation System

Bracken, (2005) define a sanitation system as comprising the users of the system, the infrastructure, the collection, transportation, treatment, and management of end products (human excreta, solid waste, grey water, storm water and industrial wastewater). A sanitation system considers all components required for the adequate management of wastes produced by humans including the users of the system.

2.1.5. Environmental Management

Environmental Management has been described as the process of allocating natural and artificial resources in order to make optimum use of the environment in satisfying human needs at the minimum and if possible, for an indefinite future. The United Nations Environmental Programme also defines environmental management as the control of all human activities which have a significant impact on the environment. (UNEP, 2005) Mitchel, (2002) defines environmental management as the actual decisions and action concerning policy and practices regarding how resources and the environment are appraised, protected, allocated, developed, used, rehabilitated, remediated and restored, monitored and evaluated.

To be efficient in managing the environment, institutions have to have a good environmental management system to provide a framework for managing environmental responsibilities in a way that is integrated into overall operations. Environmental Management System (EMS) refers to the management of an organization's environmental programs in a comprehensive, systematic, planned and documented manner. It includes the organizational structure, planning and resources for developing, implementing and maintaining policy for environmental protection.

2.1.6. Environmental Sanitation Management (ESM)

Considering all the components of environment, sanitation and management, one can deduce a definition of ESM as the process of allocating resources to ensure a hygienic environment through service and infrastructure provision and proper disposal of waste. One of the most important questions in environmental studies is how we can continue improvements in human welfare within the limits of the earth's natural resources.

A possible solution to this dilemma is sustainable development, a term popularized in a 1987 report of the World Commission on Environment and Development called *Our Common Future*. It defines sustainable development as development that meets the needs of present without compromising the ability of future generations to meet their own needs (Mitchel, 2002 p.74). The concept of sustainable development does imply limits – not absolute limits but limitations imposed by the present state of social organisation on environmental resources and by the ability of the biosphere to absorb the effects of human activities.

2.1.7. Sustainable Development

Sustainability has become a central theme of environmental studies and of human development and resource use. Although the idea of sustainability has many facets, the central idea is that we should use resources in ways that do not diminish them. Resource and natural amenities, including wildlife, natural beauty and open spaces, should be preserved so that future generations can have lifestyles at least as healthy and happy as ours or perhaps better.

2.2. Concept of School Sanitation

Sanitation is one of the basic determinants of the quality of life and human development index. The concept of sanitation was earlier limited to disposal of human excreta and construction of lavatories. Today it includes personal hygiene, safe water, human excreta disposal, waste water disposal, solid waste disposal, food hygiene and environmental sanitation (in and around the school). The components of sanitation are as follows:

a. Personal Hygiene

Besides general aspects of cleanliness for children the key issue is hand washing before handling food and after using the toilet. This can result in a substantial reduction in the incidence of diseases like diarrhoea etc.

b. Safe Drinking Water

Drinking water for children should always be taken from a safe water source. The water should be collected, stored and used hygienically eliminating any chance of contamination.

c. Human Excreta Disposal /toilets

As human excreta is responsible for the transmission of several diseases, a sanitation barrier by way of an appropriate toilet and a safe disposal system is necessary to break the chain of transmission of disease.

d. Disposal of Waste Water

Waste water accumulation in the school campus leads to the breeding of vectors which are responsible for transmission of diseases. The management of waste water (for recycling and reuse) is necessary to eliminate this threat. It also educates children about the importance of water.

e. Waterless Urinals

These urinals need to be popularized as not only do they save precious water but also serve as an excellent example and illustrate alternative methods of effective water conservation.

f. Solid Waste Management

Waste segregation and disposal is important for the school. Accumulation of waste particularly organic waste is not only unaesthetic but leads to the breeding of insects such as flies etc. which help in disease transmission. Measures such as vermi-composting, traditional-anaerobic composting or bio-dynamic quick composting are quite popular.

g. Food Hygiene

Food which is cooked, stored, or served to children in schools should be done under hygienic conditions in order to minimize the chances of contamination and disease transmission.

h. Environmental Sanitation

Proper cleanliness should be maintained within the school buildings (classrooms corridors etc.) as well as within the school campus.

Source: (National School Sanitation Manual. Government of India MUDHRD)

2.3. Environmental Sanitation Policy and Government Institution

Environmental sanitation is an essential factor contributing to the health, productivity and welfare of the people of Ghana. It is identified in Ghana's programme of economic and social development set out in "Vision 2020" as a key element underlying health and human development. The programme also identifies environmental protection and the improved management of human settlements as key factors in rural and urban development.

Benneh, (2007) argues that, the successful management of environmental resources in any country depends to a large extent on the effectiveness of the institutional arrangements put

in place by government for their management. These institutional arrangements refer to the types of organizational units involved, such as ministries, agencies, and committees, and to the responsibilities and authorities of these units, and the relationships between them.

2.3.1. Institutional Structure

At the national level, there are four ministries involved in environment and sanitation. The Ministry of Local Government and Rural Development (MLGRD), and the Ministry of Water Resources Works and Housing (MWRWH) have been the primary ministries involved in policy-making for sanitation and water, respectively. The other two ministries involved in environmental sanitation are the Ministry of Environment, Science and Technology and the Ministry of Health, which handles health data, contributes to policy-making, setting standards, and hygiene education.

2.3.2. Ministry of Local Government and Rural Development (MLGRD)

MLGRD is the lead agency in the sanitation sector. It is responsible for creating and coordinating sanitation policy, issuing guidelines on sanitation services and their management, and for supervising the National Environmental Sanitation Policy Coordinating Council (MLGRD, 1999). In theory, institutional responsibilities for sanitation are clear, with the Ministry of Local Government and Rural Development (MLGRD) having overall responsibility for formulating environmental sanitation policies.

2.3.3. Ministry of Environment, Science and Technology (MEST)

The Ministry of Environment, Science and Technology exist to establish a strong national scientific and technological base for accelerated sustainable development of the country to enhance the quality of life for all. The overall objective of MEST is to ensure accelerated

socio-economic development of the nation through the formulation of sound policies and a regulatory framework to promote the use of appropriate environmentally friendly, scientific and technological practices and techniques and the intensification of the application of safe and sound environmental practices.

2.3.4. Environmental Protection Agency (EPA)

The Environmental Protection Agency is the leading public body responsible for protecting and improving the environment in Ghana. Its job is to make sure that air, land and water are looked after by everyone in today's society, so that tomorrow's generations inherit a cleaner and healthier world. The Environmental Protection Agency (EPA) seeks to ensure environmentally sound and efficient use of both renewable and non-renewable resources, to prevent, reduce, and as far as possible, eliminate pollution and actions that lower the quality of life; and to apply the legal processes in a fair, equitable manner to ensure responsible environmental behaviour in the country.

According to Vodounhessi, (2006), the Environmental Protection Agency is very collaboration-oriented, which weakens its regulatory abilities. There is also, a need to update enforcement procedures for sanitation bye-laws for example; some fines are “ridiculously low” and still listed in British currency (Amoaning, 2006). This needs updating.

2.3.5. National Environmental Sanitation Policy

Ghana's National Environmental Sanitation Policy (ESP) was developed in 1999 in consultation with a variety of stakeholders and covers the broad spectrum of environmental sanitation including solid and liquid waste, industrial and hazardous waste, storm water

drainage, environmental and hygiene education, vectors of disease, and disposal of the dead (Republic of Ghana, 1999). The policy was developed by the Ministry of Local Government and Rural Development (MLGRD). It is a fairly concise document that sets out basic principles and objectives, identifies roles and responsibilities and also covers environmental management and protection, legislation and funding among others.

The Environmental Sanitation Policy is aimed at developing and maintaining a clean, safe and pleasant physical environment in all human settlements, to promote the social, economic and physical well-being of all sections of the population. It comprises a number of complementary activities, including the construction and maintenance of sanitary infrastructure, the provision of services, public education, community and individual action, regulation and legislation (MLGRD, 1999).

2.4. Objectives of Environmental Sanitation

Environmental sanitation is aimed at developing and maintaining a clean, safe and pleasant physical environment in all human settlements, to promote the social, economic and physical well-being of all sections of the population. It comprises a number of complementary activities, including the construction and maintenance of sanitary infrastructure, the provision of services, public education, community and individual action, regulation and legislation. The principal components of environmental sanitation include:

- (a) Collection and sanitary disposal of wastes, including solid wastes, liquid wastes, excreta, industrial wastes, health care and other hazardous wastes;
- (b) Storm water drainage;
- (c) Cleansing of thoroughfares, markets and other public spaces;

- (d) Control of pests and vectors of disease;
- (e) Food hygiene;
- (f) Environmental sanitation education;
- (g) Inspection and enforcement of sanitary regulations;
- (h) Disposal of the dead;
- (i) Control of rearing and straying of animals;
- (J) Monitoring the observance of environmental standards.

These services must be provided reliably and continuously to mitigate the negative effects of social and economic activity in human settlements.

2.4.1. Strategic Objectives (A Strategy for Environmental Sanitation)

The basic elements of a strategy to respond to the objectives and problems outlined above and to promote accelerated development of the sector include:

- (a) Formal establishment of environmental sanitation as a sub-sector within the national development programme;
- (b) Rationalization of institutional objectives and functions at all levels, including delineation of responsibilities and the establishment of inter-agency linkages;
- (c) Establishment of a National Environmental Sanitation Policy Coordination Council within the Ministry of Local Government and Rural Development;
- (d) Establishment of a National Environmental Sanitation Day to be observed one day in a year by all citizens;
- (e) Development and strengthening of the community's role in environmental sanitation;
- (f) Development of human resources and strengthening institutional structures for managing environmental sanitation;

- (g) Assigning delivery of a major proportion of environmental sanitation services to the private sector through contract, franchise, concession and other arrangements;
- (h) Development of a strong legislative and regulatory framework, and capacity for supervising environmental sanitation activities and enforcing standards;
- (i) Promotion of research to review sanitation technologies;
- (j) Identification and dissemination of cost-effective, appropriate, affordable and environmentally friendly technologies to address environmental sanitation needs;
- (k) Adoption of the cost recovery principle in the planning and management of environmental sanitation services.

2.4.2. Outputs and Targets

By adopting the above strategies it is intended that by the year 2020 the following should have been achieved:

- (a) National Environmental Sanitation Day is established by legislation and observed regularly;
- (b) The National Environmental Sanitation Policy Co-ordination Council is established within the Ministry of Local Government and Rural Development;
- (c) Environmental sanitation technologies are under regular review and continuous improvement;
- (d) All solid wastes generated in urban areas are regularly collected and disposed of in adequately controlled landfills or by other environmentally acceptable means;
- (e) All excreta are disposed of either in hygienic on-site disposal systems or by hygienic collection, treatment and off-site disposal systems;
- (f) All pan latrines are phased out (by 2010);

- (g) At least 90% of the population has access to an acceptable domestic toilet and the remaining 10% has access to hygienic public toilets;
- (h) Hygienic public toilets are provided for the transient population in all areas of intense public activity;
- (i) Active sanitary inspection and vector control programmes are in place and the incidence of malaria, bilharzia and other vector-borne diseases is falling;
- (j) Environmental standards and sanitary regulations are strictly observed and enforced;
- (k) The majority of environmental sanitation services are provided by the private sector.

2.5. Environmental Sanitation Conditions

Good sanitation and improved hygiene is a means of disposing waste. This is a growing nuisance for heavily populated areas, carrying the risk of infectious diseases, particularly from diseases that lower their resistance. Poorly controlled also means daily exposure to unpleasant environment. Events of the 20th century and early into the 21st century indicate that waste in whatever form of classification: solid, liquid or toxic has become a major consequence of modernization and economic development.

Maintaining a sound and healthy environment has always been a challenge to man (Akintola, 1978). For example, the different inputs from anthropogenic activities include energy generating heat, uncontrolled sound turning into noise, and other land using agencies that causes spoliation of the physical environment. Various human activities that requires planning and coordination demands a comprehensive and deliberate effort to keep the physical environment fit for the total man to function well.

In many Third World cities, writers suggest that large proportions (between 30 and 50 percent) of the solid waste generated by the residents are never collected for disposal and end up rotting on the streets, in drains and in streams (Hardoy, *et al.*, 2001; Pacione, 2005; Ali, 2006). Hardoy, *et al.* (2001) for instance has reported the extensive lack of solid waste collection in cities across the developing world. Pacione, (2005) has also commented on the lack of provision for urban waste management in poor countries and the resulting poor environmental conditions in the cities.

According to him, most poor city governments have great difficulty regarding the collection and safe disposal of solid wastes. He estimates that between one third and one half of all solid waste generated in Third World cities remains uncollected and the collection rate could be as low as 10 – 20 percent in some cases. Depicting a similar picture of the problem, Cointreau, (2001), has estimated that in some cases, up to 60 percent of solid waste generated within urban centres in poor countries remains uncollected and such refuse accumulates on waste lands and streets, sometimes to the point of blocking roads.

In Accra, the attitudes of the Accra Metropolitan Authority (AMA) and the population at large are important issues, which influence how seriously the waste problem can be resolved. However, the municipal authorities have not been able to keep pace with the rapid accumulation of waste. This has resulted in waste being found in gutters, drains, and in rivers in Accra. Some of the municipality's final garbage disposal site is also located near the sea and is polluting the *Korle* Lagoon, for example.

These practices have created an unhealthy environment. As one report by the Environmental Protection Agency states, “municipal solid waste has been disposed of anywhere anyhow without regard to the nuisance and harm caused to the environment. All kinds of wastes, regardless of their nature, are being dumped indiscriminately into depressions, sand pits, old quarries, beaches, drains and even, in certain areas, along streets” (EPA, 2002: 1)

Another Nigerian city reported to have a severe municipal waste problem is Port Harcourt, River State. According to Palczynski and Scotia, (2002) the city which was once known as the “Garden City” for its trees and clean streets has now gained the nickname “Garbage City” because of the dire waste situation which now characterizes it. Still in West Africa, the Senegalese capital, Dakar has a very poor waste disposal situation. To some 3 million out of the 8.5 million Senegalese, the city of Dakar produces about 1,100 tones of solid waste each day but most of the waste remains uncollected (Palczynski and Scotia, 2002). According to Palczynski and Scotia, (2002:12), “discarded paper, fruit skins, old cloths and other wastes have become part of the landscape of the West African town where just about every street is lined with waste and overflowing refuse bins are not emptied for many days”.

Kwawe, (1995) reports that by 1995 half of the million tons of waste generated in Central London were being transported more than 64 kilometers to be dumped because all dumping sites in London were full. Botkin and Keller, (2003), also point to the same problem involving the cost of construction, transportation and managing landfill space because of sheer amount of refuse.

Bryant, (1998) observed that sanitation conditions in rural Venezuela a developing country, infectious diseases like cholera, (and dysentery to escalate) was attributed to people's lack of access to clean water and inadequate facilities for excrement disposal. He further stated that in many cities, disposal of wastes is a major problem. Garbage and rubbish tends to be dumped, burnt and converted into landfills.

Access to sanitation facilities is a fundamental human right that safeguards health and human dignity. Therefore, the provision of safe water and sanitation facilities is a first step towards a healthy physical learning environment. The ultimate goal of Agenda 21 is for all people to have safe and adequate water and sanitation, and a clean and healthy environment. The sanitary conditions of schools in rural and urban areas in developing countries are often appalling, creating health hazards and other negative impacts, making schools unsafe for children. Although water and sanitation facilities are recognized as fundamental for hygienic behaviour and children's well being, in practice the sanitary conditions in most schools are inappropriate and unacceptable (UNICEF, 2001: 13).

2.6. Causes of Environmental Sanitation Conditions

Environmental problems have increased dramatically with factors such as population growth, urbanization, tourism and industrialization. For example, rapid population growth may increase consumption and environmental pollution. In touristic regions, natural vegetation of settlements may be damaged and the environmental pollution risk in the sea and on land tends to increase during tourism seasons. Rapid urbanization may also accelerate the extinction of green areas especially in developing countries (Soylu, 2009).

Ghana has waste management difficulties that extend from the state to the local municipalities, and refuse of all shapes and sizes is a common sight in both urban and rural areas. These difficulties are concentrated and complicated by population pressures in the few heavily populated cities of which Accra is the most prominent.

Grove, (1990) observed that population growth is the major cause of poor sanitation in Africa. This argument is based on the fact that if a highly populated area like the slums is compared with a less populated area, the difference in the sanitary levels will clearly show that the highly populated area has very poor sanitation compared to the low populated area. This is also attributed to the housing situation in such areas like landing sites and other temporary settlements. Viessman and Hammer, (1990) did assert that population changes affect a locality's water requirements and the capability for providing the water needed to meet their demands. They further said that the population of a given area influences the water quality and the nature of water facilities, which are indicators of sanitation coverage.

Urban environmental problems in Africa of which liquid and solid waste disposal is a part have been justified on the grounds that most of the countries in sub-Saharan Africa lack adequate funding and suffer from rapid population growth (Porter & Boakye-Yiadom, 1997: 9; Onibokun and Kumuyi, 1999: 2; Perlman, 1998: 109). Yet, others such as Satterthwaite, (1998: 70) argue that population growth and fast growing cities can be associated with growing economies which make funds available for improvements in sanitary conditions.

In fact according to Satterthwaite, there is no obvious correlation between the size of a city and urban environmental problems; that cities in the South's provision for basic necessities

like water, toilets, drainage, and garbage collection are inadequate that is why environmental health problems ensue (Satterthwaite, *ibid*: 70). What Satterthwaite is arguing for is that inadequate funding, rapid population growth, is not without its benefit. Kendie, (1999: 1) also argues that population pressure and lack of funding are nothing more than convenient excuses used by authorities to justify low investment in the provision of waste disposal facilities.

This brings us to the important question of governance and waste disposal problems in the greater Accra Metropolitan Area. In Accra, the attitudes of the Accra Metropolitan Authority (AMA) and the population at large are important issues, which influence how seriously the waste problem can be resolved. However, the municipal authorities have not been able to keep pace with the rapid accumulation of waste. This has resulted in waste being found in gutters, drains, and in rivers in Accra. Some of the municipality's final garbage disposal site is also located near the sea and is polluting the *Korle* Lagoon. These practices have created an unhealthy environment. As one report by the Environmental Protection Agency states, "municipal solid waste has been disposed of anywhere anyhow without regard to the nuisance and harm caused to the environment. All kinds of wastes, regardless of their nature, are being dumped indiscriminately into depressions, sand pits, old quarries, beaches, drains and even, in certain areas, along streets" (EPA, 2002: 1).

In Ghana, Boadi and Kuitunen, (2004) pointed out some of the problems affecting environmental sanitation. These include: weak institutional capacity and lack of resources; both human and capital. They also indicated that, home collection of waste is limited to high and, some middle income areas while the poor are left to contend with the problem on

their own. This leads to indiscriminate disposal of waste in surface drains, canals and streams, creating unsanitary and unsightly environments in many parts of the city.

Furthermore, MLGRD, (2004) summarizes the challenges of poor environmental sanitation in Ghana as follows: poor planning for waste management programmes; inadequate equipment and operational funds to support waste management activities; inadequate sites and facilities for waste management operations; inadequate skills and capacity of waste management staff; and negative attitudes of the general public towards the environment in general. It can therefore be said that the main challenges facing environmental sanitation in developing countries and for that matter Ghana include: inadequate funds to support waste management, inadequate equipment to support waste storage, collection and disposal, low collection coverage and irregular collection services, crude open dumping and burning without air and water pollution control.

