

UNIVERSITY OF CAPE COAST

ATTITUDE OF JSS 3 STUDENTS IN THE CAPE COAST MUNICIPALITY
OF GHANA TOWARDS LITTERING

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DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another degree in this University or elsewhere.

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Supervisors' Declaration

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

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ABSTRACT

Littering is a problem worldwide, Ghana being no exception. The purpose of the study was therefore to investigate the attitude of JSS 3 students in the Cape Coast municipality towards littering. Two hundred and forty students were sampled from a population of 2,398 using the stratified random sampling technique. The sample comprised 120 males and 120 females. A 52-item questionnaire was used to gather information relating to the attitude of students towards littering as well as their awareness on the effects of littering. The internal consistency of the instrument was 0.83 using Cronbach alpha reliability.

The data collected were analyzed using percentages, means and independent t-test at a significance level of 0.05. The results revealed that JSS3 students were against littering and were aware of the effects of littering. Littering was also found to be an important environmental concern among students.

The conclusions of the study are:

1. Male and female JSS 3 students are aware of the effects of littering to a very large extent.
2. Urban and rural JSS 3 students are aware of the effects of littering to a very large extent.
3. There is no significant difference between male and female JSS 3 students in their attitude towards littering.
4. There is no significant difference between urban and rural JSS 3 students in their attitude towards littering.

Students indicated that they were against littering. Such a positive attitude would be a good starting point for more education of pupils on the topic and for developing proper practices of waste disposal as far as littering is concerned. Efforts should therefore be made to increase awareness among students on the effects of littering.

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DEDICATION

Dedicated to my dear husband, Fred, and my children, Nana Afia, Maame
Egyimah and Junior.

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CHAPTER ONE

INTRODUCTION

Background of the Study

In recent times, there has been widespread concern about sustainability of the environment. The Earth serves not only as a habitat for human and other organisms in this universe but also a natural heritage, which should be preserved and passed on from one generation to the next. What the future generation would have depends directly on the current generation, and hence it is the responsibility and duty of humans to care for the environment.

Until the last ten thousand years, living systems evolved in response to changes in the abiotic (non-living) environment unaffected by human activity (Taylor, Green & Stout, 1997). Perhaps, human impact on the ecosystem was minimal. However, the development of agriculture and technology has generally affected the environment significantly. Widespread industrialization has led to environmental pollution and deterioration of environmental quality. Pollution plays a significant role in the decrease of the planet's biodiversity. For instance, many of the most polluted sea waters once supported many species of fish and shellfish. Many other remaining shellfish are dangerous to eat because they are tainted with toxic substances. Although fishes are abundant, they are tainted with

toxic substances. Bottom – dwelling fishes have reduced in abundance and diversity (Levinton, 1995).

Raw sewage that is often dumped into lakes, rivers and oceans is a major source of pollution. For instance, the Baltic Sea, which was a relatively clean seawater body, is now one of the most polluted surface waters in the world. The Baltic Sea is polluted mostly with sewage from sewage treatment plants. Sewage adds excess inorganic nutrients like nitrogen and phosphorus to the water. The excess inorganic nutrients results in an explosive growth of algae, which die and decay, depleting oxygen levels in large areas of the sea floor. This has wiped out much of the bottom fauna (animal life). Scientists have estimated that 25% of the bottom of the Baltic Sea is a marine desert (Chiras, 2001).

Through mismanagement practices and abuse, Lake Erie, one of the world's great freshwater lakes, has been converted from a clean blue lake into an aquatic desert listless of organisms but just full of murky green water (Chiras, 2001). He also stated that the water of Lake Erie is so badly contaminated with bloody bandages and syringes that neither boiling nor chlorination will purify it. The western end of Lake Erie is also muddy, due to runoff from agricultural lands and cities (Chiras, 2001).

Miller (2002) asserted that the rapid rate of urbanization throughout the world, has led to the creation of increasing amounts of waste, which in turn, pose greater difficulty of disposal. Many developed countries produce enormous amounts of solid waste each year (Wright & Nebel, 2002). Waste production is increasing in countries such as the United States (Chiras, 2001). According to

Awake (2002) people in developed countries throw away mountains of rubbish. It was estimated that the residents of New York City alone produced enough garbage each year to bury the City's huge central park under 13 feet refuse, and in Britain, it was once estimated that the average family of four discarded six trees worth of paper in a year (Awake, 2002). This source also claimed that canned, packaged foods and goods are widely available, so disposable packing is everywhere. The quantity of newspapers, magazines, advertising leaflets and other printed materials have soared as well. The highly industrialized and scientific world has also created new kinds of garbage. Hence people have always had things to throw away, thereby littering the environment.

An Italian environmental association has estimated that a glass bottle thrown into the sea takes about 1000 years to decompose (Awake, 2002). Tissue paper decomposes in about three months. Plastic bags take about 10 to 20 years to decompose. Articles made up of nylon take about 30 to 40 years; cans take 500 years and polystyrene take about 1000 years to decompose (Awake, 2002).

Pollution is also going on in developing countries. For example the Ganges River, which is very important to the people of India, is highly polluted with raw sewage (Chiras, 2001).

India's landscape is also littered with polyethene bags and this has contributed to a host of problems such as choked sewers, animal deaths and clogged soils in the country (Priya, 2001). Plastics have become a major threat in India due to their non- biodegradable nature and high visibility in the waste stream. Jacobi (1995) observed that in Sao Paulo, Brazil, a major environmental

concern is the throwing of garbage in the street and streamlets leading to the proliferation of insects and rodents. These examples are just a few of the many other global environmental problems.

In fact, the problem of littering is more acute in less developed countries (Cunningham & Saigo, 1997). These co-authors reported that most cities of many less developed countries are often littered with human waste, which has been left for rains to wash away or scavengers to consume. In Nairobi, the littering situation is made worse by the public, who litter and appear to have no regard for the beauty of the city. As a result, sanitation and environmental conditions are deplorable in Nairobi (Mwanthi & Nyabola, 1997). They stated that heaps of uncontrolled garbage, stench from those heaps, swarms of flies and the presence of rodents make the problem undesirable; and concluded that the problem of littering has been compounded by the increasing use of plastic and nylon wrapping and uncontrolled hawking activities.

In Ghana, the banks of River Densu, for instance are littered, with garbage and thereby polluting the Densu River (Green Dove, 2001). In 1976, Accra Brewery's waste load alone was 25 million litres per month and most of it ended up in the Korle Lagoon (GEAP, 1994).

Concern about the declining quality of the environment globally, has necessitated a series of conferences aimed at assessing and developing the quality of the environment. The first was the United Nations Conference on the Human Environment, also known as the "Earth Summit." This was held at Stockholm in 1972. At the Stockholm earth summit, which bore the theme, "Only one earth", it

was recommended that, the necessary steps should be taken to establish an international programme on environmental education, interdisciplinary in approach, in-school and out-of-school, encompassing all levels of education and directed towards the public: that is, the ordinary citizen living in rural and urban areas, youth and adults alike; with the view to educating them as to the simple steps, they might take within their means, to manage and control the environment (UNESCO-UNEP, 1993).

The second was the Belgrade Conference held in 1975, at which the foundation of environmental education was developed. The goal of environmental education was to raise environmental awareness among human populations and to provide opportunities to acquire the knowledge, values, attitudes and skills needed to protect the environment (UNESCO-UNEP, 1976); and objectives were thus set as follows:

1. Awareness: to help individuals and social groups acquire an awareness and sensitivity to the total environment and its allied problems.
2. Knowledge: to help individuals and social groups acquire basic understanding of the total environment, its associated problems and humanity's critically responsible presence and role in it.
3. Attitude: to help individuals and social groups acquire social values, strong feelings of concern for the environment and the motivation for actively participating in its protection and improvement.
4. Skills: to help individuals and social groups acquire the skills for solving environmental problems.

5. Participation: to help individuals and social groups develop a sense of responsibility of agency regarding environmental problems to ensure appropriate actions to solve those problems; and,
6. Evaluation ability; to enable individuals and social groups evaluate environmental measures and education programmes in terms of ecological, political, economic, social, aesthetical and educational factors.

The Belgrade conference was followed by the Tbilisi conference, held at Georgia in 1977. There, the sixth goal of environmental education; which was, evaluation ability; to enable individuals and social groups evaluate environmental measures and education programmes in terms of ecological, political, economic, social, aesthetical and educational factors was dropped. The remaining five goals have ever since been the pillars of modern environmental education. The five goals are,

1. Awareness: to help individuals and social groups acquire an awareness and sensitivity to the total environment and its allied problems.
2. Knowledge: to help individuals and social groups acquire basic understanding of the total environment, its associated problems and humanity's critically responsible presence and role in it.
3. Attitude: to help individuals and social groups acquire social values, strong feelings of concern for the environment and the motivation for actively participating in its protection and improvement.

4. Skills: to help individuals and social groups acquire the skills for solving environmental problems.
5. Participation: to help individuals and social groups develop a sense of responsibility of agency regarding environmental problems to ensure appropriate actions to solve those problems,

The Tbilisi conference emphasized awareness and sense of responsibility of citizens with regard to the environment, through education (UNESCO-UNEP, 1983). The holistic approach and innovative methodology and pedagogy put environmental education in the forefront of educational sciences.

Since the turn of the century, there have been other summits including the Moscow conference on environmental education and training held in 1987, the United Nations Conference on Environment and Development held in 1992 in Rio de Janeiro, and the World Summit on Sustainable Development, held in Johannesburg, South Africa (Annan, 2002). At these conferences, the vision of education and public awareness were further developed, enriched and reinforced.