The poor waste disposal situation in poor country cities has also been attributed to the general dearth of qualified personnel in the waste sector (Onibokun, 1999; Ogawa, 2005). According to Onibokun, (1999) most municipal authorities are unable to attract suitably qualified personnel for the various aspects of waste management such as planning, operations and monitoring. Ogawa, (2005) corroborates this observation when he notes that developing countries characteristically lack the technical expertise required for solid waste management planning and operation and this is usually the case at both national and local levels. He argues that many officers in charge of solid waste management have little or no technical background training in engineering or management. Without sufficiently trained personnel, however, solid waste management projects cannot be effective and sustainable.

Ogawa, (2005) has observed that in many cases, solid waste management programmes initiated by external consultants have collapsed in the hands of local management due to the lack of expertise and loss of funding. Lohse, (2003) has also observed that local governments in developing countries generally lack the required capacity and technical expertise to accomplish effective and sustainable waste management programmes.

Yet others such as Post and Obirih-Opareh, (2003), point to performance and structural weaknesses in the waste management institution as constituting the main problem. According to Post and Obirih-Opareh, (2003: 45), privatization of solid waste collection in Accra has resulted in some benefits but also, there have been major setbacks in terms of deteriorating environmental conditions, poor working conditions, and inadequate operational funds to support waste management.

Bryant (1998) noted that, the existence of inadequate sanitary systems affects the level of sanitation and this is due to the increasing population. He observes that domestic water supplies are often installed before attention is given to provide adequate measure for sewerage water disposal. He points out that single bucket from distant stand pipes can be disposed off, but as the water increases specific methods of disposal must be planned to prevent pooling and contamination with sewage.

Nonetheless, Kendie, (1999) argues that, the recent upsurge in waste disposal problems stems from the fact that, “attitudes and perceptions towards wastes and the rating of waste disposal issues in people’s minds and in the scheme of official development plans have not been adequately considered”. There has been a tendency to concentrate on the design of

waste management technologies and how to apply them in context rather than looking at the problem from a governance perspective.

Perhaps as Agbola, (1993), aptly put it, the root cause of many nations environmental problems can be traced to the way and manner in which “the imbibed behavioural patterns and acquired values are superimposed on the environment” (Agbola, 1993: 23). Imbibed behavioural patterns are cultural in origin. Therefore the relationship between humans and environment is thus a function of culture, the level of society’s technological development, the perceived magnitude of existing environmental problems and the level of education (Agbola, 1993: 24).

Attitudes are derived from experiences or leadership. Kendie’s (1999), study of waste disposal problems in Cape Coast for example shows clearly that most people do not believe and or are not sure whether the authorities in charge of waste can solve the waste disposal problems (Kendie, 1999). These attitudes could be changed, however in the view of Agbola, (1993). According to Agbola, (1993), beliefs, perceptions and attitudes are learned responses and can therefore be changed through education.

Moeller, (1992) noted that the increasing level of poor sanitation in Europe is as a result of many combinations of factors. These factors include lack of environmental awareness, high population, land shortage, poor waste management and negligence. He further observes that affordability and self-esteem or responsibility heavily influences the waste management system adopted. Many societies of average per capita income such as landing sites are accustomed to pit-latrines for human excreta, open dumps or landfills garbage, burning (combustion) for wastes whose proper maintenance leaves much to be desired.

2.7. Attitudes towards the Environment

2.7.1. Attitudes

Behaviour change is a complex process involving the interaction between numerous variables, including attitude. One way of changing people's behaviour therefore, is by changing their attitudes as previous research showed a relationship, albeit tenuous at times exists between attitude and behaviour.

Defining an attitude however, is problematic and there is still no consensus on a definition for it. Also, attitudes are often associated with multiple, and even contradictory values (Schultz, 2001). The concept has therefore been defined in various ways by various researchers, usually depending on their specific theoretical framework and the constructs they investigated. Plug, Meyer, Louw and Gouws, (1986) for example define an attitude as a relatively stable, predominantly learnt disposition of an individual towards a specific object (for example people, things or ideas). Fishbein and Ajzen in Thirion, (1990) believe that an attitude consists of and is influenced by three components, namely the subject (a person with a specific attitude); the object (at which the attitude is directed) and the situation (in which the subject and object interact with one another).

A change in any of these components can cause the attitude to change. Eagly and Chaiken, (1993) on the other hand define attitudes as psychological tendencies that are expressed by evaluating a particular entity (for example the environment) with some degree of favour or disfavour. This evaluative response may be expressed as a cognitive tendency (thoughts and ideas about an attitude object like the environment for example); as an affective tendency (positive or negative feelings towards or about the environment) or a behavioural

tendency (action toward the environment) or a combination of two or all three of these psychological tendencies.

An attitude only develops after a person has responded (evaluative) to the attitude (object) and is then expressed or manifested in overt cognitive, affective or behavioural responses (Willers, 1996,). There appears to be consensus among the various definitions of attitude regarding the following: an attitude is evaluative in nature; is learnt; is relatively lasting; is always involving an object and is predisposing the subject to act in a specific manner towards a given object (Thirion, 1990).

2.7.2. Environmental Attitudes

Environmental attitudes refer to people's favourable or unfavourable feelings toward some feature of the physical environment or toward an issue which pertains to the physical environment (Holahan, 1982, p. 92) is one way of defining environmental attitudes. Researchers such as Schultz, (2000) believe that people's attitudes towards the environment and the type of concern they develop towards the environment, are associated with the degree to which they view themselves as interconnected with nature. Stern and Dietz, (1994) agree and add that a person's attitude towards the environment is based on the relative importance that person places on him- or herself, other people, and the natural environment. In other words, a person's attitude towards the environment is based on his or her general set of values. They add that people with different value-orientations will ultimately have different attitudes towards, for example, the environment (Schultz, 2001).

2.8. Demographic Factors that Influence Environmental Attitudes

Various studies have indicated that different groups of people have different attitudes toward the environment. Researchers have initially attempted to explain the difference by focusing on demographic variables such as level of education, age, gender, ethnicity, income and place of residence as possible determinants of environmental attitudes. These researchers however have never been able to establish a strong relationship between demographic variables and environmental concern (Samdahl & Robertson, 1989). Results have been inconsistent and even contradictory regarding most of these variables.

One of the most consistent findings in the literature suggests a link between environmental attitudes and level of education. Studies in the US and South Africa indicate that individuals with high academic achievement tend to be more environmentally concerned than those of low academic achievement (Blum, 1987; Buttel & Flinn, 1978b; Grieve & Van Staden, 1985; Reynolds, 1992; Craffert & Willers, 1994; Willers, 1996). Reynolds (1992) for example found that people with matric or post-matric qualifications showed a more caring attitude towards the environment than did people with lower qualifications. Findings by Willers (1996) support this viewpoint. According to her study, improved educational qualifications yielded a higher percentage of environmentally concerned respondents. Siemer and Knuth (2001) add that the type of education people receive also influences how they view their environment .

2.8.1. Age

Researchers such as Bell and his colleagues, (2001) and Fiedeldey et al. (1998) believe that age is also one of the best predictors of environmentally concerned attitudes. Fiedeldey, *et al.* (1998) for example refer to research in the US that shows that younger adults expressed

more concern for the environment than their older counterparts. Studies of Arcury and Christianson, (1990) support this viewpoint and also show that age is inversely related to positive environmental attitudes as older people were found to be less concerned about the environment than younger ones. However Lyons and Breakwell's, (1994) research conducted among learners between 13 and 16 years old, reveal that age is in fact positively related to environmental concern. They believe that the positive relationship may be a result of the restricted age range they used (13 – 16) and because of a possible difference in the educational curricula of the different grades.

2.8.2. Gender

Gender has shown poor consistency and poor conclusiveness as a predictor of environmental attitudes. Studies by Blum, (1987) and Roth and Perez, (1989) for example show no difference between the two sexes, whereas studies for example of Williams and McCrorie, (1989) suggest that women are more concerned about the environment than men. Studies by Arcury and Christianson, (1990) however show that men are more environmentally concerned than women.

Researchers such as Schahn and Holzer, (1990) offer a possible explanation. According to their findings the difference in levels of environmental concern between men and women are dependent on the specific environmental issue under consideration. Research by Scott and Willits, (1994) supports this viewpoint. Their findings suggest that men may be more likely to engage in relevant political behaviour whereas women are more likely to participate in environmentally protective consumer behaviour.

Lyons and Breakwell's, (1994) study among 13 – 16 year old learners revealed no sex differences in the level of environmental concern. However their study indicates a

statistically significant difference in the level of self-reported environmental knowledge between boys and girls. Girls tended to report less knowledge on industrial pollution than boys. Lyons and Breakwell, (1994) suggested that this may be because industrial related topics are considered to be scientific and technological, hence girls assume that they would know less than boys on these topics and this is reflected in the way they answered these questions.

Gender is a variable that has received consistent attention among researchers (Jones & Dunlap, 1992; Arcury & Christianson, 1993; Lyon & Breakwell, 1994; Petts, 1994). Raudsepp, (2001) found that women were significantly more likely than men to be concerned with environmental problems. Females have been consistently shown to have higher environmentally conscious attitudes than men. The common reason advanced for gender differences is the different socialization patterns between boys and girls (Raudsepp, 2001; Diamontopoulos, Schlegelmilch, Sinkovics, & Bohlen, 2003). More often than not, girls are made to carry out most of all the sweeping and cleaning activities; they are called upon more than their male counterparts to perform maintenance tasks at home or in schools.

However, in other studies such as Van Liere & Dunlap, (1981) gender was not a significant predictor of environmental concerns and attitudes as other socio-demographic variables. Eagle & Demare's, (1999) comparison of the mean attitude scores on the pretest with gender showed that girls scored significantly higher moral attitude scores than boys; there was no significant difference in the ecologic attitude scores of boys and girls. Kellert, (1985) found no gender difference in these two attitudes for U.S. children in the 2nd grade.

Eagles and Muffitt, (1990), in a study of Canadian students in 6th, 7th, and 8th grade, found no attitude differences between the sexes.

Studies by Lindemann-Matthies, (2002) however show gender to be a strong predictor of environmental perception. Participation in an environmental education programme affected girls and boys differently. A higher proportion of girls (46.6%) than boys (39.7%) in a class stated that they could identify and name more species of animals and plants in their immediate environment. This phenomenon occurred for all age groups.

In the Ghanaian societal settings, cleanliness is broadly embraced as a virtue but most of the time the perception of cleanliness is restricted to one's immediate environs with little care for what happens outside their households. The belief is that the state will take care of things hence, one should not be bothered. This kind of orientation has some historical underpinning since in the colonial days; Ghanaians were alienated from events that took place outside their homes. Moreover, sanitation and its related issues were seen as the preserve of the colonial administration that usually employed sanitary officers to take care of the environs (Kendie, 1999). To properly understand the culture of waste management in Ghana, the researcher used the following section to delve more into the Ghanaian perception and attitude towards waste.

As argued already, cleanliness and good sanitation are considered in Ghana as one of the core societal values. Growing up in Ghana, it was always taught by our parents and in fact we grew up knowing that, dirty household and unhygienic individuals are frowned upon by the society. However, to the ordinary Ghanaian, waste management is simply a process of waste collection and disposal. Mothers mostly do the collection whilst disposal is the

preserve of the young girls in the household who dispose of waste in turns. There is a belief that if the tip of a used broom touches a boy; he is likely to become impotent hence explaining why a boy is made to distant himself from the waste handling. Thus it was only girls who did the sweeping of the compounds in the morning and collecting of the waste.

Kwawe has outlined the reason for the female exclusive handling of waste in Ghana as follows: In the first place, in the institution of marriage, it is the duty of the women to cook, fetch water and clean the house so it makes sense for her to learn from her parents how to clean, dispose of waste and keep the house in order; secondly, since it is the woman who produced the waste as a result of her domestic chores, it beholds on her to find the means to disposal of her own waste; the man is out of the house most of the time and as such produces less refuse as compared to the other members of the family hence should not be bothered (Kwawe, 1995: 63).

2.8.3. Ethnicity

Ethnicity, like gender showed poor consistency and poor conclusiveness as a predictor of environmental attitudes. However studies by Taylor, (1989), Caron, (1989) and Honnold, (1981) indicate differences in attitudes towards the environment between white and Black US citizens. Bell, et al. (2001), also believe that ethnic and cultural differences may influence how people view different aspects of the natural environment. Although there are limited data on ethnic differences in environmental concern in South Africa (Fiedeldey et al., 1998), studies by Van Aswegen, (1992) and Craffert and Willers, (1994) for example, indicate that ethnicity has been significantly related to people's views on environmental degradation.

Craffert and Willers, (1994) show that 93% of the white, 70% of the coloured, 67.2% of the Asians and 55.4% of the blacks, samples regarded environmental degradation as a priority. Supporting this are findings from Willers, (1996) study, which show ethnic grouping as the single most significant and consistent predictor of environmental concern. Most of these studies however warn against unidirectional causal interpretations and assert that other interacting factors such as socio-economic status and place of residence be considered when interpreting differences in attitudes exhibited by different ethnic groupings .

Lyons and Breakwell's, (1994) studies show that, the middle and upper classes were more concerned about the environment than lower classes. Learners from higher socio-economic backgrounds were found to be more environmentally concerned than learners from lower socioeconomic backgrounds. According to them, there may be various explanations for this difference. For example, the difference may reflect differences in parenting influences, as higher-class parents are more likely to be knowledgeable and discuss these issues with their children than parents from lower social classes. The difference may also be a result of academic achievement between the two groups or reflect differences in the curricula of the schools these different social groups were likely to attend.

Taylor, (1989) stated that there are social, economic and psychological reasons why blacks seem to be less concerned about the environment. According to her those who form part of the lower socio-economic classes, tend to live in poorly serviced, densely populated and polluted surroundings and are less aware of polluted and overcrowded conditions than their middle and upper class counterparts. Bell, *et al.* (2001) agree and add that socio-economically disadvantaged people do not possess the political or economic power or

sufficient information (knowledge) to address these forms of environmental racism even if they are aware of the hazards they face. Since blacks tend to make up the majority of people living under these conditions, this may explain why they tend to be less environmentally concerned.

Lyons and Breakwell, (1994) also assert that another variable namely level of scientific knowledge is a good discriminator between different socio-economic groups. They have concluded that it is possible that scientific knowledge raises awareness of environmental problems as well as of their possible solutions. According to them, learners who score high in the science quiz, which was an objective test of knowledge, would be more receptive to information on these issues and have thought about them and therefore have formed opinions compared to those who have lower scores. Nevertheless research by Buttel and Flinn, (1978) show a weak link between socio-economic status and environmental attitudes or concern.

2.8.4. Place of residence

Place of residence can also be seen as a predictor of environmental attitudes. Bell, et al. (2001) for example found that urban and rural residents in the US view the natural environment differently. Other findings from studies in the US suggest that urban residents are more likely to be environmentally concerned than rural ones (Fiedeldey, *et al.*, 1998). Lyons and Breakwell, (1994) agree that place of residence and academic achievements are related to environmental concern.

2.9. Forming Environmental Attitudes

According to Newhouse, (1990), there is relatively little research about how environmental attitudes are formed and changed. Most research, according to her, focused on the more tangible question of impact of specific educational programmes despite the fact that most environmental attitudes are formed as a result of life experiences and not necessarily because of specific educational programmes designed to change attitudes. Brackney and McAndrew, (2001) add that one needs to understand a person's environmental worldview before one can even attempt to understand and thus influence his or her attitudes towards the environment.

Newhouse, (1990) goes further and suggests that these life experiences that include initial predisposition to certain behaviour together with further activities concerning that behaviour interrelate to form attitudes. Other forms of life experiences, such as the environment in which a person grew up in, have been found to correlate with environmental attitudes (Newhouse, 1990). Newhouse refers to Kostka's (1976) research, which found that urban Grade 6 learners in the US scored much lower on an environmental attitude assessment than did their suburban counterparts. Kostka postulates that this may be due to a vast combination of factors, for example, the influence of peers and family and the physical environment (e.g. little exposure to the natural environment).

Newhouse, (1990) believes that mere exposure of a stimulus is sufficient to enhance an observer's attitude towards that object. According to her, several studies (e.g. Zajonc, 1968) found evidence of this. She also cites studies by Morgan and Gramann, (1988), which support this viewpoint. They however caution that the level of exposure should be high and occur over a period of time. Another suggestion is that high levels of exposure be

combined with hands-on contact with the object as this was found to promote attitudinal change. Information is another important factor that may contribute to attitude change. Newhouse, (1990) warns that the value of pure information in changing attitudes is difficult to assess as there are too many other factors involved, such as the source of the message, message content, and the characteristics of the recipients.

Authors such as Morgan and Gramann, (1988 in Newhouse, 1990) and Bell et al., (2001) found that modelling is also an effective way of producing attitude change. Morgan and Gramann, (1988) believe that modelling relies on associating objects with people who are respected or liked. Effective modelling according to them should meet at least three criteria:

1. Subjects must believe that the rewards observed from the model will be the same if they perform the behaviour.
2. The benefits of the behaviour must appear to outweigh the costs.
3. The model must be viewed in an emotionally positive way (In Newhouse, 1990).

However, it has also been argued (Newhouse, 1990) that modelling, despite its effectiveness in encouraging the adoption of appropriate values and attitudes, has at least three shortcomings when it comes to the complex issue of forming positive environmental attitudes. These shortcomings are:

1. Modelling stresses persuasion, not true education.
2. Modelling views the learner as an object to be manipulated rather than taught.
3. Modelling fails to provide the learner with the skills to make future decisions.

Kauchak, et al. (1978 in Newhouse, 1990) therefore suggest that environmental attitudes be formed by teaching environmental issues as moral dilemmas in order for learners to analyze and draw inferences from their own personal perspectives. Baines (1988 in

Newhouse, 1990) agrees. He adds that teachers should be prepared to introduce children to controversial topics. This will give them the opportunity to assess the value of the information (data) they gather. It will also help them recognize the motivations of different interest groups and critically assess information from a variety of sources, hence allowing them to draw their own conclusions and make their own value judgments.

They also believe that urban people are more positive in their attitudes toward the environment than rural people and that those with high academic achievement tend to be more environmentally concerned than those with low academic achievement. Willers, (1996) findings among South Africans also show that the level of education and place of residence interact in predicting environmental concern.

2.9.1. The Relationship between Attitude and Behaviour

Various studies on environmentally responsible behaviour have been undertaken over the past 20 years. Most of these research findings however, suggest that attitudes do not necessarily influence or lead to overt behavioural changes. For example, a positive attitude towards the environment will not necessarily mean that an individual will buy environmentally friendly products or recycle these products (Bell, et al., 2001). Wicker, (1969) in fact found a weak relationship between attitude and behaviour. (In Baron & Byrne, 1987) Although attitudes may not cause behaviour, they may have important causal effects on behaviour. The question is therefore when and how attitudes will have causal effects on behaviour.

Attitudes are theoretical constructs and are not accessible through direct observation (Fishbein & Ajzen, 1975 in Dillon & Gayford, 1997). They must be inferred from

measurable responses such as direct observation of behaviour. Since this is often difficult to achieve, responses such as statements of intentions are frequently used as they are considered to be more reliable predictors of behaviour. However, an individual's behavioural intentions are influenced by factors such as his or her attitude, social norms and perceptions of personal control over a given situation. This is the basis of a psychometric model developed by Ajzen and Fishbein (1980 in Dillon & Gayford, 1997) in their theory of reasoned action and in Dillon and Gayford's (1997) subsequent theory of planned behaviour.

According to Dillon and Gayford, (1997), Ajzen and Fishbein's theory of reasoned action provides a theoretical framework within which the relationship between attitude and behaviour can be studied. In their theory they distinguish between beliefs, attitudes, intentions, and behaviour. Beliefs involve knowledge or opinions concerning the attitude object; attitudes involve emotions and evaluations with respect to that object; intentions refer to the behavioural aims; and behaviour involves the actual action itself (Dillon & Gayford, 1997).

Fishbein and Ajzen (in Dillon & Gayford, 1997) postulated a specific pattern of effective relations among the four components. In their view, for instance, actual behaviour is, first, a function of behavioural intentions, and second, a function of attitudes that, in turn, is affected by knowledge. A critical assumption in their theory is that knowledge and attitudes influence actual behaviour only through behavioural intentions.

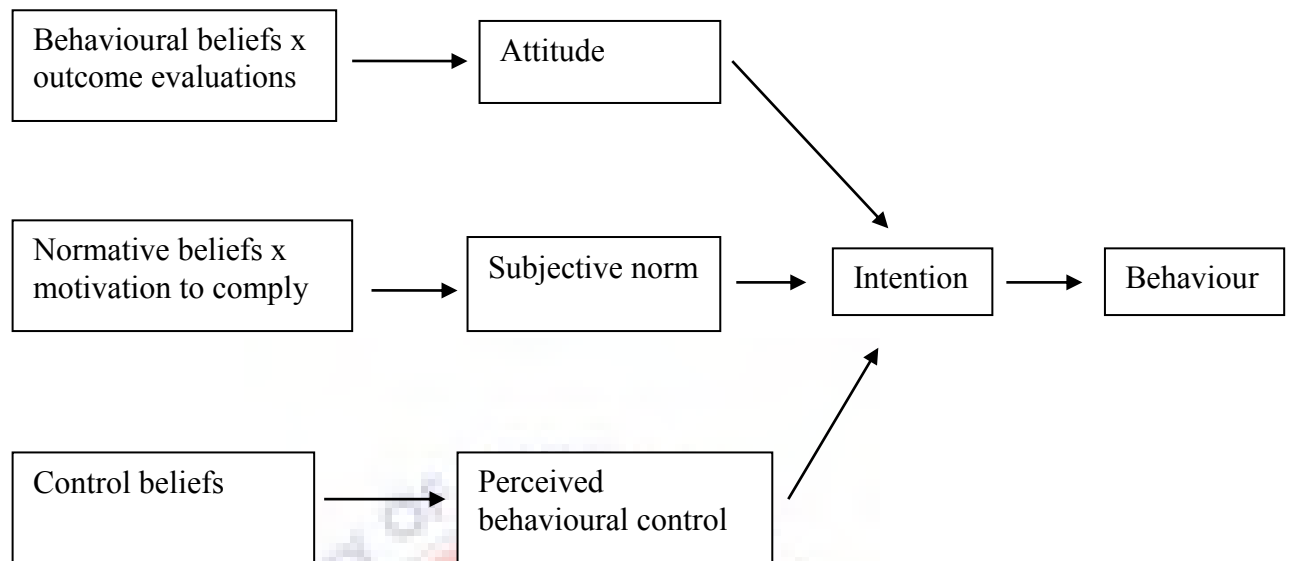
According to them, behavioural intentions are the best predictors of actual behaviour. In line with this theory at least four environmentally related dimensions could be

distinguished: knowledge and opinions concerning the environment; attitude towards the environment; willingness to make personal sacrifices in favour of the environment (behavioural intention) and environmentally responsible behaviour (Dillon & Gayford, 1997). They also stress that knowledge affects actual behaviour only through attitude and behavioural intentions.

According to Dillon and Gayford, (1997), the principle of Ajzen and Fishbein's theory is that it integrates attitude, subjective norm and perceived behavioural control. Dillon and Gayford, (1997) furthermore believe that these variables exert powerful influences on behavioural intentions. They have therefore adapted Ajzen and Fishbein's theory and described the variables in the following way:

1. An attitude is an individual's beliefs about the outcomes of the behaviour (known as the 'behavioural belief'), combined with the value placed on those outcomes (known as the 'outcome evaluation').
2. A subjective norm is the individual's perception of the social pressure to perform or not to perform a particular behaviour based on his or her beliefs (known as 'normative beliefs') about the wishes of peer group, family and important others and his or her 'motivations to comply' with this pressure.
3. Just as beliefs concerning consequences of behaviour underlie an individual's attitudes and normative beliefs underlie his or her subjective norms, so beliefs about resources and opportunities (known as 'control beliefs') underlie an individual's perceived 'behavioural control'. Perceived behavioural control is thus the degree of control that an individual thinks he or she has over his or her actions. This perception reflects past experience as well as an anticipation of impediments and obstacles (Dillon & Gayford, 1997).

Figure 2. Dillon and Gayford's (1997) Model of Planned Behaviour



(Dillon & Gayford, 1997, p. 285)

The model has been used in a wide range of contexts for investigating human behaviour in a variety of social groups and cultures (Dillon & Gayford, 1997). Questions focused on personal intentions rather than the way respondents felt those in society expected them to respond. Dillon and Gayford, (1997) reiterated that the model has been applied in a wide variety of contexts and research evidence supports the view that statements of behavioural intentions are strong indicators of personal behaviour. People's beliefs and value systems influence these behavioural intentions. As Ajzen (1988 in Dillon & Gayford, 1997, p. 288) has observed 'in the final analysis, a person's behaviour is explained by considering his or her beliefs. Since people's beliefs represent the information (be it correct or incorrect) they have about themselves and about the world around them, it follows that their behaviour is ultimately determined by this information.'

This model allowed comparison between three different kinds of normative influence: family, close friends and those considered experts. Responses in relation to the normative

influences of family and close friends often showed a broader distribution, indicating that these influences are often fairly weak. There was generally a tendency for more strongly held positive views relating to normative beliefs based on the opinions of experts. The responses relating to personal control over a given situation also showed fewer strong positive responses, suggesting that many respondents felt that their personal control over many of the issues were limited (Dillon & Gayford, 1997).

The results of the study conducted by Dillon and Gayford, (1997) showed that within the broad range of questions relating to different aspects of environmental issues, most of the respondents gave positive responses. The most consistent positive distributions across the different elements of the model were those concerning the recycling of glass. A possible explanation may be that in areas where the issue appears to be most straightforward, where there is reasonable information available and individuals are able to exercise more control over both their behaviour and its outcomes, they tend to make supportive statements about environmentally responsible intentions (Dillon & Gayford, 1997). The results show among other things, the composite importance of the influences of attitudes, subjective norms and perceived control of behavioural intention, with attitudes appearing to be the most consistently associated with behavioural intentions (Dillon & Gayford, 1997).

From the above, one can infer that people sometimes give careful and deliberate thought to their attitudes and the implications of those attitudes on their behaviour. The best predictor of how a person will act in a given situation is the strength of his or her intention with respect to the situation (Dillon & Gayford, 1997). For example, a person may have an intention to engage in certain behaviour, and not necessarily be driven by an attitude.

The following factors may play a role. The person's attitude towards the behaviour in question, for example a very shy person may be too timid to participate in anti-cruelty to animals' demonstration. The second factor known as subjective norms refers to the person's belief about how others will evaluate the proposed behaviour. If the person believes others, especially significant others will view the proposed action and hence him- or herself in a very positive light, it may strengthen his or her intention to engage in that particular action or behaviour.

The person thus has a vested interest in performing that particular behaviour (Baron & Byrne, 1987). The ease or difficulty with which a person perceives a proposed behaviour, will also impact on whether the person will actually engage in that overt behaviour or not. For example, a person may support the notion of recycling but view the act of engaging in recycling as time consuming and inconvenient and hence refrain from doing so. The perceived consequences of behaviour therefore influence intentions, which in turn strongly influence or predict actual behaviour.

Other less obvious factors are also related to attitude strength. One is direct experience. Attitudes formed by direct experience tend to be stronger and to predict behaviour better than other attitudes (Baron & Byrne, 1987; Bell, et al., 2001). Attitude accessibility, which refers to how readily an attitude comes to mind, is another factor that may play a role in how attitudes affect behaviour. It stands to reason that strong attitudes come readily to mind and therefore exert more influence on behaviour than weaker attitudes.

Direct experience and vested interest also make the attitude accessible, and are therefore two factors that increase the effect an attitude has on behaviour (Baron & Byrne, 1987).

Another factor that may strengthen the attitude behaviour relationship is the amount of information or knowledge that is available. According to Eagly and Chaiken, (1993) the less information an individual possesses about an attitude object, the more unstable the attitude will be.

Although Wicker, (1969) found a weak relationship between attitude and behaviour, other studies show that attitude can in fact predict behaviour under some conditions (Willers, 1996). Bright and Tarrant, (2002) believe that strongly held attitudes are more likely to predict related behaviour than weakly held attitudes. Some studies confirmed this as they showed that the relationship between general attitudes (for example, attitudes about religious or political issues) and behaviour tend to be weak whereas the relationship between specific, narrow and precise attitudes (referred to as attitude specificity) and behaviour tend to be quite strong (Baron & Byrne, 1987). According to Newhouse, (1990), the more relevant or important an object is to one personally, the more predictable will the behaviour of the person towards that object be.

The careful consideration of the pros and cons of engaging in a certain behaviour or not however, is not always an option. There are situations that require immediate action and do not allow for careful deliberation or reflection. In these situations, the person's attitude, coupled with his or her perception of appropriate behaviour (social norms) and previous experience, will influence immediate behaviour or reaction on that person's part. One can thus postulate that attitudes are related to behaviour. When these attitudes are strong and important, are acquired through direct experience, influence the person's self-interest and are accessible, they can have stronger effects on behaviour.

2.9.2. Environmentally Responsible Behaviour

Various studies on environmentally responsible behaviour have been undertaken over the past 20 years. Some of these studies showed that the process is more complex than the one illustrated in figure 1 (page 12) and that prediction of environmentally responsible behaviour depends on various factors that interact (Bell et al., 2001; Hungerford & Volk, 1990). Research focused mainly on identifying the demographic and personality characteristics of those most likely to engage in environmentally responsible behaviour (e.g. Hines et al., 1986/7) and on the effects of behavioural interventions on environmental behaviour. The most enduring avenue of research in this area, however has been to examine how cognitive and psychosocial variables influence environmental behaviour.

Variables studied have included the influence of perceived costs and benefits of the behaviour (e.g. De Young, 1990); inconvenience of performing the behaviour (e.g. Humphrey, Bord, Hammond & Mann, 1977); barriers and facilitating conditions to performing the behaviour (e.g. Derksen & Gartrell, 1993); knowledge or difficulty of the behaviour (e.g. De Young, 1989); perceived effectiveness or control required to perform the behaviour (e.g. Hines et al., 1986/87); attitudes toward the behaviour (e.g. Hines et al., 1986/87) and social influences on the individual performing the behaviour (in Taylor & Todd, 1995).

Taylor and Todd (1995) believe that people generally seem to be sensitive to environmental issues, and may have a positive attitude toward environmental programmes. Yet, despite these positive attitudes, participation in environmental programmes such as waste management programmes for example, varies widely (Bell et al., 2001). Little is known about how an individual's beliefs and attitudes are related to behaviour. Hopper and

Nielsen, (1991) suggest that this is because the literature lacks an integrated theoretically based model to understand the relationships between environmental beliefs, attitudes and behaviour. Schultz, (2000) concurs. He adds that this may be because most of the research on environmental issues has been based on traditional social psychological theories of attitudes, resulting in most of the research on environmental concerns, motives and behaviours, being fragmented and hence difficult to integrate into an organized theory.

2.9.3. The Hines Model of Responsible Environmental Behaviour

In 1986-87 some researchers including Hines, published an important meta-analysis of behaviour research literature (Hungerford & Volk, 1990, p. 9). These researchers analyzed 128 studies, which assessed variables in association with responsible environmental behaviour and which reported empirical data on this relationship. This analysis resulted in the emergence of a model of responsible environmental behaviour allowing Hines and his colleagues to make certain inferences. According to them, factors such as an intention to act, prior knowledge of the problem at hand, and a desire to act are more likely to lead to actual action on the part of an individual. A person's desire to act is influenced by a host of personality factors such as his or her locus of control, attitude toward the environment and toward taking action as well as situational factors such as age, gender and level of education (Hungerford & Volk, 1990).

Newhouse, (1990) sees locus of control as a person's perception of his or her ability to bring about change through his or her behaviour. It is very unlikely that someone with an external locus of control for example may try to bring about change because that person attributes change to chance or to powerful others such as God, parents, the government, etc. A person with an internal locus of control for example, will be more willing to become

actively involved as such a person may believe his or her action can make a difference (Fiedeldey et al., 1998; Hungerford & Volk, 1990). Newhouse, (1990) goes on to suggest that parents and teachers are capable of promoting an internal locus of control in children by giving them a say in matters that will affect them and by encouraging them to make their own decisions and to critically evaluate the opinions of others.

2.9.4. Relationship between Environmental Attitudes and Environmental Behaviour

To reiterate, the underlying assumption has been that people who are knowledgeable about the environment have positive attitudes toward the environment and manifest these positive attitudes in environmentally responsible behaviour (Kuhlemeier, Van den Berg & Lagerweij, 1999). Research has already shown that this assumption is untrue. For example, research by Dunlap, (1991) in Scott and Willits, (1994) indicates that despite the growing concern among US citizens of the need to protect the environment, few have adopted a more environmentally responsible lifestyle .

Dunlap goes further and offers a few reasons to explain this discrepancy. He suggests that public concern for the environment may decrease because of the increase in governmental attention to environmental issues, as people tend to believe that the government will now take care of and deal with the problems. Secondly, people tend to see institutions and big companies as the culprits, not individuals; hence they fail to change their ways. Thirdly, people may be willing to change some aspects of their lives (e.g. recycle household waste), but not others (e.g. using public transport instead of driving). Dunlap also feels that people may not have sufficient information about how to act in ways that are more environmentally responsible. He believes that those who are more environmentally aware are more likely to engage in environmentally responsible behaviour if there is strong

leadership in regard to environmental protection, emphasizing the urgency for people to change their lifestyles (Scott & Willits, 1994).

Scott and Willits, (1994) offer the following explanation for the discrepancy. According to them all the media coverage of environmental problems and issues resulted in people learning the language of environmentalism, without developing a simultaneous behavioural commitment. They add that people may simply be unaware of how their personal behaviour impacts on the environment. In other words, people may simply lack the necessary information on what specific actions they can engage in to become more environmentally responsible.

It is now also believed that environmental knowledge does not necessarily lead to positive environmental attitudes that are manifested in overt and responsible behaviour toward the environment. The following findings support this statement. Kuhlemeier et al., (1999) found that attitudes and behaviour of learners who are knowledgeable about environmental issues do not differ from those learners who do not possess that environmental knowledge. This led them to conclude that environmental knowledge does not necessarily lead to pro-environmental attitudes or a willingness to engage in environmentally responsible behaviour, especially not when this requires making sacrifices on their part or inconveniencing them.

However, a willingness to make sacrifices (a behavioural intention) is more likely to lead to environmentally responsible behaviour than an environmental attitude on its own. One can therefore say that a more positive environmental attitude and greater willingness to make sacrifices are more likely to lead to more environmentally responsible behaviour.

Kuhlemeier, et al., (1999) however found that the behavioural intention ‘willingness to make a sacrifice’ combined with a positive environmental attitude did not necessarily lead to more environmentally responsible behaviour on the part of people (in their case, Dutch high school learners). This raised the question of why these learners did not put their behavioural intentions into practice more often. They offer a possible explanation for this. According to them, learners may not have sufficient knowledge of the consequences of their behaviour on the environment. They suggest that environmental education be used to provide learners with knowledge of and skills in using environmental strategies.

It is particularly important that the link between environmental problems and learners’ personal lifestyles be stressed. It is also important to raise the awareness of learners to the environmental choices they face as for example residents, consumers, garbage producers and travellers (Kuhlemeier, et al., 1999). The different studies showed that people were unaware of the impact of their own individual lifestyles on the environment. People also felt that they did not possess the necessary knowledge (information) or skills to make a tangible difference in their environments.

Vaske and Kobrin (2001) believe that place attachment facilitates the development of environmentally responsible behaviour. They operationalize place attachment as place dependence which refers to a functional attachment to a specific place and place identity which refers to an emotional attachment to that specific place. According to them a person will engage in environmentally responsible behaviour towards a place (natural setting) if they have emotionally meaningful ties to that place. Environmental education programmes

should therefore be designed in such a way that they help learners form an emotional attachment to their immediate environment and the broader or global environment.

Much of the preceding research is based on data that is over 15 years old. It is imperative to update this data to ascertain whether these findings are still applicable as such information is crucial when designing new environmental education programmes (Scott & Willits, 1994).

2.10. Environmental Awareness from the Aspect of Educational Philosophy

It has been agreed by many philosophers that education and awareness towards environmental protection and conservation require knowledge, understanding, and the change of attitude by each individual. Within the context of education, it is the process to solve the problem which is needed to be implemented among the students since their primary school, as it able to provide them with the technique in dealing with the difficulty within their life. This element is supported by the idea of western philosophy, which is the pragmatism movement. The philosophers believe that the role of adolescent and adult in taking care of the environment is different based on their development of age (Mak Soon Sang, 2000). This philosophy presumes that knowledge can be acquired from the relation between human and nature, as both elements are interconnected (Abdul Rahman Aroff & Zakaria Kasa, 1987).

Thus, within the context of education, the implementation of the environmental values among the students can be carried out by giving them the experience through the basic activities such as working together to remain the healthy environment and expose them with the impact of environmental pollutions. Through these activities, it shows that the

students are not only trained from the aspect of their intellect and physical, but also from the element of spiritual and emotion through their courage and appreciation towards the programmes.

Children, in the early years of their lives, recognize the environment by playing games and through self-experience and the communication they establish with adults. Recognition in this context refers to learning new behaviours and skills during an interaction with the environment and associating these behaviors and skills with existing ones. Thus, children will both improve themselves and gain knowledge about the external world. Knowing the environment knowledge and enabling them to develop behaviors and attitudes about the environment are necessary is important because it shapes development in a positive way.

Children, who regularly interact with the environment, will know more about the external world and adapt better to living conditions. They will also have more self-confidence. These all will be reflected on their behaviours in positive terms. In this recognition period, it is important that the education to be given to children is planned carefully to teach them concepts about the environment and to create environmental awareness. Providing small children with environmental knowledge and enabling them develop behaviours and attitude about the environment are necessary for the permanence of the given information (Russo, 2001). In recent years, especially in developed countries with education systems, more importance is attached on creating environmental awareness in young children.

In USA, Korea and several European countries, environmental education starts between 3-6 years of age (Chu et al., 2007; Domka, 2004; Scott, 2007). Previous studies (Stoecklin, 2001; Witt & Kimple, 2008) have demonstrated that environmental knowledge, behaviours

and attitudes attained in preschool period have short and long term effects. Short term effects may be listed as follows: children, who gain knowledge about the environment through environmental education and who develop environmental awareness and sensitivity, also develop social adaptation skills and adapt better to their environment and society. Their curiosity about nature increases.

Environmental education also reinforces their aesthetic perception and scientific perspective (Shin, 2008). In the long term, environmental awareness gained in early years continues in ensuing years; and negative behaviors developed against the environment are not easily corrected at an older age. (Scott, 2007 & Wilson, 1996) The gradually increasing environmental problems and the effect of environmental education especially on preschool children justify the necessity of conducting projects and studies on environmental education for young children.

In addition, based on the doctrine of pragmatism towards the issue of environmental awareness, they believe that the speculation regarding the reality is useless, as the experience of human mainly exemplify the reality (Abdul Rahman Aroff & Zakaria Kasa, 1987). By looking at the present, the aspects of experience and students are the social organisms that are constantly interacting with the surrounding, and change based on time and condition. Thus, the implementation and appreciation towards moral and value which involve the students within the activity and environment are more significant than the learning activity solely based on theory.