The International Institute for Environment and Development (IIED, 1992) observed that there is a disturbing lack of public awareness of environmental problems and their consequences for human survival. Therefore, if a true concern for man and his environment is to develop to the point where crises situations are not as common as they are today, then a greater audience has to be reached, including secondary school students, primary school pupils, the youth and adults as well (UNESCO, 1975). Hence through the 1970's and 1980's environmental education grew strong and reached out to millions of educators,

curriculum developers, teachers and, ultimately, hundreds of millions of pupils and students at all levels of formal and informal education. The goal of awareness and knowledge about the environment was met and real awareness about, and concern for the environment spread throughout many societies. The alliance between United Nations Educational, Scientific and Cultural Organization (UNESCO) United Nations Environment Programme (UNEP) and the International Environmental Education Programme (IEEP) became one of the most active and effective networks promoting the use and incorporation of environmental education at all levels of the educational systems around the world. In the same period, many individuals, groups and organizations were also taking action on the environment (Carlson & Mkandla, 1998).

In responding to the concern regarding the quality of the environment in the world at large, the Ministry of Education, in conjunction with that of Environment, Science and Technology began to promote environmental education through the formal and non-formal educational system (IIED, 1992). In some countries for example, environmental education has been incorporated into school education and has been centred on nature conservation (Gonzalez-Gaudiano, 1998).

Before the introduction of environmental education in Ghana, the nations rich natural resources had formed the basis for the country's economic development. However, adequate care was not taken to guard against over exploitation of these resources, mainly because of ignorance and other factors such as poverty and overpopulation. The situation has given rise to serious

problems, including water and air pollution, deforestation, desertification, soil degradation and wanton destruction of wildlife (EPA, 2001).

Environmental cost arising from developmental efforts became high. This, coupled with the severe droughts in Ghana during the late 1970's and early 1980's and the ravaging bushfires of 1983/84 together with the public health problems, heightened public concern about the environment. Consequently, the Government put environmental concern on the national agenda, and in 1988 initiated the drawing-up of an Environmental Action Plan.

The result of a baseline study for the action plan indicated that the level of awareness of sound environmental management was low among Ghanaians. Environmental education therefore became one of the priorities of the Government of Ghana. A document on environmental education strategy for Ghana was produced. The objectives of this environmental education initiative were to:

- 1 ensure mass participation in environmental decision-making and management;
- 2 improve access to and provide information on environmental issues;
- 3 promote the development of training materials;
- 4 promote continuous education of the public;
- 5 develop schools and community participation in environmental education;
and
- 6 integrate environmental ethics into Ghanaian culture.

The environmental education strategy for Ghana identified specific target goals and activities. These activities covered both the formal and informal systems. In the formal system, the Environmental Protection Agency (EPA), an advisory, monitoring and coordinating body for environmental issues in the country, introduced environmental education themes and topics in the curricula of schools and colleges (EPA, 2001). For instance, environmental education, themes and topics on pollution were introduced in the Science Syllabus for Junior Secondary Schools (MOE, 2001). Environmental education in schools was seen as an important strategy in achieving environmental improvement (Loughland, Reid, Walker, & Petocz, 2003). Also assessing student's environmental knowledge and attitudes, their understanding of the relationship between environmental issues and environmental decisions, as well as their behaviour towards the environment are necessary first steps in realizing the goals of a viable environmental education (Dillon & Gayford, 1997).

The EPA in collaboration with government agencies and non-governmental organizations (NGOs) encouraged and supported the formation of environmental clubs in schools and colleges; and essay and quiz competitions were introduced to get all students interested and involved in environmental management (EPA, 2001). Pictures, slides and posters were developed and used in the schools by EPA staff when they honoured invitations to educate clubs and societies on environmental issues.

In collaboration with the Water Research Institute of the Council for Scientific and Industrial Research (CSIR), EPA undertook an environmental

education exercise, which brought together teachers, pupils, communities and the district assemblies to study causes of water pollution and related problems on practical bases.

In the informal sector, NGOs including women organizations have been trained and helped to draw action plans in environmental management. In the records of EPA, traditional rulers have been sensitized in environmental management awareness creation. Most of the traditional rulers are now concerned about environmental issues in their communities and are boldly addressing them. Religious organizations were assisted to integrate environmental issues in their activities (EPA, 2001). The district assemblies were assisted to involve the local communities in protecting the environment and not to allow them adopt environmentally unfriendly practices.

The strides made in environmental education have been so great that it can be said that awareness, knowledge of the environment and environmental issues have become common characteristics of people in most literate communities. Thus, although the EPA has succeeded in entrenching the word "environment" deeply into the national vocabulary, there is still a long way to go. For instance, the nation has not yet succeeded in devising systematic methods of dealing with all its environmental problems (EPA, 2003).

The International Institute for Environmental Development mentioned indiscriminate domestic waste disposal as one of the key environmental issues in Ghana (IIED, 1992), while the World Health Organization (WHO) has stressed that the unhygienic disposal of waste is one of the most serious environmental

problems in many regions of Africa, including Ghana (WHO cited in Ebong, 2002)

Armah (1992) observed that insanitary conditions were created by the indiscriminate disposal of waste, choked drains, stagnant pools and overgrown bushes. Asuo (1993) asserted that poor and inadequate latrine facilities, domestic drains connected to public open drains, indiscriminate dumping of refuse into drains, open spaces, at the beaches and in market places constitute a major environmental health problem in urban centers in Ghana. These result in foul odour in streets, from drains and beaches and in the breeding of mosquitoes. One of the environmental problems, which have assumed alarming proportions in Ghana, is littering. As a result, the National Association of Local Authorities of Ghana (NALAG) embarked on a national campaign against indiscriminate littering (Frimpong, 2003).

Cape Coast faces one of the most acute problems of sanitation and solid waste disposal. These include a high incidence of defaecation on the beach or disposal of refuse directly into the sea, and indiscriminate dumping of refuse directly on the landscape. Kendie (1999), has concluded that Cape Coast municipality had a serious waste disposal problem.

Though environmental education has been instrumental in bringing about the awareness and a rise in knowledge on environmental issues, it has not been able to change people's attitudes. There is therefore the need to intensify the education to change the general attitude of Ghanaians on sanitation issues. Gbadagba (2003) asserted that, the call for such a change should be directed at

families, especially children. This is because educating children at schools has enormous benefits since they take the messages and learnt behaviours to their homes and communities. Children can influence their parents to change their undesirable attitudes towards the environment. It is therefore important that information on the attitude of Junior Secondary School (JSS) students towards littering be investigated. This will be a giant step towards finding a lasting solution to the problem of littering, using children.

Statement of the Problem

The amount of rubbish often found in most human settlements in Ghana leaves much to be desired. In most cases, this is caused by carelessness with which litter, (including pieces of used paper, food wrappers and polyethylene bags) are dropped on the ground. Evidence can be obtained from a statement by Gbadagba (2003) that sanitation in Ghanaian cities, towns and villages, is deteriorating. Junior Secondary School students have been observed to litter, despite the education on the effects of littering at schools (MOE, 2001). It is in the light of this that attempts are made in this study to investigate the attitude of JSS 3 students towards littering in the Cape Coast municipality.

Purpose of the Study

The purpose of this study was to investigate the general attitude of JSS 3 students towards the problem of littering in the Cape Coast municipality. The study was also to determine whether there were any differences in the attitude of the different categories of JSS 3 students (that is male, female, rural and urban) towards littering.

Research Questions

The study attempted to answer the following questions:

1. How do JSS 3 male and female students vary in their attitude towards littering?
2. How do urban and rural JSS 3 students differ in their attitude towards littering?
3. How do JSS 3 male and female students perceive the effects of littering?
4. How do urban and rural JSS 3 students perceive the effects of littering?

Hypotheses

In the light of the problem and the research questions, the following null hypotheses were tested at the 0.05 level of significance:

1. There is no significant difference between male and female JSS 3 students' attitude towards littering.
2. There is no significant difference between JSS 3 students in rural and urban schools' attitude towards littering.
3. There is no significant difference between male and female JSS 3 students' perceptions about the effects of littering.
4. There is no significant difference between JSS 3 students in their urban and rural schools' perceptions about the effects of littering.

Significance of the Study

It is hoped that the outcome of the study will help curriculum developers plan environmental education programmes for schools on littering and its effects. Students, who will benefit from the environmental education programme on

littering and its effects, will become more enlightened as far as littering is concerned and will, hopefully, exhibit this in their behaviour during their time in school and when they join the wider society.

If JSS 3 students countrywide stop littering and practise proper disposal of litter, it will result in neater surroundings. Consequently, tourism will be promoted because visitors will be attracted to visit the country if the surroundings are clean. Money spent in keeping the environment clean by the government will be saved, because money would not be spent on litter removal and street cleaning. Furthermore, health hazards that result from indiscriminate disposal of solid and liquid waste will reduce.

Delimitations of the Study

The study was confined to some selected JSS 3 students in the Cape Coast municipality only. The scope of the problem was limited to the attitude of the students towards littering and its effects. Other aspects of the problem of littering such as the causes of littering types and the amount of litter usually found in the Cape Coast municipality were not investigated.

Limitations

For the constraint of time and finances, the study could not cover all JSS 3 students in the Cape Coast municipality. The sample used was made up of public JSS 3 students in some selected schools in the Cape Coast municipality. The items in the questionnaire were developed by the author and had not been previously validated. The conclusions therefore were limited by these factors, as generalizations could not cover all JSS 3 students in the country.

Definition of Terms

For the purpose of this study, the following operational definitions have been adopted.

Attitude: The way a person feels, thinks and reacts to a situation, an event, a person or any phenomenon.

Public JSS: Junior Secondary School established and funded by the central government.

Urban JSS: JSS located in an urban community.

Rural JSS: JSS located in a rural community.

Urban Community: Any settlement of 5,000 or more people (IIED, 1992).

Rural Community: Any settlement of less than 5,000 people (IIED, 1992).

Environment: Total surroundings of an organism, including plants and animals and those of its own kind (Smith & Smith, 1996).

Environmental awareness: Knowing the impact of human behaviour on the environment.