It is because the real achievement of students is based on their ability to cope with their problem, including the aspects of academic and the environmental aspect. By involving the

students with the activity regarding the cleanliness of the school, students will develop the attitude to love and concern towards their school and the surrounding (Yahya Don, 2005). The knowledge that have been gained by this students is very useful within their life, as the function of knowledge towards the students is the beginning of intelligence and become the last objective of education (Abdul Fatah Hassan, 2001).

Therefore, supporting the social developments of children will provide a basis for the development of positive attitudes towards the environment. The early years of life are extremely important in learning about this type of behavior. Hence, the objectives of training programs include providing knowledge and raising awareness about the environment in young children, and increasing their sensitivity towards the environment.

2.11. Environmental Education

According to Hungerford and Volk (1990), the ultimate aim of education is to shape human behaviour. Educational systems have therefore been established on a global scale to develop citizens who will behave in desirable ways. Environmental education (EE) has been identified as an educational method for promoting environmentally responsible behaviour in learners and has subsequently been implemented in the curricula of schools throughout the world. The last 10 years especially saw the scope of environmental education expanding with an increasing emphasis on the role of education in responding to wide ranging, complex environmental issues and risks. Chapter 36 of Agenda 21 recognises the central role education plays in shaping value orientations and social actions; hence it sees environmental education as a socially transformative and continuous learning process that is based on respect for all life (Lotz-Sisitka, 2002, p.100).

Guidelines for effective environmental education programmes that may lead to behavioural changes on the part of learners have also been defined by the 1977 Tbilisi Intergovernmental Conference on environmental education. These guidelines promote the following:

- a. **Awareness:** - to help learners acquire an awareness and sensitivity to the total (natural and build) environment and its related problems;
- b. **Sensitivity:** - to help learners gain a variety of experiences in, and acquire a basic understanding of the environment and its related problems;
- c. **Attitudes:** - to help learners acquire a set of values and feelings of concern for the environment and motivation for actively participating in environmental improvement and protection;
- d. **Skills:** - to help learners acquire skills for identifying and solving environmental problems;
- e. **Participation:** - to provide learners with an opportunity to be actively involved at all levels in working toward the resolution of environmental problems (Hungerford & Volk, 1990, pp. 8-9).

These guidelines allow us to define an environmentally responsible person as someone who has an awareness, sensitivity, understanding and concern for the environment and its problems as well as the motivation for active involvement, combined with the necessary skills to identify and solve environmental problems and who actively engages in working toward a resolution of environmental problems at all levels (Hungerford & Volk, 1990, p. 9). Teaching environmentally responsible behaviour therefore goes beyond basic education in its traditional sense and involves the teaching of knowledge about environmental issues, the promotion of pro-environmental attitudes and the teaching of the necessary skills for positive action in society (Hungerford & Volk, 1990).

Despite the guidelines, however, the success rate of environmental education programmes varied. Even programmes that were seen as successful were not far-reaching or widespread enough. One reason for this is that environmental education does not form part of the formal curricula of most schools and where it is applied; it is usually in the form of an extra-curricular activity. Teachers also have not received adequate training for teaching environmental education and for incorporating environmental education instruction across subject areas (Disinger, 2001; Hungerford, 2002).

These are serious shortcomings as an interdisciplinary approach to teaching and learning is required in order to produce an environmentally responsible citizenry (Paul & Volk, 2002). Another reason is that previous models of environmental education were based on the assumption that knowledge about the environment and environmental problems will lead to environmental awareness and pro-environmental attitudes, which in turn will lead to environmentally responsible behaviour.

Various behavioural studies showed that it is a more complex process and that prediction of environmentally responsible behaviour depends on various factors that interact (Hungerford & Volk, 1990). According to research done by scientists such as Hines et al., (1986/87) factors such as an intention to act, prior knowledge of the problem at hand, and a desire to act are more likely to lead to actual action on the part of an individual. A person's desire to act is influenced by a host of personality factors such as his or her locus of control, attitude toward the environment and toward taking action as well as situational factors such as age, gender and level of education (Hungerford & Volk, 1990). A person with an internal locus of control for example, will be more willing to become actively

involved, as such a person may believe his or her action can make a difference (Fiedeldey et al., 1998; Hungerford & Volk, 1990).

Most environmental education programmes, however, do not take these factors into consideration and are still designed to provide knowledge (information) about the environment and increase environmental awareness. Too few incorporate a serious attempt to promote pro-environmental attitudes, and develop or increase the behavioural intentions of learners toward environmentally responsible behaviour (Hungerford & Volk, 1990). This lack of emphasis on objectives that focus on helping learners actually solve environmental problems and develop problem-solving skills, is contrary to the guidelines as stipulated at the Tbilisi Intergovernmental Conference in 1977 and needs to be rectified (Hungerford & Volk, 1990).

It is imperative that environmental education programmes move beyond the mere knowledge production and awareness of rising and include ways of increasing the intention and desire of learners to act in environmentally responsible ways as well as equip them with the necessary skills and problem-solving abilities to actively engage in environmentally responsible behaviour. (Hungerford & Volk, 1990) A new model of instruction is therefore needed.

2.12. Attitude Theory and Environmental Education Programmes

There are several potential advantages of applying the theories of reasoned action and planned behaviour to learners and their views on the environment and hence hold important implications for future environmental education programmes. They provide a mechanism for relating cognitive elements of environmental education to the more

subjective, affective elements. Consequently, it helps to meet the criticism that it is not simply through knowledge and understanding of issues and principles that changes in attitudes and behaviour may be brought about. Using this model allow us to focus on more subtle, and probably more relevant aspects of cognition, such as peoples' beliefs about the outcomes of particular kinds of behaviour and the degree of personal control they understand they have over situations as well as their own behavioural intentions in relation to particular environmental issues (Bell et al., 2001; Dillon & Gayford, 1997).

Furthermore, the way that Dillon and Gayford's (1997) study was applied here placed the emphasis firmly on the individual and his or her personal intentions, rather than on what was considered to be what those in society at large ought to do. Again all of these have important implications for teaching and learning in environmental education. Another important feature of the use of this model is that it focuses attention away from simply concentrating on attitudes as the most important affective aspect in relation to the environment and directs attention to behaviours or at least the stated intentions to behave in a particular way (Dillon & Gayford, 1997).

A particular factor that has received little attention from environmental educators is that of the perceptions of control that individual feels that they have over behaviours relating to particular environmental issues. This fits in with research (e.g. Hines, Hungerford, & Tomera, 1986/87; Hungerford & Volk, 1990) that indicates that locus of control plays a role in determining whether someone will be more likely to engage in environmentally responsible behaviour or not.

2.13. Effects of Poor Sanitation

Sanitation is regarded as the maintenance of sanitary conditions. Therefore, basic sanitation means the provision of sufficient hygienic, hazard-free toilets, the effective removal and disposal of household waste, and effective effluent disposal (Pietersen, 1997:14). Good sanitation is important for a number of reasons, not least of all human dignity. Poor sanitation has impact on various areas of social development, which are discussed below.

The abysmal waste situations in developing country cities can have enormous implications for public health and the environment. The decomposing piles of wastes, especially in communities of the poor, have the potential to attract and harbour vermin and rodents which spread diseases (Hardoy *et al.*, 2001). The accumulated wastes also attract foraging animals like dogs and goats which scatter infected waste materials, spreading diseases and causing a nuisance (Songsore and McGranahan, 1996). Besides, accumulated waste in the cities become hot beds for the breeding of pathogens that cause diseases like dengue fever, malaria, leprosy and even elephantiasis while the blockage of drainage systems by waste materials creates stagnant waters which also become ideal breeding grounds for mosquitoes and other vectors that spread disease pathogens (Hardoy *et al.*, 2001; Perera, 2003).

Moreover, solid waste materials that find their way into water courses like drains, streams and lagoons block the flow of flash waters during storms and cause extensive flooding in some of these cities (Zahari, 2007). Waste pollution in the cities also causes the pollution of both surface and underground water and cause damage to natural ecosystems (Perera, 2003). Thus, the poor solid waste disposal situation in the cities constitutes a disaster for

human health and environmental degradation (Achankang, 2003:7-8). In view of the public health and environmental effects of inadequate waste disposal in poor cities, it behoves their governments to pay much more attention to the issue of waste disposal in order to achieve the objectives of waste management and create congenial environments for urban residents.

Lack of access to safe sanitation facilities is a significant cause of ill health in South Africa (Evans, 1994:130). Poor sanitation promotes the spread of health problems. Many infections of human beings are spread through inadequate sanitation. Viruses, bacteria, protozoa and worms may spread through direct contact, indirectly via carriers and vectors. Cholera deaths are an indication of a poor health system and certainly poor sanitation (Hall, 2003: 19). Poor sanitation impacts on the health, quality of life, and development potential of communities. The Water Services Act (RSA, 1997: 13) mentions that diarrhoea is the leading child-killer disease among South African children. Poor sanitation is a major cause of diarrhoea. The White Paper on Basic Household Sanitation (RSA: 2001: 7) affirms that adequate basic household sanitation facilities can have dramatic health benefits to communities.

Eade and Williams (1995: 688) emphasize that sanitation is vital in primary health care. It further states that over 25 million people die every year from diseases related to inadequate and poor sanitation. Inadequate sanitation has been identified as the main cause of human illness. The most common diseases associated with poor sanitation are: diarrhoea and dysentery, typhoid, bilharzia, malaria, cholera, worms, eye infection and skin diseases. Contaminated water and poor hygiene are the major cause of diarrhoea diseases, the most

common group of communicable diseases, highly prevalent among poor people living in crowded conditions with inadequate facilities (Blackett, 2001: 29).

Rajaepalan, (1999) explains that community liquid wastes can pose serious health problems in urban crowded areas unless they are properly collected and disposed off.

Sewage facilities are ideal for such purposes but are not easily attainable in many developing countries. He observed that communities are faced with dangers from unprotected water sources and unsanitary liquid waste (sewage) where only water supplies are available. The problems of insanitation are intensified by increased sewage. Where some facilities are provided, inadequacies in their planning, faulty serve operation and improper disposal of the sewage create health hazards to the community. Diseases related to poor sanitation and water availability caused many people to fall ill or even die. Children are the most vulnerable to these health hazards.

In a concept paper entitled “promotion of sanitation” Uganda’s Ministry of Health, (2000) stated that inadequate sanitary facilities combined with unhygienic practices and general lack of formal water supplies as well as safe disposal of domestic waste water and poor solid waste management, present sanitation problems in Uganda. National economies are weakened by the need to spend significant amounts of funds on health care and medicines. Many working days are lost to ill-health resulting from poor water, inadequate sanitation and low investments in water quality and quantity.

Sanitation systems involve the disposal and treatment of wastes. A lack of adequate sanitation system constitutes a range of pollution risks to the environment, especially the contamination of surface and ground water resources. This, in turn, increases the cost of

downstream water treatment as well as the risk of disease for people who use untreated water. According to The White Paper on Basic Household Sanitation (RSA, 2001:8) the effects of pollution include: waterborne diseases, blue baby syndrome in bottle-fed infants, excessive growth of aquatic plants which are toxic and depletion of oxygen in the water.

Bryant, (1998) observes poor sanitation as having a serious effect on the environment.

He further states that fecal matter do pollute water sources and degrades the surrounding environment. Inadequate sanitation, through its impact on health and environment, has implications for economic development, (UNICEF, 2001: 12). People absent themselves from work due to excreta-related diseases. Poor health keeps families in a cycle of poverty. The national cost of productivity, reduced education potential and curative health care is substantial. One estimate puts the cost of health expenditure at R3.5- billion per year (RSA, 2000: 8).

The increasing pollution of rivers and shorelines negatively impact on businesses such as tourism and agriculture, which are vital to nations' economic growth. Lack of excreta management also poses a fundamental threat to global water resources. The White Paper on Basic Household Sanitation (RSA, 2001:9) highlights the benefits of improving sanitation: reduced morbidity and increased life expectancy, savings in health care costs, and saves one from taking sick leave. Inadequate sanitation facilities, inadequate disposal of waste and poor sanitation practices, result in loss of privacy and dignity, exposure and increased risks to personal safety (RSA, 2001:9). People are forced to use the bush as their toilet facility. They are exposed to dangerous situations where they can be assaulted or attacked by wild animals.

Poor environmental sanitation practices also affect the environment in diverse ways. In regions where a large proportion of the population are not served with adequate water supply and sanitation, sewage flows directly into streams, rivers, lakes and wetlands, affecting coastal and marine ecosystems, fouling the environment and exposing millions of children to disease. Particularly in the context of urbanization, indiscriminate littering, domestic wastewater, sewage and solid waste improperly discharged presents a variety of concerns as these promote the breeding of communicable disease vectors as a result of air, water and soil pollution.

Poor waste management also contributes to a loss of valuable biodiversity. In the case of coral reefs, urban and industrial waste and sewage dumped directly into the ocean or carried by river systems from sources upstream, increase the level of nitrogen in seawater. Increased nitrogen causes overgrowths of algae, which in turn, smother reefs by cutting off their sunlight. Improved environmental sanitation management reduces environmental burdens, increases sustainability of environmental resources and allows for a healthier, more secure future for the population.

Poor sanitation gives many infections the ideal opportunity to spread: plenty of waste and filth for the flies to breed on, and unsafe water to drink, wash with or swim in. Among human parasitic diseases, schistosomiasis (sometimes called bilharzias) ranks second behind malaria in terms of socio-economic and public health importance in tropical and subtropical areas. The disease is endemic in 74 developing countries, infecting more than 200 million people. Of these, 20 million suffer severe consequences from the disease (WHO and UNICEF, 2008). Sound environmental sanitation management ensures that appropriate interventions are introduced and implemented to promote behaviour change.

Poor environmental sanitation or hygiene also has tremendous economic costs. The health impact of inadequate environmental sanitation leads to a number of financial and economic costs including direct medical costs associated with treating sanitation-related illnesses and lost income through reduced or lost productivity and the government costs of providing health services. Additionally, poor sanitation also leads to reduced income from tourism (due to high risk of contamination and disease) and clean up costs. A World Bank country environmental analysis conducted in Ghana has shown that health cost resulting from poor water, sanitation and hygiene is equivalent to 2.1% of Annual Gross Domestic Product (GDP), (UNICEF, 2008).

Fobil, (2001) argues that domestic waste in Accra is primarily made of organic material (65%). The remainder of the disposed waste consists of paper, plastics, glass, metals and textiles. The organic material is typically a mixture of kitchen waste (vegetables, rotten fruits, crop residues, and leaves) and animal excreta.

None of the organic material is in and of itself toxic to humans or the environment. Frequently it is the manner in which the waste is kept that dictates the exposure to health risks. The largest risk to humans comes in the form of diseases associated with unsanitary conditions. Infectious diseases of poor sanitation and poverty are the most common diseases affecting the residents of Accra. Vector born disease such as malaria, diarrhea, typhoid, bilharzias, and hepatitis make significant health impact. More than half of these diseases are related to the poor sanitary conditions that exist and the attendant economic and social costs (Ghana's Climate Change Technology, 2003).

In the Accra households it is not uncommon to find open waste containers. Many households store their waste in baskets and plastic bags. The hot and humid weather conditions favor accelerated corrosion of organic matter. If open containers are not emptied, the decomposing material will attract flies. The presence of flies in the household lowers the threshold for contamination of food and cooking items. These houseflies can act as vectors for various diseases by transmitting pathogens through direct contact or through their droppings (Ghana's Climate Change Technology, 2003).

Domfeh, (2010) noted that, the high incidence of diarrhea in children under 6years is related in part to food contamination by flies. Hygiene related diarrhea alone is thought to cause 20,300 deaths per year, and is considered one of the most common presentations at outpatient Accra facilities. Outside of the home, health risks are no better. When disposal facilities are not accessible or have overflowed, residents will dispose of their waste in open spaces and surface drains. If drainage channels becomes blocked with solid waste, water cannot drain from streets. Blocked drains and standing water pools are a contributing factor in the endemic status of Malaria. Malaria transmitting anopheles mosquitoes use the stagnant water piles as breeding grounds. Malaria accounted for 53 percent of all reported diseases at Ghana outpatient facilities in 1998, and is the leading cause of morbidity in Accra.

Songsore and McGranahan, (1996) reported on the lack of substantive toilet infrastructure means that citizens at times resort to defecating outside. Past studies have found more than two-fold increase in childhood diarrhea prevalence due to neighborhood outdoor defecation. Insufficient communal facilities can lead to open defecation along beaches, drains, and open spaces. In this environment there is a tendency for fecal material to

become intermixed with household refuse. Street runoffs also become a potential source for human infection when drains become contaminated with fecal matter. Studies have found endemic fecal pathogens including parasitic worms, protozoan, bacteria, and viruses at concentrations sufficiently enough to create the potential for human infection.

Boadi, (2005) pointed out that even at non-infectious concentrations, some pathogens such as *Taenia saginata* and *Ascaris lumbricoides* survive at infective stages outside their host for months on contaminated grounds. Therefore even if adults or children attempt to avoid fecal matter, they may be unknowingly working and playing on fecally contaminated grounds, increasing their risk of infection.

He further stated that poor sanitation practices are also a cause of cholera. Cholera, an acute intestinal infection caused by *Vibrio cholera*, infects humans through contaminated food and water. The standard treatment, oral rehydration therapy, is safe and usually effective. Nonetheless cholera symptoms (profuse watery diarrhea, vomiting) are unpleasant. It is considered a preventable disease in areas with adequate sanitation, but in Accra cholera outbreaks do occur as recently as 2008 where persons perish needlessly.

Boadi, (2005) postulated that cholera persists in Accra because the *V. cholera* can survive outside in fecal specimens if kept moist. Thus the creation of open-space dumps less than 500 m away from community centers subjects residents to cholera infection risk. This explains the statistically significant association between cholera prevalence and density of refuse dumps. Residents who live closer to refuse dumps are subject to more bouts of cholera.

Songsore and McGranahan (1996) Waste practices can cause air pollution. About 18% of households in greater Accra region (mostly low-income households) burn their waste. This burning can contribute to outdoor air pollution. Leachants from burned refuse can enter the groundwater. Leaching of refuse into water, particularly from household products like batteries, is a very pressing concern during the rainy season. Many neighborhoods are situated in low-lying areas which are susceptible to floods. Contamination of surface water in these flood prone areas raises the risk of exposure.

Osei & Duker, (2008) argues that the burning of domestic waste has been associated with respiratory illness. Households that are serviced inconsistently by waste collection companies sometimes burn their waste. In these households, respiratory diseases are more common in mothers and children. One suspected cause of this association is that these households are prone to burn their waste, and burning is an activity primarily performed by women and children. Women and children may be exposing themselves to harmful fumes and consequently presenting with a higher incidence of respiratory disease.

Boadi, (2005) wrote that Water pollution is another important potential outcome of inappropriately managed waste. The unregulated leachants from refuse near waterways increase the technical difficulty of providing clean water and subject city residents to urban flooding risk. Urban floods occur when drainage systems and other storm control devices overflow because of waterway blockages. Indiscriminate dumping and refuse overflow can all be sources of drainage blockage. While it is true that seasonal rains can cause flooding in all parts of Accra, the poorer residences with their weaker drainage infrastructure are more likely to experience flood damage.

He further noted that the poorer population of Accra bears a disproportionate amount of the environmental health risk burden. The most vulnerable populations are sanitation workers and the migrant workers from the North. Migrant workers frequently resort to scavenging to provide income. Scavengers can be seen in broad daylight searching through refuse at open dumps for materials, plastic slivers and metals that can be sold back to processing factories. These scavengers are exposing themselves to harmful leachants and chemicals without any protection.

Sanitation workers are hired by private companies. However, they receive little or no protective clothing from the waste management companies which employ them. These workers earn low wages, and thus are not able to purchase appropriate clothing for their protection. Thus, they suffer more exposure, and as a consequence have a higher turnover rate, higher incidences of sick days and work-related accidents, and higher mortality than the rest of the city population (Domfeh, 2010).

The significant economic benefits of good environmental sanitation are not well known; the media often emphasize on health benefits, but the time savings and opportunity cost are equally important stories. Environmental sanitation management ensures that there is prudent allocation of limited resources tailored to the needs of the people to ensure economic sustainability. On the one hand, a healthy people produce more and miss fewer days and on the other hand, a healthy community is often a more lucrative market for goods, services and investment (WHO, 2009).

Every dollar spent on improving sanitation generates economic benefits (about nine times) that far exceed the required sanitation investments. The cost of inaction is enormous. Achieving the MDG for sanitation would result in \$66 billion gained through time, productivity, averted illness and death. It is estimated that a 10 year increase in average life

expectancy at birth translates into a rise of 0.3-0.4 per cent in economic growth per year (WHO, 2008). Improved environmental sanitation management reduces environmental burdens, increases sustainability of environmental resources and allows for a healthier, more secure future for the population.

The management of built environment is determinant to the quality of man at any given time. Where this is undermined, there is bound to be poor physical conditions and the consequence is poor human output. Of particular interest is the school environment. The physical outlook of the school environment is very important in contributing to healthy academic exercise. It forms the fulcrum on which other activities revolve. This is because it creates an atmosphere of the mind for study. The challenge of developing and managing a school environment taking into consideration some parameters is a great one; one of such is the school location.

Where a school is located can determine to a large extent the stability of the student's mind for academic readiness. A school located along air-traffic route, roadside (especially without a fence), in a neighbourhood of industrial activities, markets, and so on will constitute a nuisance and interference with the students' learning process. It will generate noise enough to badly affect the study adventure. As indicated by the National Teachers' Institute (NTI, 2008; McKay, 1964 in Egim, 2003) school supervision and sanitation. This discusses all the strategies adopted by a school system in managing the wastes (noise, water, and other effluents), drainage pattern, and the facilities provided in the school. When these strategies are not adopted by schools, the quality of learning environment is affected negatively. Equally crucial is the greening of the school environment. Sanitation Connection, (2001/2002) maintains that a school management that provides sanitation and

planting of flowers, trees and maintaining lawns, well cleared grasses, etc. improves quality of life and study environment.

The physical environment of a school adds a lot of value to the school (Obong, 2007a). Egim, (2003) observed in her study on School Environment and Administrator's Role Performance in Cross River State Secondary Schools believes that the physical environment contributes either negatively or positively to the administrator's role performance in the school. The school physical environment includes the buildings, classrooms, furniture, equipment, instructional materials, laboratories, libraries, play grounds, and so on. Others are walls, machinery, decorative objects, play fields, skating rinks, swimming pools, audio-visual equipment (Mckay, 1964 in Egim, 2003).

Egim, (2003) maintained that in a bid to expand the educational enterprise, educational planners are more interested in issues such as the number of schools, teachers, students' infrastructural facilities like classrooms and school buildings. Little attention is paid to the quality of the environment. The design and structure of school environment forms the physical appearance of the school which may attract parents and friends of educational institutions in their initial judgments about the quality of what goes on in the school. They have effect on the perception and choice for learning experience desired by parents and students (Mitchell, 2008).

Learning environment has since been emphasized as an essential requirement for smooth teaching and learning process to take place (National Teachers' Institute, NTI, 2008). This is because students' study habits are to a large extent tied to it. According to Sharon Mitchell, director of Mental Health, Wellness and Safety Promotion (2008), "the

environment in which you study can have a big effect on how efficient your study time is”. He identified noise, interruptions, lighting, temperature, neatness, comfort and equipment to have potential effect on study habits. This is supported by Sanitation Connection, (2005) which posits that as schools provide an important learning environment, the promotion of personal hygiene and environmental sanitation within schools is essential. In addition schools provide ideal environment in which to help children to adopt good habits that will serve for the rest of their lives.

However, managing school environment has posed great challenges over the years to the government, principals and administrators. The challenges range from location, beautification, waste materials, landscaping, sanitation, greening, and so forth. These issues have occupied some studies by researchers such as Sanitation Connection, (2002) and Egim (2003); Obong (2007a).

It is common to see school environments poorly maintained. They are often strewn with litters of papers, dusty classrooms, poor ventilation, and landscaping for sit-outs during break periods. Such environments, as agreed by Ikpaye, (1987) deprives rather than stimulating learning and intellectual development. Little attention seems to be given to the quality of learning environment, perhaps because educational planners and administrators have not been adequately informed on the environment’s role in enhancing learning and intellectual development.

The issue above constitute school environmental management strategies that could solve school environmental sanitation problems and to make the school a place to live and not to leave. In spite of this all-important top burner matter, very little have been done in managing school environments for fruitful academic venture. It becomes necessary to

conduct a study into the attitudes of students and staff towards environmental sanitation in Asamankese Senior High School. How a school environment is managed in aesthetics, recreation, waste, drainage pattern, and other physical outlook of the environment has telling effect on the quality of learning environment of students.

A lot of studies have been done on attitudes towards the environment. However, relatively few researchers have examined the attitudes of school children and teachers towards the environment. The researcher seeks to examine the attitudes of senior high students and teachers towards the environment. Most of the authors talked about health issues as one of the major effects of poor sanitation in our environment. In the school set up good sanitation is an important condition that will enhance healthy living of both staff and students to promote academic excellence.



CHAPTER THREE

RESEARCH METHODOLOGY

3.0. Overview

This chapter describes specific research methods and techniques used for the study. It describes the population, the sampling procedures, scoring instrument and its designs. The chapter ends with validity and reliability and the tools used to analyze the data, not leaving out the method of data analysis.

3.1. Research Design

De Vos (1998) is of the view that research design is a blueprint that serves as a framework on the basis of which the researcher can plan and conduct the study. A descriptive sample survey was adopted for this study. According to Gay (1987), the descriptive sample survey involves collecting data in order to test hypothesis or to answer questions concerning the current status of the subject of study. The descriptive sample survey has also been recommended by Babbie, (2001) for the purpose of generalizing from a sample of a population so that references can be made about some characteristics, attributes or behaviour of the population. The aim of a survey is to obtain information which can be analyzed and patterns extracted and comparisons made.

This approach was preferred because it provides a systematic way of looking at events, collecting data, analyzing information and reporting results. It is used to narrow down a very broad field of research into one easily researchable topic. This design will be chosen because the researcher is interested in gaining an insight into the factors responsible for the insanitary conditions and their effects. The descriptive sample survey design will provide rich description and analysis of the phenomenon.

The research study employed various methods and strategies to obtain relevant information to provide answers to questions posed and assisted in drawing suitable conclusions after the data had been analyzed. A combination of qualitative and quantitative data was gathered for the data analysis. Those aspects that relate to human behaviour and are not easily measurable were investigated using qualitative methods.

Leedy and Omrod, (2001) indicate that qualitative research is typically used to answer questions about the complex nature of phenomena, often with the purpose of describing and understanding the phenomena from the participants' point of view. The qualitative researcher seeks a better understanding of complex situations.

Quantitative research is also used to answer questions about relationships among measured variable with the purpose of explaining, predicting, and controlling phenomena (Leedy & Omrod, 2001). Quantitative researchers seek explanations and predictions that will generalize to other persons and places. The intent is to establish, confirm, or validate relationships and to develop generalizations that contribute to theory. In this study data were categorized and analyzed in terms of frequencies and percentages.

The decision to combine quantitative and qualitative methods in this study can also be justified on the grounds that it made it possible for the researcher to explore the research questions from different perspectives which would lead to broader understanding of the issues connected with environmental sanitation in Ghanaian cities. Bryman, (2004) has argued that while quantitative research is associated with the researcher's perspective,

qualitative research is concerned with seeing the object of study through the eyes of the people being studied.

Thus, combining qualitative and quantitative methods in the present study made it possible for the issues relating to attitudes of students and staff of Asamankese Senior High School to be captured from the perspectives of teachers and students as well as from my own perspective. Furthermore, combining different methods of data collection and analysis provided the researcher with the opportunity to obtain in-depth information from the different categories of participants.

3.2. Population

The place that was selected for the study is the Asamankese Senior High School. The school is situated in Asamankese, a town located in the West Akim Municipality of Ghana. The targeted population for the study consists of teaching staff and students in the Asamankese Senior High School in the Eastern Region of Ghana. The estimated students' population that the researcher worked with was about one thousand five hundred (1500) students and a staff (teachers) population of about seventy-two (72).

3.2.1. Study Sample

A sample size of three hundred (300) students and thirty (30) staff members were selected from the Asamankese Senior High School. Equal number of students was selected from each class to add up to 300.

3.3. Sampling Technique

Sampling is the process of selecting a sample or choosing cases, events, elements or people to represent the whole population. Sampling technique is the process of choosing the unit of the target population which are to be included in the study. Equal number of students was selected from each class to add up to three hundred. The students were selected through random sampling. Word cards were used in the selection of students. The words 'Yes' and 'No' were used for the exercise. The number of 'Yes' cards corresponded to the number of students needed in a class for the study. The remaining cards have the 'No' inscription. Both cards (Yes and No) were put in one closed box from which a single card was randomly picked by students. Any student that picked the 'Yes' card, was selected for the study.

This exercise was repeated for all the other classes. This procedure allowed a true representation of the classes. The teaching staff was selected using purposeful sampling. The type of purposeful sampling that was used here was convenient selection. The convenient sample was used because it was very difficult to get all the teaching staff presents in school during school days.

3.4. Ethical Issues

The research process was guided by the following considerations:

- I. Informed consent was sought from respondents and permission requested to as to engage the students and teachers in answering the questionnaire from the Headmaster of the school.
- II. Anonymity- the names of study subjects were not used to ensure anonymity of respondents.

- III. Confidentiality- responses from study subjects were kept in strict confidence and only used for the purpose of the study.

3.5. Research Instrumentation

The major instruments that was used in the study to gather views, opinions and suggestions included questionnaires and observation. Questionnaire was used because it provided detailed information on what the researcher sets out to collect. It also helped the researcher to find out those things that were very difficult to be directly observed.

Two types of questionnaires was designed; one for the staff and another for the students. Both sets of questionnaire were designed in such a way that they contained open-ended and close-ended type of questions. For the close-ended type of questions, options were given and the respondents were allowed to tick the answer which is applicable. With the open-ended type of questionnaire, respondents were required to express their own kind of responses in the spaces that were provided on the questionnaire.

A structured observation checklist was also made. This enabled the researcher examined the attitudes of students and teachers towards environmental sanitation. The observation checklist also examined the factors responsible for the poor environmental sanitation in the Asamankese Senior High School.

3.6. Pilot-test

The questionnaire was pre-tested in a pilot test carried out at St. Thomas Senior High Technical School in the Eastern Region of Ghana. The school was selected because it shares similar characteristics with Asamankese Senior High School in the selected Region.

The pilot study enabled the researcher to restructure the questionnaire to help elicit the right responses.

3.7. Validity

According to Joppe (2000), validity determines whether the research instrument truly measures that which it was intended to measure. To ensure the validity of the questionnaire it was discussed in class during a lecture period with colleagues and a lecturer who painstakingly went through and gave the necessary suggestions and corrections to ensure its content and face validity.

3.8. Reliability

A pilot test of the instrument was carried out with forty (40) students in St. Thomas Senior High Technical School in the Eastern Region of Ghana. These students used for the pilot test did not form part of the sample for the study. The reliability of the students' questionnaire was determined using the split half method. Using odd-even items, the questionnaire was split into two halves and given to some non-research subjects to respond to. The two sets of scores were correlated. This yielded an internal consistency of 0.83 based on Pearson's product moment correlation formula. This was then compared with the tabulated coefficient of reliability which according to Bryman and Cramer (2001), is acceptable at 0.8. Thus, the internal consistency (reliability) of the instrument was calculated.

3.9. Data Collection Procedure

The questionnaire was administrated by the researcher personally. This enabled the researcher to get to the respondents directly and to enable her establish rapport with the respondents. It also enabled her to explain further parts of the questionnaire items that

posed some problems to the respondents. After the questionnaire was issued out to the respondents, a time frame or interval of one week was allowed so that respondents could respond to them not only as appropriate as possible but also at their own convenience. The researcher also had the opportunity to observe students and teachers attitude towards the environment on the compound.

3.10. Method of Data Analysis

Coding schemes were developed to organize the data into meaningful and manageable categories. This involved the data obtained from the questionnaires and formal observations through the use of observation guide. The categorized data were later converted into frequency counts and simple percentages and used to answer the research questions addressed in the study.

This study, “The Attitudes of Students and Staff of Asamankese Senior High School towards Environmental Sanitation” employed both qualitative and quantitative methods in analyzing the data that was collected (Fisher & Fraser, 1990; Fraser & Tobin, 1991; Fraser, 1998a; 1998b; 1994c; Fisher, Rickards, & Fraser, 1996). This was done, using Statistical Microsoft Excel Spreadsheet. According to Tobin and Fraser (1998), combining qualitative and quantitative methods of research provides multiple theoretical perspectives (observational and interpretive methods) into issues concerning the attitudes of people, in particular. The practice whereby a combination of both qualitative and quantitative measures is included in a research study is generally accepted as enhancing the study (Fraser & Tobin, 1991; Tobin & Fraser, 1998).

CHAPTER FOUR

PRESENTATION, ANALYSIS AND DISCUSSION OF DATA

4.0. Overview

This chapter presents the results gathered from the respondents' (teachers and students) responses to the questionnaire items. It also contains the analysis of the various responses from both teachers and students.

4.1. Background Data on the Selected Teachers and Students

Two sets of questionnaires were administered to the students and their teachers. The questionnaires present the findings of an examination of an aspect of social problems in Ghana: The Attitude of Students and Staff towards Environmental Sanitation. The data was collected through observation. Three hundred students and thirty teachers were selected from Asamankese Senior High School in the West Akim Municipality in the Eastern Region.

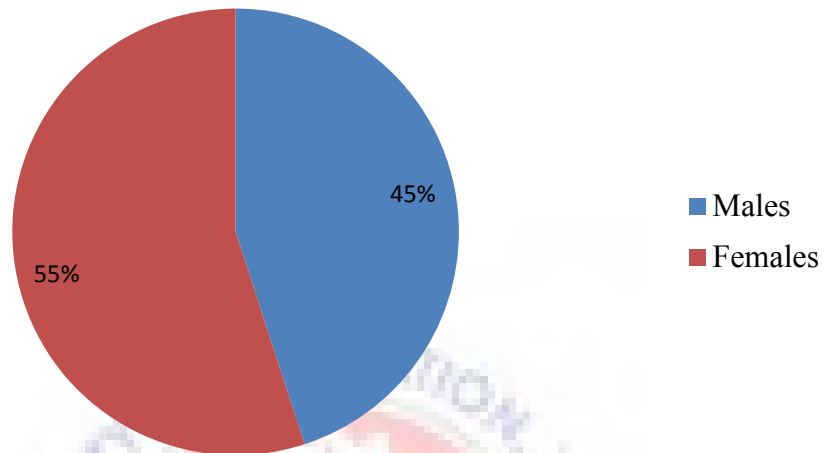
The areas the researcher focused on included the environmental Sanitation situations in schools, factors responsible for poor environmental sanitation, attitudes of students and staff towards environmental sanitation and finally the effects of poor environmental sanitation. In all four research questions were raised to guide the study. The research questions have been stated in the presentation of the results.

4.2. Demographic Characteristics of Respondents

Figures 3 to 6 Shows Respondents Demographic Characteristics. These include gender, age and residential status of students and teachers. From figure 3, out of the 300 students

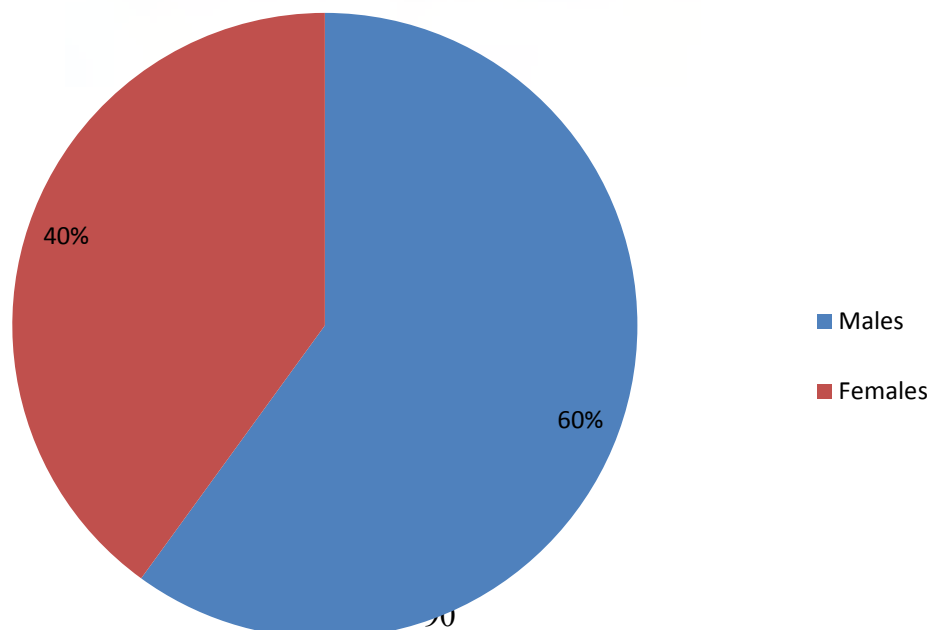
that were selected, 135 students representing 45% were males and 165 students constituting 55% were females.

Fig. 3: Gender of Students



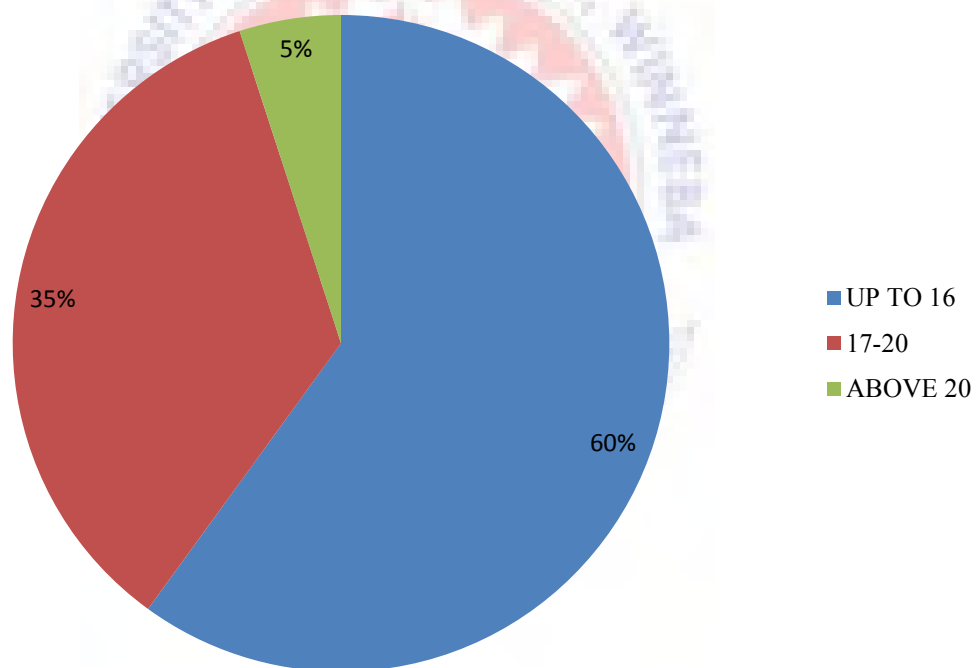
From figure 4, out of 30 teachers that were selected, 18 teachers representing 60% were male and 12 teachers constituting 40% were females.