Green house gas: A gas which accumulates in the atmosphere, acts as a blanket and trap heat radiated from the earth into space, making the earth warm.

Pro-environmental behaviour: Behaviour that consciously seeks to minimize the negative impact of one's actions on the natural and built world. Examples include minimization of resource exploitation, energy consumption, the use of toxic substances and waste production (Kollmuss & Agyeman, 2002).

Pollution: The release of harmful substances into the environment by human. Pollution can affect all aspects of the environment -- human - made, natural, abiotic and biotic - and may be readily transferred between components of the life support system (Taylor, et al., 1997).

CHAPTER TWO

REVIEW OF RELATED LITERATURE

In recent times, there have been many articles on various aspects of the environment. Littering, which is one important aspect of the environmental degradation, is no exception. There is a large volume of literature on environmental pollution in general but only few researchers have concentrated on litter. A greater fraction of those on litter is more anecdotal than research based. For this reason, it has been difficult to find many studies directly relevant to the research questions and hypotheses of the present study. However, a few of the general studies on environment were found to be relevant and have been cited in the chapter. The literature has been reviewed under the following subheadings:

1. the problem of littering,
2. attitude towards littering,
3. environmental knowledge and attitude change
4. effects of littering,
5. perceptions on the effects of litter
6. methods of reducing waste and,
7. summary of the related literature.

The Problem of Littering

Litter has been a major problem in both developed and developing countries worldwide. Studies have shown that in Mexico City, a significant

portion of the air borne dust is pulverised human faeces (Cunningham & Saigo, 1997). In rural areas and small towns of China, there are no disposal facilities and there is therefore indiscriminate disposal of refuse. Plastic bags are blown away from uncovered waste disposal sites and eventually end up hanging on trees (Haihong, 2002). In a study conducted in Botswana, about 61.5% of the respondents indicated that can litter was a serious environmental problem, 56% cited bottle litter as a serious problem whilst 65.2% considered paper and plastic litter as a very serious environmental problem (Chanda, 1999). Plastic makes up 90% of all large debris stranded on South African beaches and is particularly troublesome because it disperses easily and degrades slowly (Balance, Fitz, Ryan & Turpie, 2000).

In Ghana, the Environmental Protection Agency (EPA) has stated that litter deserves special attention. The Agency points out that, litter is a major environmental problem today and unlike other global or international issues, the litter situation is entirely our own making (EPA, 1997). Refuse heaps are found around urban areas in Ghana. Gutters, drains, street pavement, lorry parks, beaches and other public places are literally buried under an avalanche of all kinds of waste materials. All sorts of refuse including human excreta parcelled in polyethene bags are either thrown out of windows or dropped into the street (Dadzie & Awuku, 2000). President Kufuor, the president of the republic of Ghana has observed that "We cannot litter, we cannot leave our surroundings dirty and call ourselves patriots" (Green Dove, 2001).

The environment and sanitation policy of the Ministry of Local Government and Rural Development of Ghana has defined the roles and responsibilities of individuals, communities, district assemblies and councils as a way of controlling filth and dirt (Dadzie & Awuku, 2000). In spite of this, some individuals do not seem to realize their responsibilities to keeping the environment tidy.

Attitude towards Littering

General Attitude towards Littering

The EPA (2000) commissioned a study of attitudes towards littering, and the results suggested five mindsets regarding attitudes and behaviour towards littering. There are people who are willfully arrogant and anti-establishment types of litterers. These litterers are aware that littering is anti-social, but they have no desire or capacity to change because of peer pressure and broader social problems (EPA, 2000). Some people do not litter but clean up other people's litter. Some people litter as a matter of convenience or through ignorance. A person may litter as a willful arrogant while with a peer group, but litter as an inconvenient in a different social setting. The same person can behave differently depending on the situation (EPA, 2000). Review of related literature identifies the following reasons for littering; laziness, a feeling that someone else is paid to clean up the litter and a perception that litter is not an important environmental concern (Bonnett & Williams, 1998). However, EPA (2000) has indicated that littering is a very important environmental issue and it is never acceptable to litter. Van and Verdon (1994) point out that apathy is one of the causes of littering.

Gbadagba (2003) stated that people who sell at market places litter the markets. Passengers on moving vehicles litter the roads with all kinds of things especially iced water sachets. People throw used fan milk containers, pieces of paper and polyethene bags about indiscriminately. People may litter when unobserved, but not when in public. People of all social backgrounds litter. Students and the unemployed had a higher than average rates of littering (EPA 2000). In a study by Rockland (1995), students agreed that human health is the top reason to protect the environment. Bonnet and Williams (1998) observed that scarcity of litter bins lead to littering in primary school children. However, Colman (2000) and EPA (2000) had indicated that, lack of bins is not a major factor in littering, because most littering occurs within a 5 meter radius of a bin. Lucas (1981) in a research found out that the attitudes of secondary school students to the environment tended to be positive. Thrall (1996) in a study of high school students showed that gender of students have effect upon the formation of positive attitudes about the environment.

Gender and Attitude towards Littering

According to EPA (2000) males and females are equally likely to litter and that people under age 15 are least likely to litter. Research has found that females are more environmentally conscious than males (Roper, 1994; Connell, Fien, Lee, Sykes & Yencken, 1998.). According to Chawla (1988) females have stronger feelings and verbal commitment to the environment, while males have greater knowledge about the environment. However, Ainley (1999) thinks that concern

for the environment seems to decrease with age in both sexes but more markedly in males.

Gender effects on environmental attitudes are explained by both socialization-based theories and structural theories (Blocker & Eckberg, 1997). According to the socialization theory, females are more likely than males to associate "caregiver" roles. In other words, females are socialized to be more caring than males and consequently display more care about the environment than males (Myers, Boyes, & Stanisstreet, 1999). It is argued that this makes females to be more in-tune with their locality and the world at large, and consequently turn their compassion toward the environment by keeping it clean.

Lehman (cited in Kollmus & Agyeman, 2002) holds the view that even though females usually have a less extensive environmental knowledge than males, females are more emotionally engaged, show more concern about environmental destruction, and are more willing to change. Borden and Schettino (1979) who declared that females have higher commitment to the environment than males had held a similar view. Jing – Shin (1993) showed that females' attitude towards the environment was more positive than males'. Glifford, Hay and Boros (1983) pointed out that females expressed greater concern about the environment than males. These authors wrote further that though females appeared to know less about the environment, they seemed to be more verbally committed to issues of environmental degradation than males. Rockland (1995) observed that females are more likely to worry about the environment than males are. However, the results of a study by Chanda (1999) indicated that females were

less concerned about environmental issues. According to Ebong (2002) attitude does not differ between male and female on sustainability of a healthful environment.

Location of School (Rural/Urban) and Attitude towards Littering

Environmental quality issues enjoyed greater recognition among residents of medium-high cost areas as compared to residents of low-cost areas of Gaborone (Chanda, 1999). According to Uwe and Manuela (1998), those who grew up in urban areas or are now living there, worry more about the environment than those who grew up in rural areas or are now living in the rural areas. Rockland (1995) stated that youth from disadvantaged areas were more concerned about present and immediate environmental problems. Consequently, they were less likely to engage in environment-friendly activities such as recycling and picking litter (Roper, 1994). Similarly, McCorrie and Williams (1990) suggested that rural children have a higher degree of environmental consciousness. However, Bonnett and Williams (1998) found out that expressing strong positive concern about the environment carried a high degree of consensus and detected no significant difference in general attitude on this between urban and rural schools. In a study of students from Australia, Loughland, Reid, Walker and Petocz, (2003) concluded that location of school does not seem to have a significant effect on conception of environment.

Environmental Knowledge and Attitude Change

School is a major influence and shapes the opinions and attitudes of young people. There is often a desire on the part of education to provide information

with the hope that this will result in a change in attitude. Over the last 30 years, many psychologists have explored the roots of direct and indirect environmental action. Numerous theoretical frameworks have been developed to explain the gap between the possession of environmental knowledge and environmental awareness, and the display of pro-environmental behaviour (Kollmuss & Agyeman, 2002). The oldest and simplest models of pro-environmental behaviour were based on a progression of environmental knowledge. This led to environmental awareness and concern (environmental attitudes). This combined effect of awareness and concern, in turn was thought to lead to pro-environmental behaviour. These models assumed that educating people about environmental issues would automatically result in more pro-environmental behaviour (Burgess, Harrison, & Filius, 1998).

Bryant and Hungerford (1977) conducted a study in which they presented an instructional unit on environmental problems to kindergarten pupils. The pupils were asked to describe their own and responsibilities of others as a way of measuring the pupils' verbal commitment to action. It was found that pupils appeared more environmentally conscientious at the conclusion of the environmental education unit. The conclusion was that the pupils could understand environmental issues and citizenship responsibilities. This indicates that the knowledge the pupils had during the course, resulted in their understanding of environmental issues and citizenship responsibilities.

In another study, Jaus (1984) assessed the short-and long-term impacts of environmental instruction on the attitude of third graders. Instruction for the unit

involved group discussions about environmental problems. When post-tested, the experimental group scored 30% higher than on their pre-test of positive environmental attitudes. The control group had only a 2 % increase.

Additionally, Driver and Johnson (1984) studied the long- term benefits of the Youth Conservation Corps programme, which combined outdoor work opportunities and environmental education for youth aged 15 to 18. The youths indicated that they had become more environmentally aware because of the programme.

Furthermore, Shepard and Speelman (1986) measured the impact of participating in an outdoor education programme at resident 4-H camps in Ohio (USA) on children aged 9 to 14. The experimental group participated in outdoor education programmes emphasizing sensory awareness and basic ecological concepts, while the children in the control group did not. Although the experimental treatment did not develop significantly more positive environmental attitudes, researchers found that programme length had an effect on positive environmental attitude development. It has been reported that people who possess environmental awareness are in a better position to maintain a quality environment (Stronkhorst, as cited in Mosothwane, 1999). People tend to have a positive attitude towards the environment when their knowledge level increases; thus, lack of knowledge negatively affects attitude (Ebong, 2002).