Fig. 4: Gender of teachers



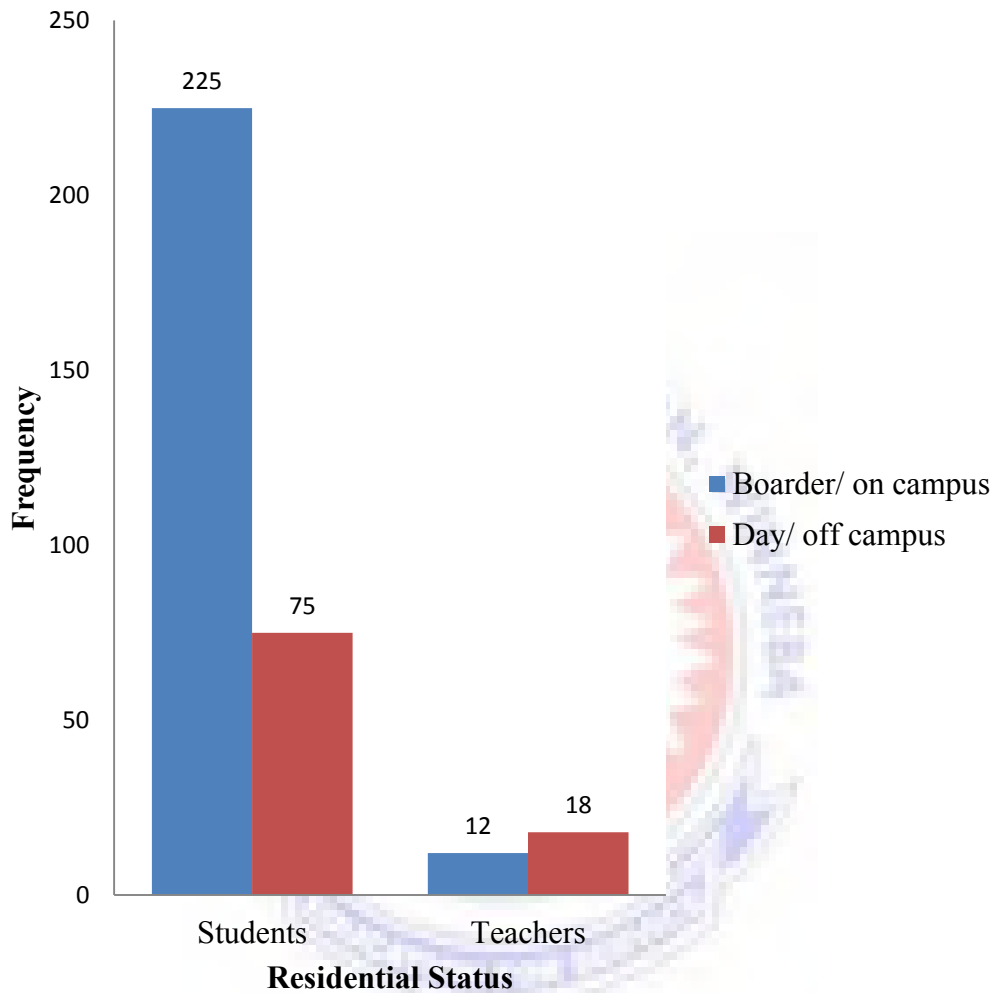
The age range of students confirmed that students within the ages of 12-16 were 180 constituting 60% of the students' population. Those between the ages of 17-20 were 105 representing 35% and students above 20 years numbered 15 representing 5%. This is represented in figure 5.

Fig. 5: Age Range of Student Respondents



The residential status of students and teachers shows that 225 students out of 300 representing 75% were boarders and 12 teachers out of 30 constituting 40% stay on the compound. Seventy-five students representing 25% were day students whilst 18 teachers indicating 60% were teachers who stayed outside the school compound. This is represented in figure 6 below.

Fig. 6: Residential Status of Student and Teacher Respondents



4.3. Presentation of Results by Research Questions

The analyzed data are now presented based on the research questions formulated for the study.

4.3.1. Research Question 1

What is the Environmental Sanitation Situation in Asamankese Senior High School?

In an attempt to answer the above question, the researcher used items 6, 7 and 8 of the students' questionnaire as well as items 5, 6 and 7 of the teachers' questionnaire. Figure 7 represents the responses of students and teachers. In this table, the responses from the respondents in line with the questionnaire were coded as very good, good, satisfactory, poor and very poor.

In the case of students as indicated in figure 6, 15 out of the 300 respondents representing 5% suggested that environmental sanitation in the school is very good. The responses from 6 out of 300 students representing 10% however indicated that the environmental sanitation situation in the school is good while 75 students representing 25% stated that environmental sanitation situation in the school is satisfactory. The response from 135 students representing 45% however indicated that the environmental sanitation situation in the school is poor. Forty-five (45) students representing 15% stated that the environmental sanitation situation in the school is very poor.

Responses as indicated by teachers reveal that 4 teachers representing 13.3% suggested that sanitation situation in the school was very good. The responses from 6 (20%) teachers indicated that sanitation situation was good. The results from another 6 (20%) teachers also stated that sanitation situation in the school is satisfactory. The responses from 8 teachers representing 30% however indicated that the environmental sanitation situation in the school was poor. The results from 6 teachers representing 20% suggested that sanitation situation in the school was poor.

Fig. 7: Responses of Students and Teachers on Sanitation Situation in the School



When asked to enumerate the major environmental sanitation problems in the school, the responses from the respondents in line with this question were coded as the following: water shortage, inadequate toilet facilities, disposal of waste materials, indiscriminate littering, weedy compound and public urination. The responses are represented in figure 8.

From figure 8, 15 students representing 5% and 3 teachers representing 10% indicated that public urination is a major environmental sanitation problem. The response from 30 (10%) students and 6 (20%) teachers chose inadequate toilet facilities as a major sanitation problem. the response from 60 students representing 20% and 8 teachers representing 26.7% also indicated that disposal of waste materials is a major sanitation problem. The results from 120 students representing 40% and 11 teachers representing 36.7% stated that weedy compound is a major environmental sanitation problem in the school. In the case of indiscriminate littering as a major sanitation problem in the school, 150 students,

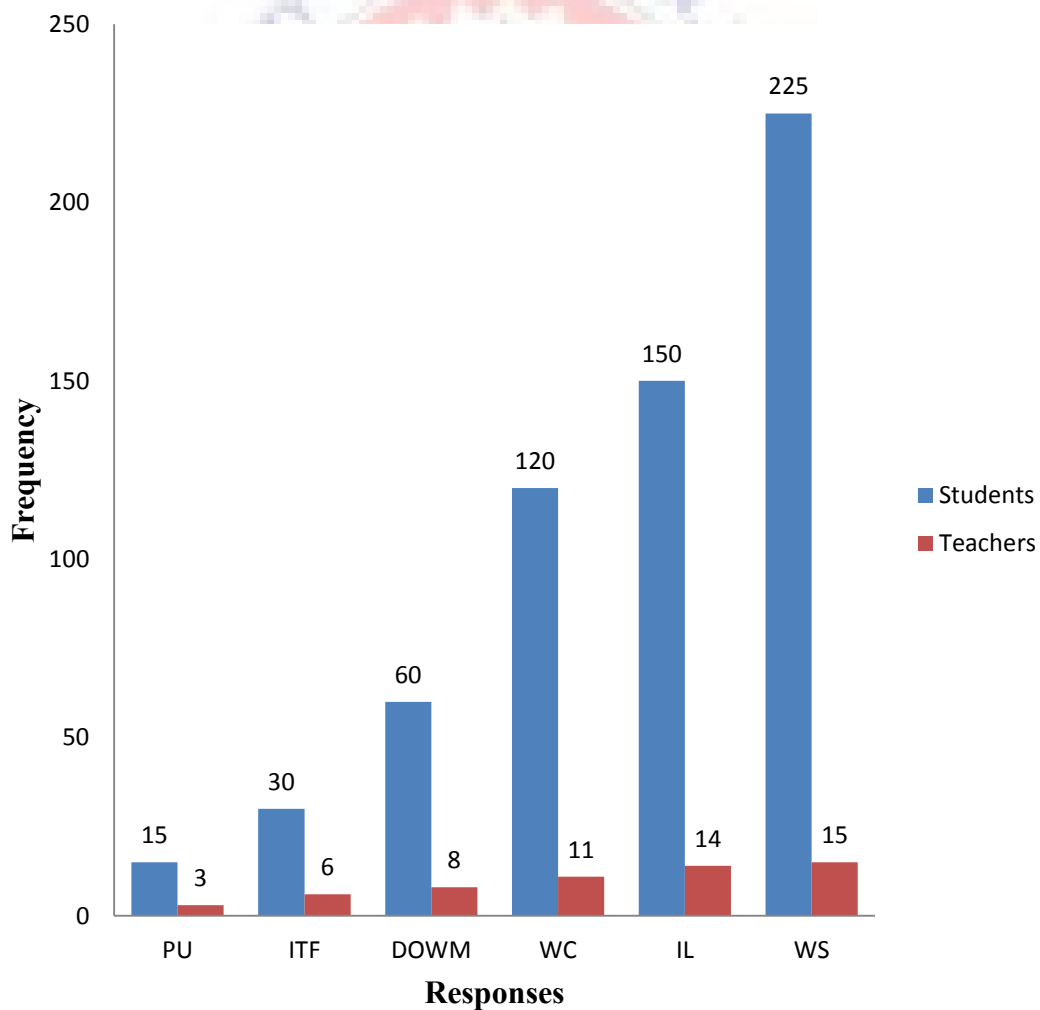
representing 50% and 14 teachers representing 46.7% answered in the affirmative. Two hundred and twenty-five students representing 75% and 15 teachers representing 50% however stated that water shortage is a major environmental sanitation problem.

The responses in figure 8 were coded as shown below and used to draw the graph in fig. 8.

Public urination as **PU**; Inadequate toilet facilities as **ITF**; Disposal of waste materials as

DOWM; Weedy compound as **WC**; indiscriminate littering as **IL** and Water shortage as **WS**

Fig. 8: Students' and Teachers' Responses on Major Sanitation Problems



On the question of how refuse is disposed of in the school, the responses from the respondents in line with this question were coded as the following: don't know, recycling, incinerator composting waste, landfill site and open burning of waste.

The results indicate that 10 (3.3%) students and 4 (13.3%) teachers stated that they don't know how refuse is disposed of in the school.

The results from 20 (6.7%) students and 4 (13.3%) teachers chose composting waste as means of disposing of refuse. Another 4 (6.7%) students and 5 (16.7%) teachers indicated that refuse are put in an incinerator. The results from 120 (40%) students and 7 (23.3%) teachers chose landfill site as a means of disposing of refuse. The results also indicate that 170 (56.7%) students and 15 (50%) teachers indicated that refuse are usually burnt openly. The responses are represented in figure 9.

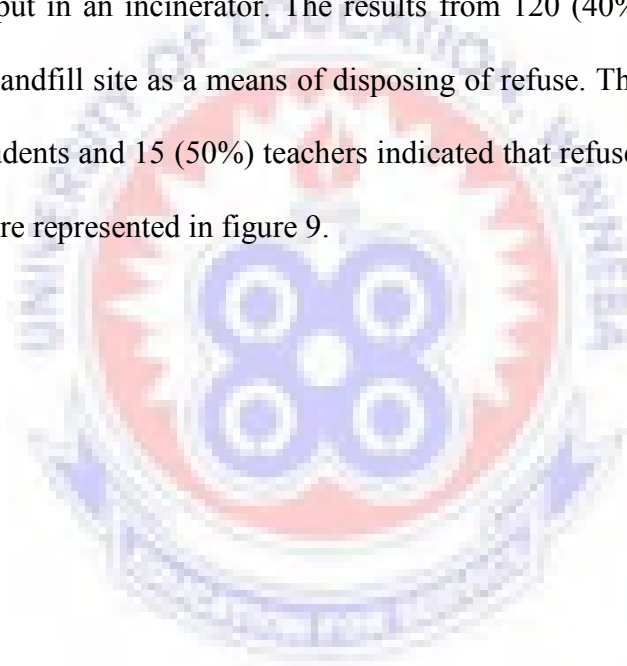
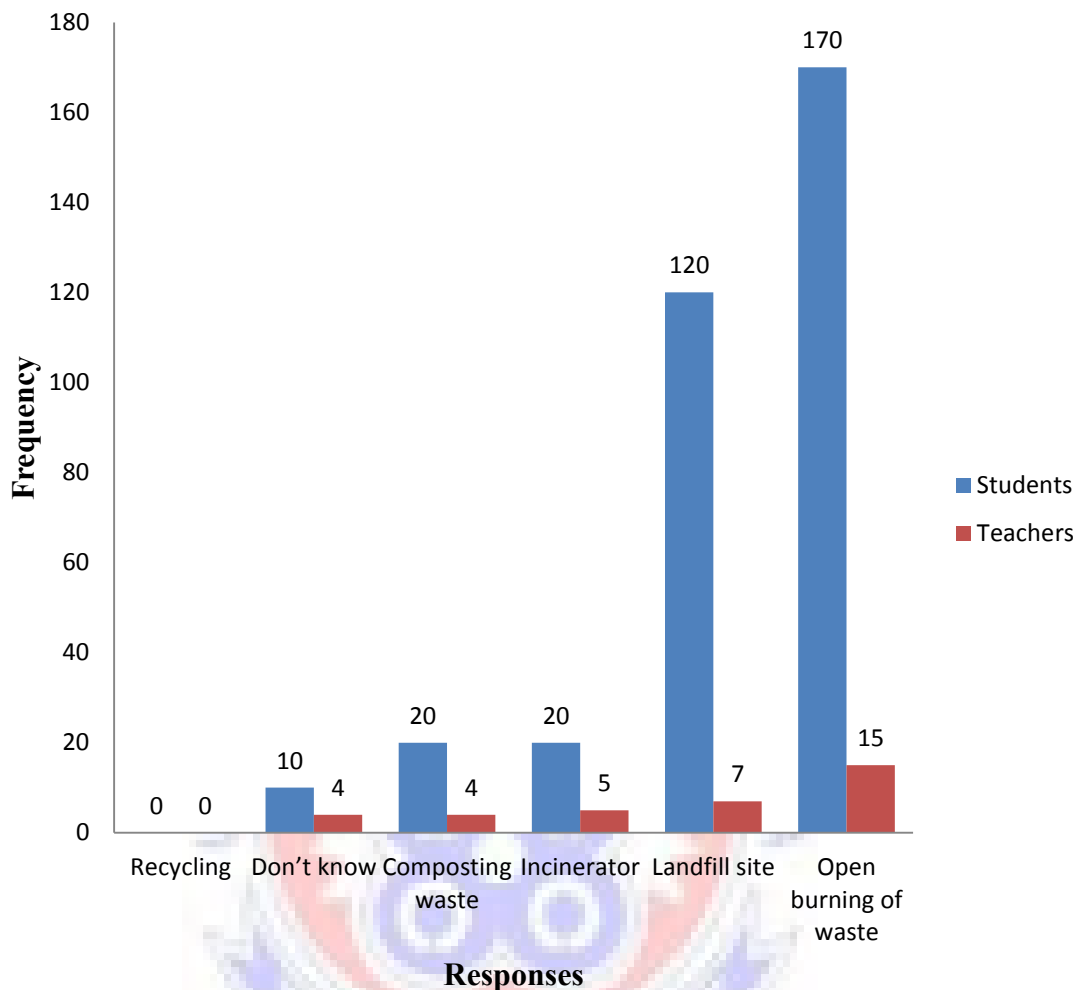


Fig. 9: Students' and Teachers' Responses on how Refuse is Disposed of



4.3.2. Research Question 2

What factors are responsible for the Environmental Sanitation situations in Asamankese Senior High School?

The purpose of this question was to identify the factors responsible for the poor environmental sanitation in Asamankese Senior High School. Responses to the question on whether the school has littering as a major problem were coded as 'yes' or 'no'. Items 13 and 15 of the students' questionnaire were considered and items 12 and 14 of the teachers' questionnaire were also considered. The responses are represented in table 1.

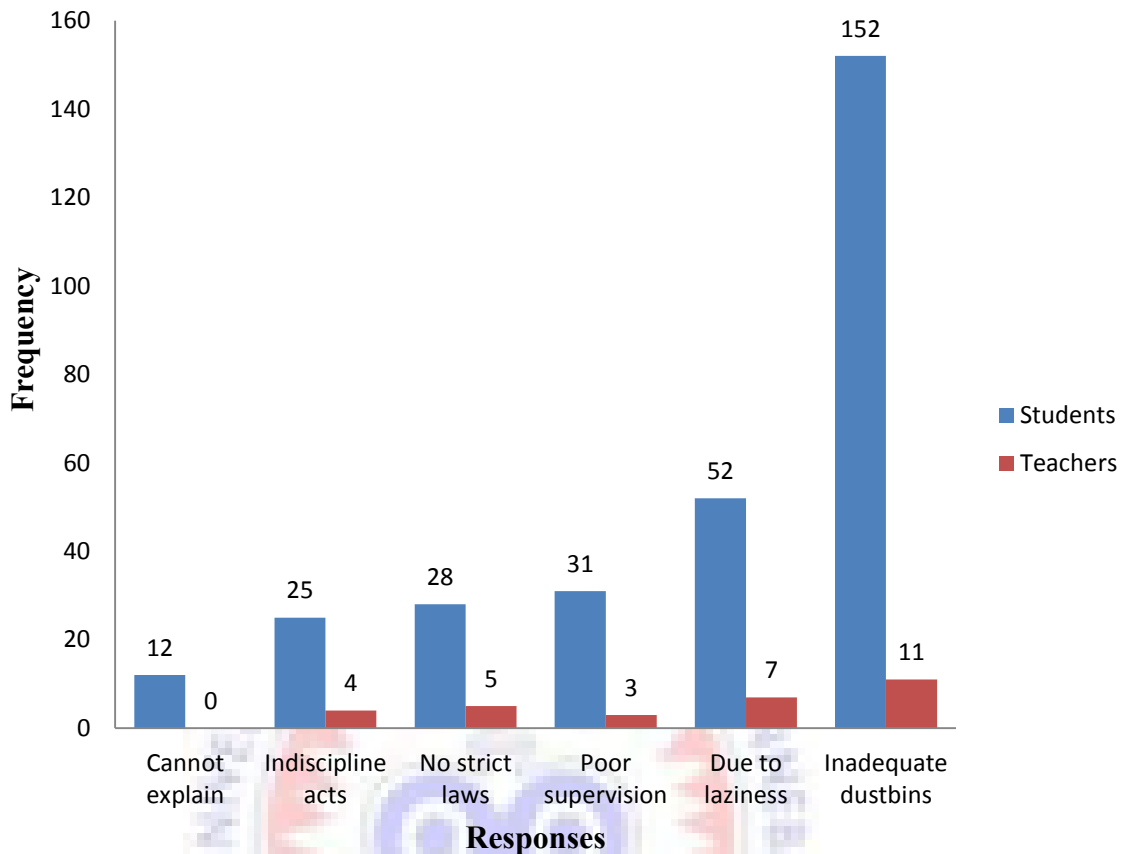
It can be inferred from the questionnaire that 218 students out of 300 representing 72.7% and 21 teachers constituting 70% chose the option ‘yes’ for an answer. The results from 82 students representing 27.3% and 9 teachers representing 30% chose the option ‘no’ for an answer.

Table 1: Responses on Littering as a Major Problem

| Responses | Students | | Teachers | |
|--------------|------------|------------|-----------|------------|
| | Frequency | Percentage | Frequency | Percentage |
| Yes | 218 | 72.7 | 21 | 70 |
| No | 82 | 27.3 | 9 | 30 |
| Total | 300 | 100 | 30 | 100 |

On the question of why you think students and teachers litter, responses from respondents were coded as cannot explain, indiscipline acts, no strict laws, poor supervision, due to laziness and inadequate dustbins. Responses gathered indicated that 12 (4%) students out of 300 stated that they cannot explain why students and teachers litter. Twenty-five (25) students representing 8.3% and 4 teachers representing 13.3% indicated that students and teachers litter as a result of indiscipline acts. The results from 28 (9.3%) students and 5 (16.7%) teachers confirmed that students and teachers litter because there are no strict laws. Responses from 31 students representing 10.3% and 3 teachers representing 10% argued that students and teachers litter because of poor supervision. The results from 52 (17.3%) students and 7 (23.3%) teachers suggested that students and teachers litter due to laziness. Responses from 152 students representing 50.6% and 11 teachers representing 36.7% indicated that students and teachers litter as a result of inadequate dustbins at vantage points on the compound. Figure 10 shows the various responses.

Fig. 10: Reasons why Students and Teachers Litter



4.3.3. Research Question 3

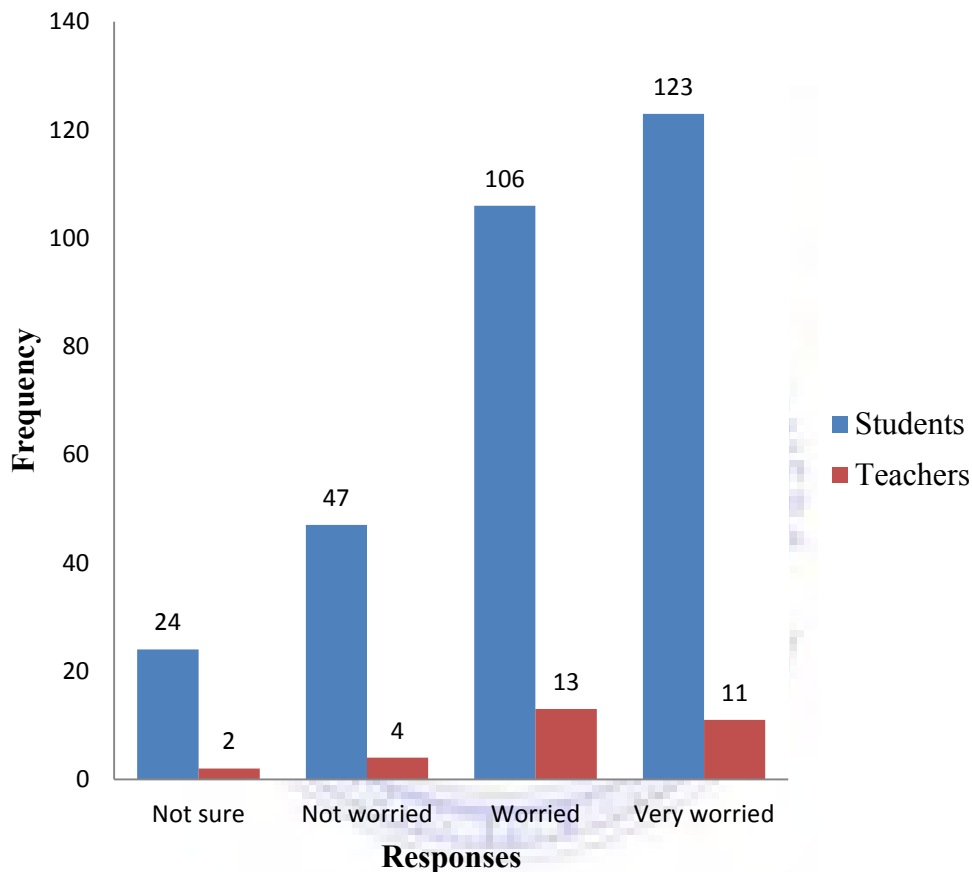
What are the Attitudes of Students and Teachers towards Environmental Sanitation?

Responses to the question on to what extent do you worry about waste around your school premises were coded as the following: not sure, not worried, worried and very worried. In addressing the above question, the items 20, 21 and 23 of the questionnaire for students and 19, 20 and 23 of the teachers' questionnaire were used.

According to figure 11, 8% of the students as against 6.7% of teachers indicated that they were not sure whether they were worried about the waste around the school premises. Students who indicated that they were not worried forms 15.7% as against 13.3% of teachers who also stated that they were not worried. The results from 106 students

representing 35.3% as against 13 (43.3%) teachers stated that they were worried about the waste around the school premises. Responses from 123 students representing 41% and 11 teachers representing 36.7% indicated that they were very worried about the waste around the school premises.

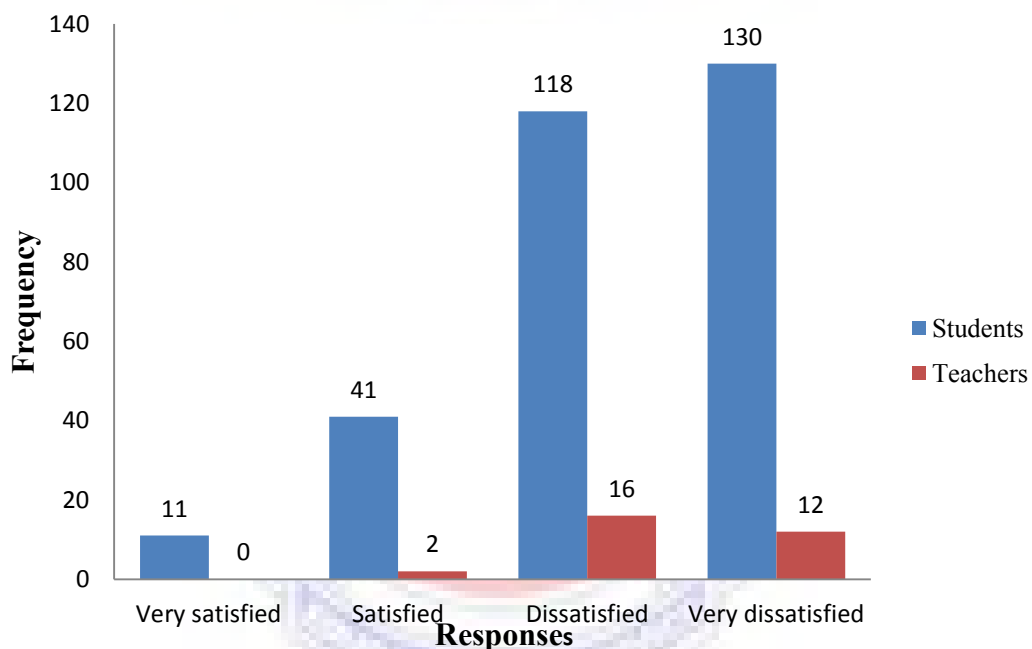
Fig. 11: The Extent to Which Students and Teachers got Worried about Waste around School Premise



On the question of whether students and teachers are satisfied with the way students' dispose of their waste, responses were coded as very dissatisfied, dissatisfied, satisfied and very satisfied. Responses from 11 students representing 3.7% indicated that they were very satisfied with the way students' dispose of their waste. None of the teachers was very satisfied with the way waste is disposed of. The results from 4 (13.7%) students and 2 (6.7%) teachers stated they were satisfied with the way students' dispose of their waste.

Responses from 118 (39.3%) students as against 16 (53.3%) teachers suggested that they were dissatisfied with the way students' dispose of their waste. The results also depicted that 130 students representing 43.3% and 12 teachers representing 40% were very dissatisfied with the way students' dispose of their refuse.

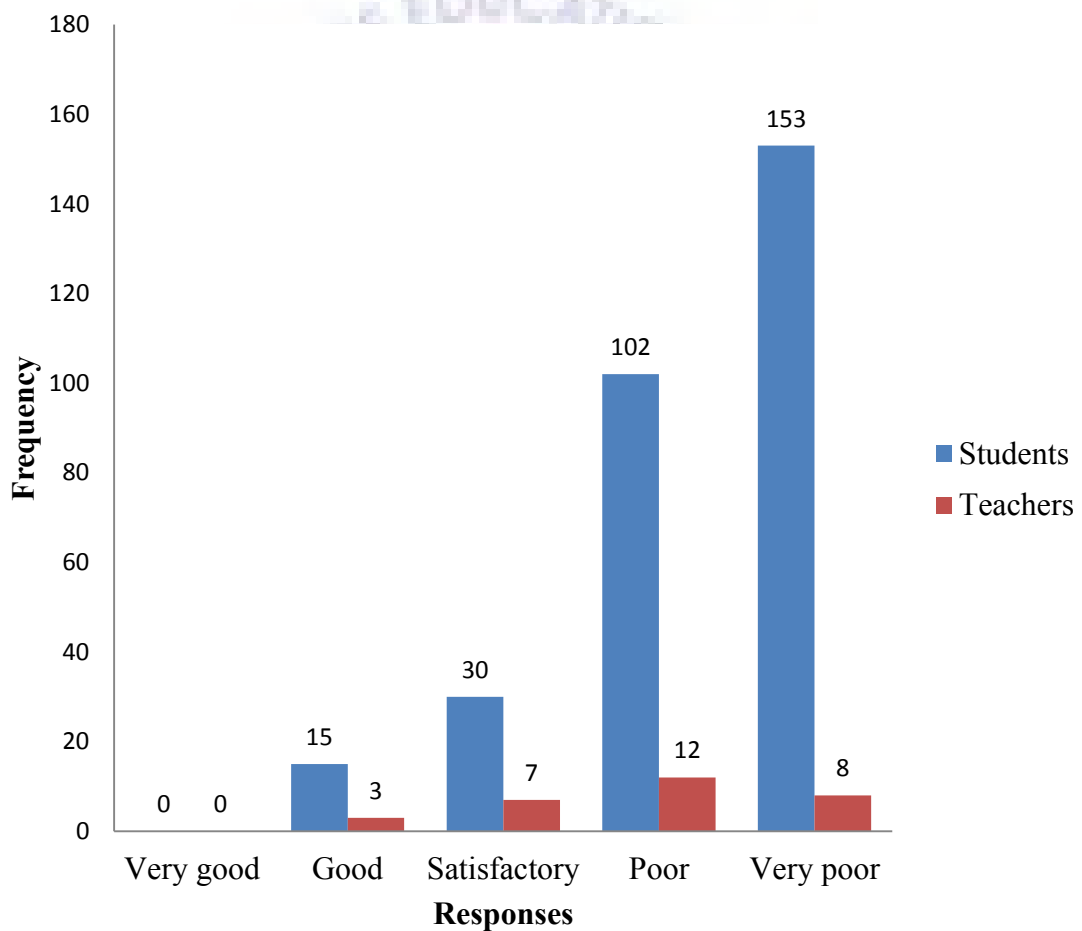
Fig. 12: Students' and Teachers' Feelings on the way their Waste is Disposed of



In addressing the question, how will teachers and students assess peoples' attitude towards maintaining environmental sanitation in the school, responses were coded as: very good, good satisfactory poor and very poor. It can be inferred from the questionnaire that none of the students and teachers chose the option very good as a way of assessing the teachers and students attitude towards sanitation. The results from 15 students out of 300 representing 5% as against 3 teachers out of 30 representing 10% indicated that students and teachers attitude towards maintaining environmental sanitation is good.

Responses from 30 (10%) students and 7 (23.3%) teachers stated that students and teachers attitude towards sanitation is satisfactory. One hundred and two (102) students representing 34% as against 12 teachers representing 40% argued that students and teachers attitude was poor. The response from 153 (51%) students and 8 (26.7%) teachers suggested that students and teachers attitude towards environmental sanitation is very poor.

Fig. 13: Responses on the Assessment of Students' and Teachers' Attitudes Towards Environmental Sanitation



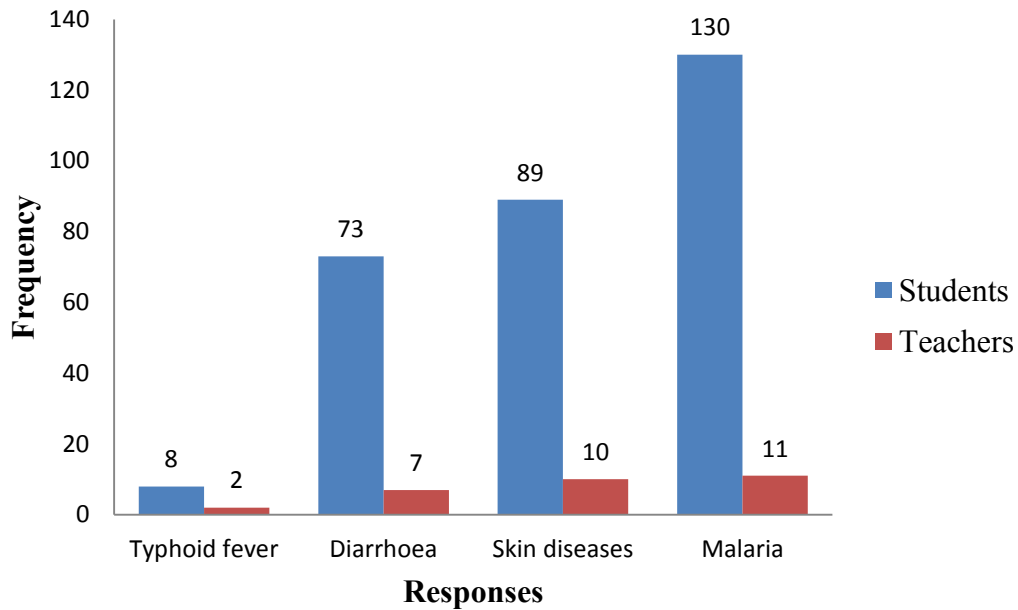
4.3.4. Research Question 4

What are the effects of the insanitary conditions in Asamankese Senior High School?

The purpose of this question is to identify the effects of the insanitary conditions in Asamankese Senior High School. Responses to the question on, the rampant diseases /illness in the school were coded as the following: malaria, diarrhoea, typhoid fever and skin diseases. Items 28 and 30 of the students' questionnaire and 31 and 33 of the questionnaire for teachers were considered.

Responses gathered indicated that students representing 6.7% stated that typhoid fever is the most rampant illness in the school. The results from 73 (24.3%) students as against 7 (23.3%) teachers suggested that the most rampant disease or illness in the school is diarrhoea. Eighty-nine(89) students representing 29.7% as against 10 teachers representing 33.3% argued that skin diseases is the most rampant in the school. The results from 130 (43.3%) students and 11 (36.7%) teachers indicated that malaria is the most rampant in the school.

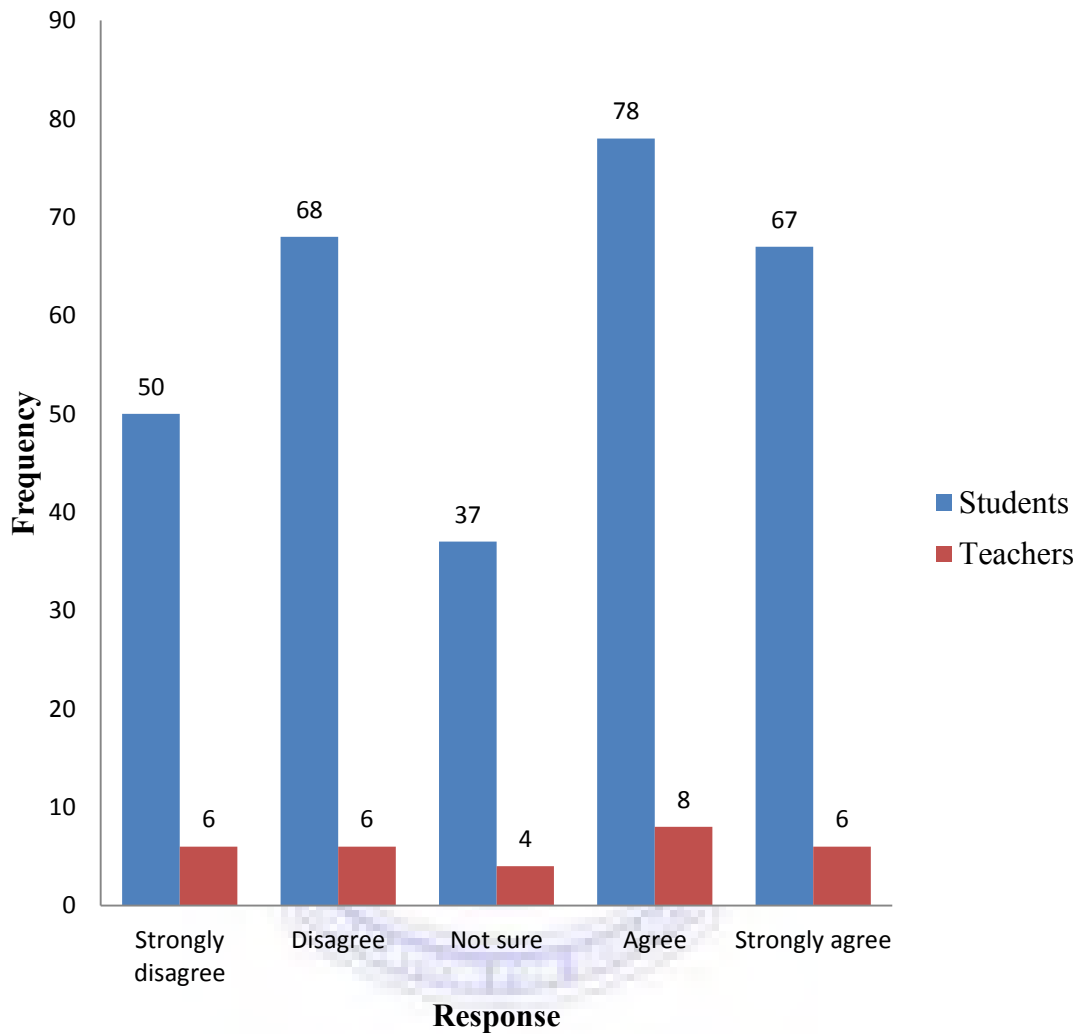
Fig. 14: Responses on the most Rampant Diseases on Campus



When asked whether students and teachers agree that poor environmental sanitation in the school has affected academic work, the responses to this question were coded as the following: strongly agree, agree, not sure, disagree and strongly disagree.

The results from 50 (16.7%) students and 6 (20%) teachers argued that they strongly disagreed that poor environmental sanitation conditions in the school affects academic work. The response from 68 students representing 22.7% and 6 teachers representing 20% also suggested that they disagree that poor environmental sanitation conditions in the school affect academic work. Thirty-seven (37) students representing 12.3% as against 4 (13.3%) teachers suggested that they were not sure that poor environmental conditions affect academic work. Responses from 78 (26%) students and 8 (26.7%) teachers stated that they agree that poor environmental conditions in the school affect academic work. The remaining 67 students out of 300 representing 22.3% and 6 teachers out of 30 representing 20% indicated that they strongly agree that poor environmental conditions in the school affects academic work.

Fig: 15: Responses on Whether Poor Environmental Sanitation Conditions Have Affected Academic Work on Campus



4.4. Discussion

4.4.1. Environmental Sanitation Conditions

According to figure 7, the percentage of the responses of students (45%) and teachers (26.7%) reveals that the environmental sanitation conditions in the school is poor. According to the percentage values of both students and teachers responses as given in the table, it reveals or indicates that the environmental sanitation condition in the school is

poor. Akintola, (1978) in the literature reviewed argues that maintaining a sound and healthy environment has always been a challenge to man. Various human activities that requires planning and coordination demands a comprehensive and deliberate effort to keep the physical environment fit for the total man to function well.