According to Jensen (2002), knowledge should be acknowledged as one among many important preconditions for the development of competence, leading to action and behavioural adjustments in relation to the environment. Knowledge

about the environment correlates with action. Students who know a lot about the environment seem to buy more recycled or reusable products than those who know only a little or practically nothing about it (Roper, 1994). These studies seem to indicate that when more knowledge about a subject is acquired there is a tendency for the modification of attitude towards that subject, for the better.

Some studies have indicated that acquisition of knowledge does not always guarantee a change in attitude. Most researchers agree that a small fraction of pro-environmental behaviour can be directly linked to environmental knowledge and environmental awareness (Kollmus & Agyeman, 2002). At least 80% of the motives for pro-environmental or non-environmental behaviour seem to be situational factors. This argument is further strengthened by the study of Kempton, Boster and Hartley (1995). Who surveyed different groups in the US, ranging from environmentalist to those they thought were strong anti-environmentalists. Kempton *et al* (1995) found the average knowledge about environmental issues to be low. Surprisingly, the lack of knowledge was equally strong among environmentalists and non-environmentalists. The results of the study therefore implied that environmental knowledge *per se* was not a prerequisite for pro-environmental behaviour. In other words most people do not know enough about environmental issues to act in an environmentally responsible way. Other studies have shown that very detailed technical knowledge does not seem to foster or increase pro-environmental behaviour (Dickmann & Preisendoerfer; Fliegenschnee & Schelakovsky, as cited in Kollmuss & Agyeman, 2002).

In keeping with the notion of education for the environment, Hungerford and Volk (1990) stated that the ultimate goal of environmental education is to change human behaviour, in order to develop citizens who will behave in environmentally desirable ways. The traditional approach to education has been based on the belief that behaviour can be modified by simply teaching learners about something. These co-authors argue that in order to change behaviour, instructions must go beyond awareness or knowledge of issues alone to provide students with the opportunity to develop a sense of ownership and empowerment necessary to promote responsible action. According to Iozzi (1989), appropriate educational techniques to achieve this in learners include affective domain learning and value education. Learners should address environmental issues on an emotional as well as a cognitive level. By developing strong personal values towards the environment, behavioural change is more likely to follow (Iozzi, 1989).

According to Jensen (2002), the fact that knowledge *per se* does not lead to action and attitudinal change, is due to the following factors:

- a. Traditional knowledge about the environment as it is taught in school is not in essence action oriented.
- b. Environmental education at school has traditionally focused on passing on knowledge to pupils, who have thus not been afforded the opportunity of actively appropriating and internalizing that knowledge.

Although there seem to be some relationship between attitude and knowledge, this relationship is not a simple one. It is one that is influenced by

many factors. In spite of the evidence that knowledge does not always have an effect on attitude, acquisition of knowledge is the first step towards bringing about a change in attitude. Thus, people have to have a basic knowledge about environmental issues and the behaviours that cause them in order to act pro-environmentally in a conscious way.

Effects of Littering

Litter is widespread in both urban and rural areas; black plastic wrappers and discarded items have become common sights. Environmentalists believe plastic waste causes infertility of land, contaminates ground water and clogs drains (Menon & Shankar, 1997). Dumping of refuse in drains prevents water from flowing freely after rainstorm. As a consequent, gutters are choked leading to flooding in the rainy season (Green Dove, 2001). Poor sanitation is partly responsible for the destructive floods (Gbadagba, 2003).

Improper solid waste disposal can result in serious rat infestation. When the organic waste decays it attracts flies and mosquitoes, threatening the health of people. Problems associated with insanitary conditions have provoked and aggravated the spread of a number of water and air-borne diseases (Songsore & McGranaham, 1993). Among these diseases are malaria, diarrhoea, cholera, typhoid fever, intestinal worms' infestation and respiratory diseases. The low standard of public hygiene has led to the spread of these diseases.

According to EPA (1997), litter is a health hazard, which can create a breeding ground for organisms, which can cause outbreaks of diseases. Results of studies have shown that plasticisers from polyethene bags enter foods with a high

fat content and contaminate water (Menon & Shankar, 1997). Cadmium-based pigments used to colour plastics could enter the food chain and accumulate in the kidneys and arteries of humans (Menon & Shankar, 1997). Some animals die as a result of choking due to swallowed plastic waste (Keelson, 2003). Some litter is a threat to human safety; for instance, broken glass and tins can cause injuries in recreational areas such as beaches and parks (EPA, 1997).

Human and animal wastes usually create the most serious health related pollution problems. As stated by Degraft (2000), a healthy environment is very important because the health status of a society affects its total productivity and contribution to national development. According to Gyasi (2003), litter negatively affects some industrial development programmes and tourism. Balance, Fitz, Ryan and Turpie (2000) reported that, litter densities of more than 10 large items per meter of beach deter 40% of foreign tourists and 60% of domestic tourists from returning to Cape Town beach in South Africa. This has a great impact on the regional economy, leading to loss of billions of rands each year.

Litter costs money - billions of cedis are spent annually by towns and metropolitan authorities on litter removal and street cleaning. It costs nine times more to sweep litter from streets than to collect it at the doorstep (EPA, 1997). Domestic and industrial effluents pollute water bodies. Ellis (2000) declared that improper disposal of industrial and domestic waste increases the possibility of pollution of surface and ground water. Pollution of surface waters has a direct negative effect on aquatic biota, reduces biodiversity and increases treatment cost of water supply for industrial and domestic use (Boon & Hens, 1997). Polluted

surface waters limit the use of such waters for purposes of recreation. Poor garbage disposal causes environmental degradation and create health risks. Gbadagba (2003) commented that sanitation has become a major problem for villages, towns and cities in Ghana. Despite the Ghana government's efforts to address the problem of sanitation, littering is still widespread and requires innovative ways to tackle it.

Perceptions on the Effects of Litter

General Perceptions on the Effects of Litter

In a research conducted by Roper (1994), it was concluded that young people have definite opinions about the seriousness of environmental problems. Students place differing priorities on the environmental issue that they and their nation face. According to Roper (1994), not all young people consider litter as one of the most serious environmental issues. Litter is an environmental problem that few students from either disadvantaged or non-disadvantaged areas consider as important. Roper (1994) reported that, students who reported knowing about the environment seemed to buy more recycled or reusable products than students who reported knowing only a little or practically nothing at all. Few students feel that a reason for reducing litter is to save and re-cycle resources like glass and plastic materials.

Gender Perceptions on Effects of Litter

In a study by Ebong (2002) it was revealed that male and female residents are not significantly knowledgeable about activities for maintaining a sustainable healthy environment. Roper (1994) found out that more females than males said

they and their family cut down on littering, pick up litter and buy recycled products. Females are more willing to protect the environment with a view to protecting human health now than males.

Location of School and Perceptions on the Effects of Litter

According to Roper (1994), concern about harm to the environment is similar among urban and rural students. Students from disadvantaged areas place greater stress on protecting human health as the first reason for protecting the environment. That is, they show more concern about protecting water bodies from pollution and reducing litter than students from advantaged areas. Students in the rural areas ensured that natural places always existed, preserved recreational areas and are more focused on keeping areas clean than students in urban areas. Students in the rural areas further said that cleaning up the neighbourhood today is a better use of one million dollars than research to protect the environment for use in the future (Roper, 1994). The result of a research by this author also indicated that young people from disadvantaged areas are often exposed to higher levels of environmental hazards than children from urban areas. Students from disadvantaged areas appear to have significantly less environmental knowledge than students from non-disadvantaged areas. Sunal (1991) reported that, rural schools were characterized by inadequate laboratory facilities, less component science teachers, lack of student awareness of outside world, and curriculum unrelated to student's needs. To solve this problem, it was suggested that the effect of region probably can be minimized by identifying each region with its special needs in environmental education. This could be done by enriching

environmental education resources (including teachers in rural areas and empowering rural teachers to bring about the improvement of environmental education in rural schools). In addition, all teachers need to be updated on environmental knowledge and issues.

Methods of Reducing Waste

Recycling

Recycling is the re-processing of discarded materials into new, useful products (Cunningham & Saigo, 1997). Waste becomes a resource when it is recycled, but becomes a problem if it is not recycled (Johnson, 1990). In many developed countries, some effort has been made at recycling. For example, recycling of plastics, metals and paper has been reported by Crump (1991); and Japan currently recycles about half of its garbage. One suburb of Tokyo recycles and composts 90% of its garbage (Chiras, 2001). According to Miller (2000) sorting refuse for recycling, and producing energy from waste have increased in wealthy countries. The goal of every recycling process is to use or reuse materials from garbage in order to minimize the amount of solid waste produced (Bilitewsk, Hardte &, Marek, 1997). These authors asserted that the most significant part of the recycling process is that, the procedure begins with separation of waste; and the separation should always be done at source, to facilitate the processing of waste and increase the overall efficiency of the material recovery facility.

Recycling is a better alternative to dumping. Landfill sites are expensive, a wasteful use of land and often release methane, which is a green house gas.

Recycling lowers the demand for raw resources. In the United States of America, about 2 million trees are cut down every year to produce newspaper and other paper products. This is a heavy drain on the forest. According to Cunningham and Saigo (1997), recycling the print run of a single Sunday issue of the New York Times would spare 75,000 trees. Raw materials are processed using energy. Recycling therefore, reduces energy consumption, saves energy, money, raw materials, landscape and reduces pollution. Recycling encourages individuals to become aware and responsible for the refuse produced. Recycling reduces the volume of waste and pressure on disposal systems (Cunningham & Saigo, 1997).

Studies have identified some specific 'inconvenience factors' as important reasons for people not recycling. These factors include: the effort involved, lack of storage space and the time required. As a result, those who perceive more inconvenience tend to recycle less (Boldero, 1995). In the view of Werner and Makela (1998), provision of free containers can increase convenience, and so affect recycling behaviours.

Composting is a form of recycling which involves the breakdown of organic matter in the presence of oxygen into humus (Cunningham & Saigo, 1997; Miller, 1999). Composting is a good way to convert vegetable scraps and other organic materials into useful garden mulch. Compost, which is the product obtained after composting can be used as an organic soil fertilizer. This compost aids water retention, slows down the rate of soil erosion and improves crop yield. The high organic matter content of the waste, coupled with the fact that Ghana's economy is based largely on agriculture, makes composting a good option for

Ghana. However, the cost of the composting plant and the fact that the public does not readily buy the compost makes the method economically non-viable (Armah, 1992). Composting reduces the amount of litter in the environment.

Reuse

Reuse involves cleaning and reusing of materials in their present form (Cunningham & Saigo, 1997). Reuse removes useful materials from the waste stream and channels them back to the end users (Chiras, 2001). For instance, autoparts are sold from junkyards, especially for older car models. Tained glass windows, brass fitting, fine woodwork and bricks salvaged from old houses are reused. Other items that are reused are clothes, shoes, silverware, plates, pans, books, tools, bicycles, furniture and appliances. Packaging materials such as cardboard boxes and grocery bags can also be reused by individuals.

Glass and plastic bottles are routinely returned to beverage producers for washing and refilling. Presently the reusable, refillable bottle is the most efficient beverage container. Though recyclable and disposable bottles and cans have nearly eliminated the reusable containers from the market, reuse of materials is better than recycling them. Reuse saves materials, reduces the land needed for solid waste disposal, decreases the amount of materials consumed by society, reduces litter, pollution and the rate of environmental degradation. Reuse if practised in Ghana, will help to reduce the amount of litter in the environment.

Waste Reduction

Having less waste to discard, that is generating less waste is better than struggling with disposal methods (Cunningham & Saigo, 1997). One of the

greatest sources of unnecessary waste is excess packaging of food and consumer products. Paper, plastic, glass and metal packaging material make up 50% of the domestic trash by volume in the United States of America (Miller, 1999). Manufacturers and retailers must reduce these wasteful practices. If consumers ask for products without excess packaging, then the amount of litter will reduce drastically. It is better to use products with no packaging primarily, followed by minimal packaging, reusable packaging and recyclable packaging (Cunningham & Saigo, 1997). Making products smaller and more compact can significantly reduce waste. One of the most effective means of reducing solid waste is to reduce consumption by buying just what one needs; to reduce litter and to protect the environment, fast food restaurants should package food in paper or biodegradable wrapping, where disposable packaging is necessary.

Summary of the Related Literature

Litter is a major problem worldwide. Therefore littering deserves special attention. Unlike some other global problems, littering is made by humans. Litter is a health hazard. It costs money, because billions of cedis are spent on street cleaning and litter removal. Litter also affects industrial development programmes and tourism. It is evident from the literature that recycling, re-use and waste reduction should be practised in order to reduce the amount of litter. Recycling, re-use and waste reduction would also help reduce pollution and environmental degradation. The attitudes of people are important because these determine their actions. It is evident from the literature that knowledge is very important in the solution to the environmental problem of littering. However, it is revealed that

increase in knowledge and awareness does not lead to pro-environmental behaviour. Literature has shown that there is a gap between attitude and pro-environmental behaviour and that many barriers are responsible for the gap between environmental attitudes and pro-environmental behaviour. Nonetheless, attitudes play an important role in determining pro-environmental behaviour.

Review of literature has identified various attitudes such as apathy, laziness, a feeling that someone else is paid to clean up the litter and a perception that litter is not an important environmental concern as the main reasons for littering. In terms of gender and environmentalism, it is evident that there is no clear decision. However, some researchers have found that women are more concerned about environmental issues than men. Concern about harm to the environment is similar among urban and rural students. Students from rural areas have significantly less environmental knowledge than students from urban areas. Students' awareness of the consequences of litter is minimal.

CHAPTER THREE

METHODOLOGY

This chapter describes the research design, the population, the sample and the sampling procedure used in the study. The research instrument used in the data collection, the validity and reliability of the instrument are discussed. The procedures for the collection of data, methods of scoring and data analyses are also discussed.

Research Design

The research design used for the study was the descriptive survey. This was in line with the objective of the study, which was to investigate the attitude of JSS 3 students towards littering. A survey attempts to collect data from members of a population in order to determine the current status of the population with respect to one or more variables (Gay, 1987). Data were collected from a sample and generalization made from the sample about the population so that inferences could be made about the attitude of the population.

Survey designs have rapid turnaround in data collection and the ability to identify attributes of a population from a small group of individuals (Fowler, as cited in Creswell, 1994). The survey was cross-sectional because information was collected at a point in time from a sample to represent all the relevant sub-groups in the population (Creswell, 1994).

Population

The population for the study was all JSS 3 students in public schools in the Cape Coast municipality in the Central Region of Ghana. The JSS 3 students had completed the part of the syllabus on littering and its effects (MOE, 2001). They had acquired the knowledge on littering and its problems. Assessing their attitude towards littering and its effects was therefore appropriate. There were 2,398 JSS3 students comprising 1,183 boys and 1,215 girls in the public schools in the Cape Coast municipality. The study focused on students in rural and urban schools. Out of the 2,398 JSS 3 students, 521 were rural and 1,877 were urban. All the JSS schools differed in terms of gender composition.

Of the 42 schools with a population of 2,398 students, 3 were boys - only, 6 were girls - only schools and 33 were co-educational. Out of the 42 schools, 12 were rural and 30 were urban. All the 12 rural schools were co-educational. Of the 521 students in the rural schools, 270 were boys and 251 were girls. The urban schools were made up of 3 boys - only schools, 6 girls - only schools and 21 co-educational. Students in the urban schools were 1,877, made up of 978 boys and 899 girls. One of the girls' schools had boarding facilities. The ages of the students were between 14 and 16 years.

Sample

The sample for the study was 240 JSS 3 students drawn from rural and urban schools in the Cape Coast municipality. That number of students was used as the sample because according to Nwana (1994) if the population is a few thousand, then a 10% sample suggestion should be used. One hundred and twenty

students were girls and 120 students were boys. The usage of equal numbers of boys and girls for the study was necessary, because according to Walpole and Myers (1985) the consequences of unequal variances are not serious if the sample sizes are equal. The distribution of the sample in terms of gender and location of school is shown in Table 1.

Table 1: Distribution of Sample used in the Study

Name of School	Location	Gender		
		Male	Female	Total
Ayifua Saint Mary's Anglican	Urban	10	10	20
Catholic Jubilee Boys	Urban	20	0	20
Saint Augustine's	Urban	10	10	20
Saint Lawrence	Urban	10	10	20
Saint Monica's Girls	Urban	0	20	20
Pedu M/A 'B'	Urban	10	10	20
Abakam Cran Presby	Rural	10	10	20
Efutu M/A	Rural	10	10	20
Ekon M/A	Rural	10	10	20
Nkanfoa Catholic	Rural	10	10	20
Nyinasin M/A	Rural	10	10	20
Saint Peter's Anglican	Rural	10	10	20
Total		120	120	240

Sampling Procedure

Sampling is the process of choosing a number of individuals from a target population which is to be included in a study (Sarantakos, 1994). A stratified random sampling procedure was used. This method was deemed appropriate because it enabled the different categories of JSS 3 students of interest (that is gender and location of school), in the study to be fairly represented (Gay, 1987). The random sampling enabled every member of the population to have an equal chance of being selected (Sarantakos, 1994). The 42 public JSS in the Cape Coast municipality was first stratified into rural and urban categories. The names of the 12 rural schools were written on pieces of paper and folded. The folded papers were placed in a container and 6 schools sampled out by the simple random (lottery) method. Twenty students, comprising 10 girls and 10 boys were chosen from each of the selected co-educational schools; and 20 boys or girls from the boys - only or girls – only schools.

The simple random (lottery) method described above was used for the selection from the 30 urban schools as well. The selection was done separately for each of the 3 categories of urban schools as follows: a school from each of the 3 boys only or 6 girls' only schools and four out of the 21 co-educational schools.

Research Instrument

The questionnaire, shown in APPENDIX A, was the main instrument used in this study. The questionnaire is widely used for collecting data in educational research. The use of questionnaire enabled each respondent receive the same set of questions. Secondly, the questionnaire was much more efficient, since it

required less time and permitted collection of data from a much larger sample (Gay, 1987). Lastly, the questionnaire simplified the state of the data analysis. This was because the information obtained was already well organized (Kerlinger, 1993). The questionnaire however had some disadvantages. Some of these were the possibility of misinterpreting the questions by the respondents. In addition, it was not easy getting the respondents to answer the questions thoughtfully and honestly (Fraenkel & Wallen, 2000). Moreover, the questionnaire did not allow probing and clarification of the items, since the method normally involves the use of structured questions.

The questionnaire was a self-designed, fifty - two item divided in 2 parts (APPENDIX A). In part 1, respondents were to give information about themselves, by responding to items 1 - 2. The main factors emphasized in this section were gender and location of school. Part II consisted of 50 items meant to elicit information about the respondent's attitude towards littering. The items in part II of the questionnaire were in two sections as follows: Section A, (items 3 - 34) was on attitude towards littering; Section B, (item 35 - 52) was on the effects of littering. A Likert type of rating scale with five options, namely strongly disagree (SD), disagree (D), undecided (U), agree (A) and strongly agree (SA), accompanied each item in part II. Respondents were to indicate their agreement or disagreement to each item by choosing the appropriate option.