From this study, it was revealed that water shortage is the major sanitation problem in the school. With reference to the various percentage values (see figure 8), water shortage constituting 75% and 50% of the students and teachers responses respectively suggest that water shortage is a major sanitation problem in Asamankese Senior High School. In agreement with these findings, the reviewed literature shows that the study conducted by UNICEF, 2001 found that access to sanitation facilities is a fundamental human right that safeguards health and human dignity.

Therefore the provision of safe water and sanitation facilities is a first step towards a healthy physical learning environment. UNICEF, (2001) further stated that the ultimate goal of Agenda 21 is for all people to have safe and adequate water and sanitation, and a clean and healthy environment. The sanitary conditions in schools in rural and urban areas in developing countries are often appalling, creating health hazards and other negative impacts, making schools unsafe for children. Bryant, (1998) in support of this reported that infectious diseases like cholera and dysentery in Venezuela escalate as a result of people lacking access to water and clean water.

It was also found out from this study that, indiscriminate littering is also an environmental sanitation problem in the school. Figure 7 points to the fact that the environmental sanitation condition in the school is poor. Observation also showed that both teachers and

students litter indiscriminately. Observation reveals that littering in the school is not checked by prefects. On the part of teachers few of them are concerned about the rate of littering on the compound. A Report by the Environmental Protection Agency states that all kinds of wastes, regardless of their nature, are being dumped indiscriminately into depressions, sand pits, beaches, drains and even in certain areas along streets (EPA, 2002). These practices have created an unhealthy environment.

As was presented in figure 9, open burning of waste record for students (56.7%) and teachers (50%) of being the responses on how refuse is dispose of in the school. Table 7 again indicated that 40% of the students' respondents and 23.3% of the teachers' respondent suggest that landfill site is another means of disposing of refuse in the school. Pacione, (2005) commented on the lack of provision for urban waste management in poor countries. According to him, most poor city governments have great difficulty regarding the collection and safe disposal of solid wastes. He estimated that between one third and one half of all solid waste generated in third world cities remains uncollected and the collection rate could be as low as 10% - 20% in some cases.

Depicting a similar picture of the problem, Cointreau, (2001) in the literature review reported that, in some cases, up to about 60% of solid waste generated within urban centres in poor countries remains uncollected and such refuse accumulates on waste lands and streets, sometimes to the points of blocking roads. In schools, such situations will result in negative consequences such as health hazards. These landfill sites and open burning of waste could bring about pollution in the environment which can result in air- borne diseases.

4.4.2. Factors Responsible for Environmental Sanitation Conditions

With regard to factors responsible for poor environmental sanitation, one other finding is that majority of the students and teachers confirmed that littering is a major problem in the school (see table 1). With this finding most of the students and teachers responses shows that littering is one major factor that accounts for the poor environmental sanitation problems in Asamankese Senior High School.

Again the study reveals that 50.7% of the students' respondents and 36.7% indicated that indiscriminate littering in the school is as a result of inadequate dustbins on the school compound. Through observation, it was found out that, although there were few dustbins on the compound, they were inadequate and they were not placed at vantage points. The observation reveals that for all the five classroom blocks observed, none of these blocks have a dustbin although some few classrooms have their own dustbins. On the compound in general, dustbins could not be found at vantage points.

Again, it was observed that at the girls' dormitory, there were dustbins on their verandahs but there were no dustbins at vantage points around the dormitory. The observation reveals that the story was different at the boys' dormitory. At the boys' dormitory block, there was only one big dustbin on the ground serving the whole block.

This observation is in line with the literature reviewed of Boadi and Kuitunen, (2004). In their submission, Boadi and Kuitunen, (2004) indicated that some of the problems affecting environmental sanitation include weak institutional capacity and lack of resources, both human and capital. This has also been supported by MLGRD, (2004). MLGRD, (2004) summarizes the challenges of poor environmental sanitation in Ghana as

follows: Poor planning for waste management programmes, inadequate equipment and operational funds to support waste management activities, inadequate sites and facilities for waste management operations.

It was also found out that (see figure 10) some students and teachers also litter as a result of both students and teachers feeling lazy to walk to vantage points where dustbins are placed to dispose of their rubbish. This behaviour on the part of teachers and students geared towards the attitude of teachers and students as opined by Agbola, (1993).

4.4.3. Attitude of Students' and Staff towards Environmental Sanitation

Majority of the students and teachers were very worried about the poor environmental sanitation conditions in the school. This means that teachers and students were aware of the poor environmental conditions. It was also found out that teachers were dissatisfied and students were very dissatisfied about the way students and teachers dispose of their rubbish. From the study it was revealed by teachers that, students and teachers attitude towards environmental sanitation was rated as poor whiles students rated it as very poor.

Besides, it was observed that some students and teachers had positive attitude towards environmental sanitation whiles others have negative attitude towards environmental sanitation. This observation is in line with that of Agbola, (1993). In his submission, Agbola, opined that the root cause of many environmental problems can be traced to the way and manner in which the imbibed behavioural patterns and acquired values are superimposed on the environment. He further stated that imbibed behavioural patterns are cultural in origin. In another submission, Agbola, (1991) argues that these attitudes could

be changed. He stated that beliefs, perceptions and attitudes are learned responses and can therefore be changed through education.

4.4.4. Effects of Poor Environmental Sanitation Conditions

From the study, the issue of the most rampant illness or disease in Asamankese Senior High School reveals that malaria is the most rampant illness. This findings confirms that the literature reviewed by Harody *et al*; 2001; Perara, 2003). They argued that accumulated waste in the cities become hot beds for the breeding of pathogens that cause disease like dengue fever, malaria leprosy and even elephantiasis while the blockage of drainage systems by waste materials creates stagnant waters which also become ideal breeding grounds for mosquitoes and other vectors that spread pathogens. Consequently, the study indicated that students and teachers agree to the fact that poor environmental condition affect academic work in Asamankese SHS.

This information revealed by students and teachers has been supported by National Teachers Institute (NTI, 2008; McKay, 1994 in Egin, 2003). They argued that school supervision and sanitation affects the quality of learning environment. The NTI further argues that students study habits are to a large extent tied to good school supervision and sanitation. Mitchell, 2008 also opines that the physical appearance of a school may attract parents and friends of educational institutions in their initial judgments about the quality of what goes on in the school.

Respondents also mentioned some of the things that could be done to address the identified problems. These include; provision of more dustbins, enough brooms to the various classes. Others are the school authorities should enact laws governing littering, employ

more laborers, teachers and prefects must be tasked to work hard, recycling of waste and organizing environmental awareness seminar.



CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.0. Overview

This chapter presents the summary of findings from the results of field data obtained from the survey conducted in Asamankese Senior High Schools in the West Akim Municipality. The survey was intended to ascertain the Attitude of Students and Staff towards Environmental Sanitation. The findings of the present study have made it abundantly clear that poor environmental sanitation is a serious environmental problem in Asamankese Senior High School.

5.1. Summary of the main Findings

From the analysis of the data in the study, the following were the major findings:

1. Responses indicated that teachers and students argue that environmental sanitation in the school is poor.
2. Both students and teachers consider water shortage as the major sanitation problem.
3. Both students and teachers indicated that open burning of waste is a method of how refuse is disposed of.
4. Both respondents argue that littering is also a major problem.
5. Inadequate dustbins account for the reason why students and teachers litter.
6. Students are very worried about waste around the school while teachers are worried about waste around the school.
7. Students are very dissatisfied with the way students and teachers dispose of their waste while teachers are dissatisfied with the way students and teachers dispose of their waste.

8. Students rated teachers and students attitude towards environmental sanitation as very poor while teachers argued that it was poor.
9. Both students and teachers confirmed that malaria is the most rampant illness on the school compound.
10. Both students and teachers indicated that poor environmental sanitation conditions in Asamankese Senior High School affects academic work.

5.2. Conclusion

In conclusion students and teachers are predisposed to unhealthy environmental dispositions. Yet, societal environment consciousness relies heavily on the efforts of people like students and teachers since their immediate environment is morally charged with the responsibility of advancing the consciousness of its members.

Hence there is an earnest need to update students and teachers environmental knowledge, such that their attitudes may also improve. From the findings of this study, it can also be concluded that since a good and clean environment enhances effective teaching and learning, as well as promotes healthy living in the school, the need for good environmental sanitation cannot be overemphasized.

There is need for every available strategy and persons to be used in keeping the school environment clean and beautiful. Generally, all the issues mentioned regarding environmental sanitation depend on the planning and management by the school administration. They have the power to come up with appropriate policies and programmes, design working strategies and own the resources to change all that may not be right with the school's environmental sanitation for the better.

5.3. Recommendations

In the light of the above findings, the following recommendations are put forward for better management of the school environment:

1. Formation of Environmental Sanitation Team: The school should constitute a team with a duty of checking the environmental sanitation conditions in the school. This team will keep surveillance while ensuring that the environmental sanitation conditions in the school are properly checked.
2. Drilling of bore holes: The School Administration need to prioritize the aspect of water supply in the school. The excuse of inadequate financial resources is not genuine enough to explain the inadequacy of the sanitation facilities in the school. It is therefore strongly recommended that a separate budget is put aside and strictly observed by the school to cater for this indispensable service in the school. The school can also rely on Internally Generated Funds to finance the drilling of bore holes.
3. The school should be encouraged and facilitated to put wall painting, wood carving and clay portraits that depict hygiene and sanitation messages. These can be installed or mounted in such a manner that they are not easily removed. The messages being depicted will help to promote environmental awareness which will result in environmentally responsible behaviour.
4. Emptying of dustbins: There should be regular emptying of dustbins to avoid heaping of waste or refuse and overflowing of litter and waste. At least dustbins

should be emptied every day. There should be regular monitoring of emptying of dustbins by teachers. This will keep the compound clean and prevent any possible outbreak of communicable diseases such as cholera, malaria and typhoid.

5.4. Suggestions for Further Study

Since society continues to be dynamic with continuous changes in societal needs, there is always the need for further research to be conducted into many aspects of education at all levels to meet the aspirations of society. It is therefore suggested that:

1. More studies should find out whether the formation of environmental clubs in schools could help improve environmental sanitation in schools.
2. A study should be conducted to find out whether gender has any influence on environmental sanitation.
3. More work need to be done to find out whether environmental sanitation in schools could have an influence on academic work.

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APPENDIX A

UNIVERSITY OF EDUCATION, WINNEBA

DEPARTMENT OF SOCIAL STUDIES EDUCATION

QUESTIONNAIRE FOR STUDENTS

Questionnaire for Assessing Attitudes of Students towards Environmental Sanitation

SECTION A: INTRODUCTION

This questionnaire is designed for a research on Attitudes of Students towards Environmental Sanitation. The research is purely for academic purposes. The answers provided therefore shall be treated confidentially.

Instruction: Please tick (✓) in the appropriate box your response. You are permitted to tick more than one box if you have more than one response. (Tick all that apply)

SECTION B: BIO DATA

1. Gender: Male [] Female []
2. Age: 12-16 [] 17- 20 [] above 20 []
3. Class: SHS 1 [] SHS 2 [] SHS 3 []
4. Status: Day [] Boarder []
5. State the name of the club you belong to.

.....
.....

SECTION C: ENVIRONMENTAL SANITATION SITUATIONS

33. How do you assess environmental sanitation in your school?

Very good [] good [] satisfactory [] very poor [] poor []

7. Which of the following is/are a major environmental sanitation problem in your school? Water shortage [] inadequate toilet facilities [] disposal of waste materials [] Indiscriminate littering [] weedy compound [] public urination [] any other.....

8. How do you dispose of refuse in the school? Open burning of waste [] recycling [] Landfill site [] composting waste [] incinerator [] don't know [] Others(specify).....

9a. Do you have enough dustbins at vantage points on the compound?
Yes [] No []

9b. if yes, how often do you empty the dustbins? Daily [] weekly []
Others (specify).....

33. Who are those responsible for the cleaning of the compound?
Students [] prefects [] Teachers [] school labourers []

SECTION D: FACTORS RESPONSIBLE FOR POOR ENVIRONMENTAL SANITATION

33. Do you think your school has problems concerning maintaining a clean environment?

Yes [] No []

12. If yes, what do you think are the problems?

.....
.....
.....

13. Do you have littering as a major problem in your school?

Yes [] No []

14. If yes, who is causing the littering problem? Students [] Staff []

Students and staff [] others (specify).....

15. Why do you think they litter?

.....
.....
.....
.....

16. Where does the littering occur?

.....
.....
.....

17. If not why is this possible? Have there been systems implemented to tackle this?

.....
.....

18. Do teachers educate students about how to keep the school compound clean?

Yes [] No []

19. If yes, has the education brought about any impact on the school environment?

.....
.....
.....

**SECTION E: ATTITUDES OF STUDENTS TOWARDS ENVIRONMENTAL
SANITATION**

20. To what extent do you worry about waste around your school premise?

Not sure [] not worried [] worried [] very worried []

21. How will you assess other students' attitude towards maintaining environmental sanitation in the school?

Very good [] good [] satisfactory [] poor [] very poor []

22. How do you feel when you see students littering the compound?

Very bad [] bad [] normal [] guilty [] very guilty []

23. Are you satisfied with the way students' dispose of their waste?

Very dissatisfied [] dissatisfied [] satisfied [] very satisfied []

24. How satisfied are you with the way the wastes are handled by your school management?

Very dissatisfied [] dissatisfied [] satisfied [] very satisfied []

25. Are you a member of any group whose main aim is to preserve or protect the environment?
Yes [] No []

26. If yes, what has your group done to protect the environment?

.....
.....
.....

SECTION F: EFFECT OF POOR ENVIRONMENTAL SANITATION

27. Has the school encountered any problems as a result of poor environmental sanitation?

Yes []

No []

28. If yes, what are these problems?

.....
.....
.....

29. Which of the following diseases/illness is very rampant in your school?

Malaria [] diarrhoea [] typhoid fever [] skin diseases []

Others (specify).....

30. What do you think is the cause of the above mentioned disease/illness?

.....
.....
.....
.....

31. Do you agree that poor environmental conditions in the school have affected academic work?

Strongly agree [] agree [] not sure [] disagree [] strongly disagree []

SECTION G: GENERAL COMMENTS

32. In your opinion, how would the school authorities address environmental sanitation problems in the school?

.....
.....

.....
.....
33. Any other suggestions on how to keep the school environment clean?
.....
.....



APPENDIX B

UNIVERSITY OF EDUCATION, WINNEBA

DEPARTMENT OF SOCIAL STUDIES EDUCATION

QUESTIONNAIRE FOR TEACHERS

Questionnaire for Assessing Attitudes of Teachers towards Environmental Sanitation

SECTION A: INTRODUCTION

This questionnaire is designed for a research on Attitudes of teachers towards Environmental Sanitation. The research is purely for academic purposes. The answers provided therefore shall be treated confidentially.

Instruction: Please tick (✓) in the appropriate box your response. You are permitted to tick more than one box if you have more than one response. (Tick all that apply)

SECTION B: BIO DATA

1. Gender: Male [] Female []
2. Subject taught.....
3. Residential status: on campus [] off campus []
4. Apart from being a classroom teacher, state any other position that you occupy.....

SECTION C: ENVIRONMENTAL SANITATION SITUATIONS

5. How do you assess environmental sanitation in your school?
Very good [] good [] satisfactory [] poor [] very poor []

6. Which of the following is/are a major environmental sanitation problem in your school?

Water shortage [] inadequate toilet facilities [] disposal of waste materials []

Indiscriminate littering [] weedy compound [] public urination []

Any other.....

7. How do students dispose of refuse in the school? Open burning of waste []

Recycling [] Landfill site [] composting waste [] incinerator []

Don't know [] others (specify).....

8a. Do you have enough dustbins at vantage points on the compound?

Yes []

No []

8b. if yes, how often do students empty the dustbins? Daily [] Weekly []

Others (specify).....

9. Who are those responsible for the cleaning of the compound?

Students [] prefects [] Teachers [] school labourers []

SECTION D: FACTORS RESPONSIBLE FOR POOR ENVIRONMENTAL SANITATION

10. Do you think your school has problems concerning maintaining a clean environment?

Yes []

No []

11. If yes, what do you think are the problems?

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.....

12. Do you have littering as a major problem in your school? Yes [] No []

13. If yes, who is causing the littering problem?

Students [] staff [] Students and Staff [] others (specify).....

14. Why do you think they litter?

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.....

15. Where does the littering occur?

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16. If not why is this possible? Have there been systems implemented to tackle this?

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17. Do you as a teacher educate students about how to keep the school compound clean?

Yes []

No []

18. If yes, has the education brought about any impact on the school environment?

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**SECTION E: ATTITUDES OF TEACHERS TOWARDS ENVIRONMENTAL
SANITATION**

19. To what extent do you worry about waste around your school premise?

Not sure [] not worried [] worried [] very worried []

20. How will you assess other teachers' attitude towards maintaining environmental sanitation in the school?

Very good [] good [] satisfactory [] poor [] very poor []

21. How often do you see teachers littering the compound?

All the time [] often [] sometimes [] seldom [] never []

22. How do you feel when you see students and teachers littering the compound?

Very bad [] bad [] normal [] guilty [] very guilty []

23. Are you satisfied with the way students' dispose of their waste?

Very dissatisfied [] dissatisfied [] satisfied [] very satisfied []

24. How satisfied are you with the way the wastes are handled by your school management?

Very dissatisfied [] dissatisfied [] satisfied [] very satisfied []

25. Are you a member of any group whose main aim is to preserve or protect the environment? Yes [] No []

26. Do you as a teacher incorporate environmental education in your teachings?

Yes [] No []

27. If yes, has the education brought about any positive impacts? Yes [] no []

28. If no, why don't you incorporate environmental education in your teachings?

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SECTION F: EFFECT OF POOR ENVIRONMENTAL SANITATION

29. Has the school encountered any problems as a result of poor environmental sanitation?

Yes [] No []

30. If yes, what are these problems?

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31. Which of the following diseases/illness is very rampant in your school?

Malaria [] diarrhoea [] typhoid fever [] skin diseases []

Others (specify).....

32. What do you think is the cause of the above mentioned disease/illness?

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33. Do you agree that poor environmental conditions in the school have affected academic work?

Strongly agree [] agree [] not sure [] disagree [] strongly disagree []

SECTION G: GENERAL COMMENTS

34. In your opinion, how would the school authorities address environmental sanitation problems in the school?

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35. Any other suggestions on how to keep the school environment clean?

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APPENDIX C

OBSERVATION CHECKLIST

Grading Scale

1. Very good
2. Good
3. Satisfactory
4. Poor
5. Very poor

| NO. | AREAS OF OBSERVATION | GRADING SCALES | | | | |
|-----|--|----------------|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| 1 | General cleanliness on the compound. | | | | | |
| 2 | Attitude of students towards environmental sanitation. | | | | | |
| 3 | Attitude of teachers towards environmental sanitation. | | | | | |
| 4 | Cleaning of the compound. | | | | | |
| 5 | Availability of dustbins at vantage points. | | | | | |
| 6 | Regular emptying of dustbins. | | | | | |
| 7. | Sanitation in and around the classroom blocks. | | | | | |
| 8. | Situations at refuse sites created on the compound. | | | | | |
| 9. | Sanitation in and around the boys' dormitory. | | | | | |
| 10. | Sanitation in and around the girls' dormitory. | | | | | |

Any other observations made pertaining to environmental sanitation among students and teachers.....