Scoring the Items of the Instrument

Part II of the questionnaire yielded a total score for each respondent. The responses to the items in part II of the questionnaire were scored using a five

point Likert scale and weighted depending on whether the item was positively or negatively stated. For example, the weights assigned to a positive statement like "all litter should be put into dustbins" is

	Scale value
Strongly agree	5
Agree	4
Undecided	3
Disagree	2
Strongly disagree	1

The weights assigned to a negative statement such as "one can put refuse into nearby gutters" was reversed to the negative as illustrated below:

	Scale value
Strongly disagree	5
Disagree	4
Undecided	3
Agree	2
Strongly agree	1

Each respondent's score for each item was the value assigned to the choice selected. The sum of the weights for the opinion selected gave the total raw score of the individual. The raw scores for any individual subject with regard to attitude towards littering fell between the minimum of 32 and a maximum of 160. The cut-off point (neutral attitude) was computed to be 96. Hence, those who scored above 96 were considered as having favourable or positive attitude towards

littering, and those who scored below 96 were considered as having unfavourable or negative attitude towards littering. If an opinionnaire consisted of 32 items, the following score values would be revealing:

$$32 \times 5 = 160 \text{ (most favourable / positive attitude)}$$

$$32 \times 3 = 96 \text{ (a neutral attitude)}$$

$$32 \times 1 = 32 \text{ (most unfavourable / negative attitude).}$$

With regard to the effects of littering, the raw scores for any individual fell between a minimum of 18 and a maximum of 90. The cut-off point being 54.

The mean attitude score was also computed by summing the opinions selected by each individual. The raw scores obtained were divided by the total number of items. The mean attitude was used to conclude whether the individual's responses reflected a positive or a negative attitude. The mean attitude score values are as follows:

Scale value

5 positive attitude

3 neutral attitude

1 negative attitude

Validity of the Instrument

To ensure the validity of the instrument the questionnaire was first given to two fellow graduate students to review for its face validity. After that some experts in the field of science education examined the questionnaire to find out whether the items measured the intended content area (face validity) and whether they covered the whole content area (content validity). Since content validity is

determined by expert judgment (Gay, 1987; Best & Kahn, 1995). The suggestions received from the experts helped to modify the items in the questionnaire.

Reliability of the Instrument

The Cronbach coefficient alpha was calculated to assess the internal consistency of the items. Cronbach coefficient alpha was used because the questionnaire consisted of items with various alternative response options. (Ary *et al.*, 1990). Coefficient alpha was also used, because the items were not scored dichotomously (Sproull, 1988). A reliability coefficient of 0.70 or higher showed that the instrument was reliable (Sproull, 1988).

A first reliability coefficient of 0.67 was calculated. This value was an indication of a low reliability. A second reliability coefficient derived from another pilot test was calculated to be 0.83. This value was an indication of a higher reliability of the instrument.

Pilot Test

Two pilot tests were conducted to try out the instrument; one was conducted at Apewosika JSS using a sample size of 42 JSS 3 students. At Bakatsir JSS where the second pilot test was conducted, a sample size of 42 students was used. The main aim of the pilot test was to establish the reliability of the instrument. It was also to modify, restructure or refine the items in the instrument. Finally, it was to determine the appropriate time needed by the students to complete the items. It was found out that 40 minutes was adequate for the students to complete the questionnaire in both urban and rural schools.

Data Collection Procedure

The questionnaires were used in collecting the data. Permission to administer the questionnaires was obtained from the Municipal Director of Education and heads of the JSS through a letter of introduction from the Head, Department of Science Education [APPENDIX B]. The questionnaires were hand-delivered on the agreed dates. The questionnaires were accompanied by a letter explaining the purpose of the study and also assuring participants of anonymity.

In each of the chosen JSS, the selected students were put in one classroom. With the help of the assistant Headteacher, the questionnaire was administered to the students during school hours. This was to ensure more cooperation from respondents. The administration and completion of the questionnaires were supervised by the author. The completed questionnaires were collected for analysis. All the questionnaires were retrieved from the respondents after the questionnaires had been answered by the respondents.

Data Analysis

The data collected were analyzed statistically using the Statistical Package for Social Sciences (SPSS version 10.0) computer programme. Percentages were the main descriptive statistics used for testing research questions 1 - 4. The independent sample t-test was used to test the difference between the variables (male / female; urban / rural) at 0.05 level of significance. The independent sample t-test was conducted on each item. According to Sproull (1988), the independent sample t-test can be used to compare gender (that is, male / female) and location of school (that is, urban / rural), measured by scores on the attitude

survey. That is, for a nominal dichotomous group on a numerical attitude score. The independent sample t-test was used because the members of one group were not related to the members in the other group in any systematic way. The categories were different.

The independent sample t-test was also used to test hypotheses 1 - 4 at 0.05 level of significance. This was applied to the group responses of the various categories of responses (that is, male / female; rural / urban). The t-test is essentially a parametric test of significance used to determine whether two means are significantly different at a selected probability level. The t-test is also used on data that are measured rather than counted. Thus, since hypotheses 1 - 4 tested the significance of difference between the measured attitude and perception of the different categories of JSS 3 students, the t-test was considered the most appropriate statistical instrument.

CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter presents the results of the data collected for the study. The main analyses of the data collected have been presented by the four research questions and their corresponding hypotheses set for this study. In order to answer the four research questions, percentages, mean and the independent t-test were used to interpret the data. The attitude or opinion scale may be analyzed in several ways, but the simplest way to describe opinion is to indicate percentage responses for each individual item (Best & Kahn, 1995).

The percentages reported for answering the research questions are as a result of combining multiple categories of the five point Likert scale to results in three categories for analysis. That is, Agree (strongly agree and agree), Undecided and Disagree (strongly disagree and disagree). For this type of analysis by item, three responses, agree, undecided and disagree are preferable to the usual five (Best & Kahn, 1995). The independent t-test was used to test the four hypotheses set for the study. The test statistics were clearly stated. Tables have also been drawn to depict the responses more clearly and to enhance understanding of the results. Other findings obtained from the study have also been spelt out.

Discussion on Background Data

Twelve Junior Secondary Schools (JSS) were selected from the schools in the Cape Coast Municipality. Six JSS were selected from the urban area and six from the rural area. Table 2 shows the selected schools and their location.

Table 2: Selected JSS and their Location

Name of School	Location
Ayifua Saint Mary's Anglican	Urban
Catholic Jubilee Boy's	Urban
Saint Augustine's	Urban
Saint Lawrence	Urban
Saint Monica's Girls	Urban
Pedu M/A 'B'	Urban
Abakam Cran Presby	Rural
Efutu M/A	Rural
Ekon M/A	Rural
Nkanfoa Catholic	Rural
Nyinasin M/A	Rural
Saint Peter's Anglican	Rural

Two hundred and forty (240) respondents comprising 120 each of male and female answered the questionnaire. One hundred and twenty were from the urban schools and 120 from the rural schools.

Research Question 1

How do JSS 3 male and female students vary in their attitude towards littering? Analysis of the results was based on items 3 - 34 of the questionnaire in APPENDIX A. The results are presented in Table 3.

Table 3: Percentage Distribution of the Responses on Gender and Attitude Towards Littering

Item	Gender	Percentage Responses		
		D %	U %	A %
When I see people throwing rubbish like, pieces of paper, orange peels, iced water sachets about I feel bad.	Male	33.3	0.0	66.7
	Female	25.8	0.8	73.3
I can throw pieces of paper anywhere because someone else is paid to clean up the surroundings	Male	89.2	4.2	6.7
	Female	87.5	4.2	8.3
As an individual, I cannot do much in keeping my surroundings clean.	Male	70.8	5.8	23.3
	Female	75.0	9.2	15.8
Any student seen dropping pieces of paper anywhere should be punished.	Male	15.8	1.7	82.5
	Female	12.5	0.8	86.7
People should have the freedom to throw off their household waste in a nearby bush close to their house.	Male	73.3	5.0	21.7
	Female	78.3	2.5	19.2

Table 3 Continued

Item	Gender	Percentage Responses		
		D %	U %	A %
Students should not throw away	Male	11.7	4.2	84.2
pieces of paper anyhow.	Female	9.2	3.3	87.5
I do not feel bad throwing litter at	Male	69.2	13.3	17.5
any place where some refuse or	Female	63.3	13.3	23.3
litter exists already.				
Filtered water sachets and carrier	Male	82.5	6.7	10.8
bags can be dumped anyhow.	Female	86.7	4.2	9.2
One can put refuse into nearby	Male	85.0	3.3	11.7
gutters.	Female	82.5	5.0	12.5
Littering is NOT an important	Male	55.0	9.2	35.8
environmental concern.	Female	65.8	6.7	27.5
Keeping my surroundings clean is	Male	10.8	3.3	85.8
very dear to my heart.	Female	7.5	1.7	90.8
I litter because I feel lazy to put the	Male	72.5	12.5	15.0
rubbish in the dustbin.	Female	73.3	11.7	15.0
I drop pieces of paper	Male	55.0	21.7	23.3
unconsciously.	Female	57.5	20.8	21.7
I drop litter so that other people will	Male	84.2	5.8	10.0
think I am a 'guy'.	Female	87.5	4.2	8.3

Table 3 Continued

Item	Gender	Percentage Responses		
		D %	U %	A %
Orange and banana peels are dirty, and so I drop them so that I do not have to hold them.	Male	70.8	11.7	17.5
	Female	72.5	9.2	18.3
Defaecating on the landscape is NOT a problem since the faeces is washed away by rain.	Male	83.3	9.2	7.5
	Female	86.7	6.7	6.7
I drop litter because I do not care.	Male	85.8	5.0	9.2
	Female	92.5	2.5	5.0
Obeying school rules on littering does NOT make you free.	Male	58.3	11.7	30.0
	Female	60.8	7.5	31.7
I drop litter because I think it is fun.	Male	80.0	11.7	8.3
	Female	75.0	10.0	15.0
I do not litter because I am afraid of being punished.	Male	19.2	4.2	76.7
	Female	16.7	3.3	80.0
It is wrong to litter.	Male	20.8	4.2	75.0
	Female	20.0	3.3	76.7
I will prefer to buy a drink in a container that can be thrown away after use.	Male	59.2	15.0	25.8
	Female	66.7	13.3	20.8

Table 3 Continued

Item	Gender	Percentage Responses		
		D %	U %	A %
I will rather buy a drink from a shop	Male	25.8	10.8	63.3
in a clean cup brought from home	Female	23.3	7.5	69.2
than in a container that can be thrown away after being used.				
I will buy food with no wrapping	Male	23.3	13.3	63.3
but on a clean plate brought from	Female	20.0	6.7	73.3
home.				
Individuals should use products that	Male	21.7	10.8	67.5
can be used again, (like cotton	Female	17.5	5.0	77.5
handkerchiefs) instead of tissue paper or paper handkerchiefs.				
Rubbish should be separated so that	Male	15.8	7.5	76.7
some items like newspapers and	Female	25.8	7.5	66.7
bottles could be recycled.				

Males = 120, Females = 120, D = Disagree, U = Undecided, A = Agree.

The results in Table 3 show that 66.7% of the males and 73.3% of the females agreed to the statement 'when I see people throwing rubbish like, pieces of paper, orange peels, iced water sachets about I feel bad.' Zero point eight percent (0.8%) of the females were undecided; none of the males was undecided.

All the males either agreed or disagreed to the statement. On the statement, 'I can throw pieces of paper anywhere because someone else is paid to clean up the surroundings', 89.2% of the males and 87.5% of the females disagreed. The data revealed that 70.8% of the males and 75.0 % of the females disagreed to the statement 'As an individual, I cannot do much in keeping my surroundings clean. However, 23.3% of the males and 15.8% of the females agreed. With reference to the statement 'People should have the freedom to throw off their household waste in a nearby bush close to their house,' 73.3% males disagreed, while 78.3% females disagreed.

Majority of the respondents, that is 82.5% males and 86.7% females agreed to the statement 'any student seen dropping pieces of paper anywhere should be punished.' With respect to the statement, 'control of littering is considered to be important in the education of students' 90.0% males and 87.5% females agreed, whilst 7.5% males disagreed and 10.8% females disagreed. Two point five percent (2.5%) of the males and 1.7% of the females were undecided. With reference to the statement 'Litter should be put in dustbins,' 90.8% males agreed, while 90.0% also females agreed. The data revealed that 84.2% males and 87.5% females agreed to the statement, 'Students should not throw away pieces of paper anyhow.' On the statement 'I do not feel bad throwing litter at any place where litter exists already,' 69.2% of males disagreed as compared to 63.3% females who also disagreed. Eighty-two point five percent (82.5%) males and 86.7% females agreed to the item 'Filtered water sachets and carrier bags can be

dumped anyhow.’ With regards to the statement, ‘One can put refuse into nearby gutters,’ 85.0% males and 82.5% females disagreed.

Concerning the issue ‘Littering is NOT an important environmental concern’, 55.0% of males and 65.8% of females disagreed. On the statement ‘Keeping my surroundings clean is very dear to my heart,’ 85.5% of males agreed as compared to 90.8% females who also agreed. With respect to the statement, ‘I litter because I feel lazy to put the rubbish in the dustbin,’ 72.5% of the males disagreed and 73.3% of the females disagreed, while 15.0% of both males and females agreed. Moreover, on the statement, ‘I drop litter anywhere because I cannot find a dustbin,’ 61.7% of the males disagreed and 73.3% of the females disagreed. The data indicate that 55.0% of the males and 57.5% of the females disagree with the statement ‘I drop pieces of paper unconsciously.’ Most of the respondents, 84.2% males and 87.5% females disagreed to the statement ‘I drop litter so that other people will think I am a ‘guy’’. Majority of the respondents, that is, 70.8% of the males and 72.5% of the females disagreed to the statement ‘orange and banana peels are dirty, so I drop them so that I do not have to hold them.’

Furthermore, on the item ‘Defaecating on the landscape is not a problem since the faeces is washed by rain,’ 83.3% of the males disagreed whilst 86.7% of the females also disagreed. With respect to the statement, ‘Obeying school rules on littering does NOT make you free,’ 58.3% of males as compared to 60.8% of females also agreed. On the issue ‘I drop litter because I think it is fun,’ 80.0% males and 75.0% females disagreed. Seventy-five percent (75.0%) of the males

and 76.7% of the females agreed to the statement that 'it is wrong to litter.' Concerning the statement, 'I will prefer to buy a drink in a container that can be thrown away after use' 59.2% of males disagreed while 66.7% of the females also disagreed. Most of the respondents, that is, 80.8% males and 91.7% females agreed to the statement, 'I will prefer to buy a drink in a bottle that can be washed and reused.' With respect to the item 'I will rather buy a drink from a shop in a clean cup brought from home than in a container that can be thrown away after being used,' 63.3% of the males and 69.2% of the females disagreed. Also on the item 'I drop litter because I do not care,' 85.8% of the males disagreed and 92.5% of the females also disagreed. Ninety-five point zero percent (95.0%) of the females and 88.3% of the males agreed to the statement, 'Students should be educated on the importance of recycling.' Moreover, 75.0% of the males and 73.3% of the males agreed to the statement 'I will rather buy food wrapped in a paper bag that can be easily recycled.' With reference to the statement 'I will buy food with no wrapping but on a clean plate brought from home,' 63.3% of males agreed while, 73.3% of females also agreed. On the statement, 'Individuals should use products that can be used again, (like cotton handkerchief) instead of tissue paper or paper handkerchiefs,' 67.5% males agreed and 77.5 of females agreed. As regards to the statement 'Rubbish should be separated so that some items like newspapers and bottles could be recycled,' 76.7% of the males agreed whilst 66.7% of the females agreed.

As shown in Table 4, a look at the various mean attitude scores of the different items indicated that both male and female students had positive attitude towards most of the items. The following items, however, revealed a negative attitude in both males and females, 'I drop pieces of paper unconsciously,' (mean attitude score of 2.55 for males and 2.41 for females). 'I do not litter because I am afraid of being punished,' (mean attitude score of 2.15 for males and 2.08 for females). Even though there are slight variations, in the views of the students using the percentages, t-tests showed no significant difference between males and females or the opinions expressed were not dependent on the sex of the respondents as shown in Table 4. The only statement that produced significant difference between the opinions of male and female students was 'I drop litter anywhere because I cannot find a dustbin.' With regard to this statement, 61.7% and 73.3% of male and female students agreed respectively. Though both male and female students generally agreed, t-test showed a statistically significant difference between their opinions [$M = 3.86$, $SD = 1.14$], $t(238) = -2.59$ $P = .05$. This means that the opinions expressed by students on that issue were dependent on their sex.

The t-test conducted on items 3 - 34 of the questionnaire in APPENDIX A, on "attitude towards littering" are also presented in Table 4.

Table 4: Item-by-item t-test and Mean attitude score on Gender and Attitude towards Littering (df = 238, t-tab = 1.96.)

Item	Gender	Mean	SD	t-cal.
When I see people throwing rubbish like, pieces of paper, orange peels, iced water sachets about I feel bad.	Male	3.58	1.70	-0.91
	Female	3.78	1.55	
I can throw pieces of paper anywhere because someone else is paid to clean up the surroundings	Male	4.45	0.94	1.26
	Female	4.29	1.00	
As an individual I cannot do much in keeping my surroundings clean.	Male	3.84	1.34	-0.96
	Female	4.00	1.20	
Any student seen dropping pieces of paper anywhere should be punished.	Male	4.11	1.22	-0.92
	Female	4.25	1.17	
People should have the freedom to throw off their household waste in a nearby bush close to their house.	Male	3.95	1.38	-0.25
	Female	3.99	1.21	
Control of littering is considered to be important in the education of students.	Male	4.36	0.99	0.20
	Female	4.23	1.08	
Litter should be put in dustbins.	Male	4.38	0.95	-0.07
	Female	4.38	0.95	
Students should not throw away pieces of paper anyhow.	Male	4.07	1.12	0-.97
	Female	4.20	1.02	

Table 4 Continued

Item	Gender	Mean	SD	t-cal.
I do not feel bad throwing litter at any place where some refuse or litter exists already.	Male	3.83	1.19	1.35
	Female	3.61	1.30	
Filtered water sachets and carrier bags can be dumped anyhow.	Male	4.13	1.14	0.68
	Female	4.23	1.11	
One can put refuse into nearby gutters.	Male	4.29	1.20	0.75
	Female	4.16	1.21	
Littering is NOT an important environmental concern.	Male	3.38	1.56	-0.92
	Female	3.56	1.54	
Keeping my surroundings clean is very dear to my heart.	Male	4.28	1.20	-0.20
	Female	4.43	0.99	
I litter because I feel lazy to put the rubbish in the dustbin.	Male	3.91	1.14	00
	Female	3.91	1.22	
I drop litter anywhere because I cannot find a dustbin.	Male	3.45	1.30	-2.59*
	Female	3.86	1.14	
I drop pieces of paper unconsciously.	Male	2.55	1.24	0.89
	Female	2.41	1.23	
I drop litter so that other people will think I am a 'guy'.	Male	4.27	1.06	-0.63
	Female	4.35	0.98	
Orange and banana peels are dirty, so I drop them so that I do not have to hold them.	Male	3.83	1.20	-0.53
	Female	3.92	1.25	

Table 4 Continued

Item	Gender	Mean	SD	t-cal.
Defaecating on the landscape is NOT a problem since the faeces is washed away by rain.	Male	4.34	1.06	0.26
	Female	4.38	0.91	
I drop litter because I do not care.	Male	4.09	1.07	-2.00
	Female	4.34	0.86	
Obeying school rules on littering does NOT make you free.	Male	3.46	1.47	-0.27
	Female	3.51	1.39	
I drop litter because I think it is fun.	Male	4.05	0.97	1.44
	Female	3.85	1.18	
I do not litter because I am afraid of being punished.	Male	2.15	1.27	0.46
	Female	2.08	1.24	
It is wrong to litter.	Male	3.91	1.38	.024
	Female	3.87	1.37	
I will prefer to buy a drink in a container that can be thrown away after use.	Male	3.47	1.32	-1.33
	Female	3.68	1.21	
I will prefer to buy a drink in a bottle that can be washed and reused.	Male	3.47	1.05	-1.84
	Female	3.68	0.83	
I will rather buy a drink from a shop in a clean cup brought from home than in a container that can be thrown away after being used.	Male	3.60	1.37	-.54
	Female	3.69	1.27	

Table 4 Continued

Item	Gender	Mean	SD	t-cal
Students should be educated on the importance of recycling.	Male	4.23	1.08	-1.56
	Female	4.23	0.80	
I will rather buy food wrapped in a paper bag that can be easily recycled.	Male	3.80	1.19	0.16
	Female	3.78	1.29	
I will buy food with no wrapping but on a clean plate brought from home.	Male	3.58	1.28	-1.41
	Female	3.81	1.19	
Individuals should use products that can be used again, (like cotton handkerchiefs) instead of tissue paper or paper handkerchiefs.	Male	3.58	1.29	-1.65
	Female	3.85	1.28	
Rubbish should be separated so that some items like newspapers and bottles could be recycled.	Male	3.86	1.16	1.83
	Female	3.56	1.37	

Males = 120, Females = 120, df = 238, t-tab = 1.96, * sig

Differences between items are significant if the probability level equals or is less than the 0 .05 level of significance. An item is said to be significant if there is statistically significant difference in the opinion expressed by the 2 groups of respondents; namely males and females.

Hypothesis 1

It was hypothesized that:

Ho: There is no significant difference between male and female JSS 3 students' attitude towards littering.

iii: There is a significant difference between male and female JSS 3 students' attitude towards littering.

A t-test was used to test the data in Table 5 using item 3 - 34 of the questionnaire in APPENDIX A, under the heading "attitude towards littering." The results in Table 5 indicated that the calculated t-value of -1.06 was less than the tabulated value of 1.96 at 238 degrees of freedom and 0.05 level of significance. The null hypothesis was therefore accepted. This revealed that there was no statistically significant difference between male and female JSS 3 students' attitude towards littering. From Table 5, the mean attitude score shows that both male and female JSS 3 students have positive attitude towards littering.

Table 5: t-test and Mean Attitude Score on Gender and Attitude towards Littering

Gender	F	Mean raw score	t-cal	t-tab	df	Mean attitude score	Conclusion
Male	120	122.83	-1.06	1.96	238	3.90	Positive attitude
Female	120	124.66				3.94	Positive attitude

Research Question 2

How do urban and rural JSS 3 students vary in their attitude towards littering? Analysis of data relating to this question was specifically based on items 3 – 34 of the questionnaire APPENDIX A. The results are presented in Table 6.

Table 6: Percentage Distribution of Responses on Location of School and Attitude towards Littering

Item	Location of School	Percentage Responses		
		D %	U %	A %
When I see people throwing				
rubbish like pieces of papers,	Urban	29.2	00	70.8
orange peels, iced water sachets	Rural	30.0	0.8	69.2
about, I feel bad.				
I can throw pieces of paper	Urban	90.8	1.7	7.5
anywhere because someone else	Rural	85.8	6.7	7.5
is paid to clean up the				
surroundings.				
As an individual, I cannot do	Urban	78.3	5.0	16.7
much in keeping my surroundings	Rural	67.5	10.0	22.5
clean.				
Any student seen dropping pieces	Urban	10.8	0.8	88.3
of paper anywhere should be	Rural	17.5	1.7	80.8
punished.				
People should have the freedom	Urban	83.3	1.7	15.0
to throw off their household	Rural	68.3	5.8	25.8
waste in a nearby bush close to				
their house.				

Table 6 continued

Item	Location of School	Percentage Responses		
		D	U	A
		%	%	%
Control of littering is considered	Urban	13.3	4.2	82.5
to be important in the education	Rural	5.0	0.0	95.0
of students.				
Litter should be put in dustbins.	Urban	5.8	2.5	91.7
	Rural	10.0	0.8	89.2
Students should not throw away	Urban	9.2	1.7	89.2
pieces of paper anyhow.	Rural	11.7	5.8	82.5
I do not feel bad throwing litter at	Urban	56.7	13.3	30.0
any place where some refuse or	Rural	75.8	13.3	10.8
litter exists already.				
Filtered water sachets and carrier	Urban	90.0	2.5	7.5
bags can be dumped anyhow.	Rural	79.2	8.3	12.5
One can just put refuse into	Urban	87.5	1.7	10.8
nearby gutters.	Rural	80.0	6.7	13.3
Littering is NOT an important	Urban	57.5	7.5	35.0
environmental concern.	Rural	63.3	8.3	28.3
Keeping my surroundings clean is	Urban	9.2	2.5	88.3
very dear to my heart	Rural	9.2	2.5	88.3

Table 6 continued

Item	Location of School	Percentage Responses		
		D %	U %	A %
I drop pieces of paper unconsciously.	Urban	67.5	15.0	17.5
	Rural	45.0	27.5	27.5
I drop litter so that other people will think I am a 'guy'.	Urban	86.7	4.2	9.2
	Rural	85.0	5.8	9.2
Orange and banana peels are dirty, so I drop them so that I do not have to hold them.	Urban	75.8	5.8	18.3
	Rural	67.5	15.0	17.5
Defaecating on the landscape is not a problem since the faces is washed away by rain.	Urban	83.3	8.3	8.3
	Rural	86.7	7.5	7.0
I drop litter because I do not care.	Urban	90.0	3.3	6.7
	Rural	88.3	4.2	7.5
Obeying school rules on littering does not make you free.	Urban	64.2	7.5	28.3
	Rural	55.0	11.7	33
I drop litter because I think it is fun.	Urban	85.8	6.7	7.5
	Rural	69.2	15.0	15.8
I do not litter because I am afraid of being punished.	Urban	19.2	1.7	79.2
	Rural	16.7	5.8	77.5

Table 6 Continued

Item	Location of School	Percentage Responses		
		D	U	A
		%	%	%
I will prefer to buy a drink in a bottle that can be washed and reused.	Urban	6.7	5.8	87.5
	Rural	10.0	5.0	85.0
I will rather buy a drink from a shop in a clean cup brought from home than in a container that can be thrown away after being used.	Urban	28.3	10.8	60.8
	Rural	20.0	7.5	71.7
Students should be educated on the importance of recycling.	Urban	5.8	2.5	91.7
	Rural	7.5	0.8	91.7
I will rather buy food wrapped in a paper bag that can be easily recycled.	Urban	20.8	7.5	71.7
	Rural	20.0	3.3	76.7
I will buy food with no wrapping but on a clean plate brought from home.	Urban	18.3	10.0	71.7
	Rural	25.0	10.0	65.0
Individuals should use products that can be used again, (like cotton handkerchiefs) instead of tissue paper or paper handkerchiefs.	Urban	16.7	7.5	75.8
	Rural	22.5	8.3	67.2
Rubbish should be separated so that some items like newspapers and bottles could be recycled.	Urban	19.2	7.5	73.3
	Rural	22.5	7.5	70.0

Urban = 120, Rural = 120, D = Disagree, U = Undecided, A = Agree.

The results in Table 6 show that majority of the respondents from the urban schools (70.8%) and the rural schools (69.2%) agreed to the statement 'When I see people throwing rubbish like pieces of papers, orange peels, iced water sachets about, I feel bad'. On the statement 'I can throw pieces of paper anywhere because someone else is paid to clean up the surroundings', 90.8% of the respondents from the urban school and 85.8% from the rural schools disagreed. The data indicated that (78.3%) respondents from the urban schools and 67.5% respondents from the rural schools disagreed to the statement, 'As an individual, I cannot do much in keeping my surroundings clean.' In reacting to the item, 'Control of littering is considered important in the education of students,' 82.5% urban and 95.0% rural respondents agreed. In responding to the statement, 'Filtered water sachets and carrier bags can be dumped anyhow,' 90.0% urban respondents and 79.2% disagreed. Majority of both rural and urban respondents made up of 91.7% urban and 89.2% rural respondents agreed that 'Litter should be put in dustbins'. Moreover, on the item 'Students should not throw away pieces of paper anyhow,' 89.2% urban respondents and 82.5% rural respondents agreed. Responding to the item 'One can put refuse into nearby gutters' 87.5% urban respondents and 80.0% rural respondents disagreed. On the item, 'I litter because I feel lazy to put rubbish in the dustbin,' 78.3% urban respondents and 67.5% rural respondents disagreed.

Thirty five percent (35.0%) of the urban respondents and 28.3% of the rural respondents agreed to the statement, 'Littering is not an important environmental concern. However, 57.5% urban and 63.3% rural disagreed. Majority (88.3%) of both urban and rural respondents agreed to the statement 'Keeping my surroundings clean is very dear to my heart'. With respect to the statement, 'I drop litter anywhere because I cannot find a dustbin', 68.3% urban respondents and 66.7% rural respondents disagreed. As regards to the statement, 'defaecating on the landscape is not a problem, since the faeces is washed away by rain', 83.3% urban respondents and 86.7% rural respondents disagreed. The data show that majority (90.0%) of the urban respondents and 88.3% rural respondents disagreed with the statement 'I drop litter because I do not care'. With respect to the statement 'I will prefer to buy a drink in a container that can be thrown away after use,' 65.8% urban and 60.0% rural respondents disagreed. Furthermore, on the statement, 'I will prefer to buy a drink in a bottle that can be washed and reused', 87.5% of the urban respondents agreed and 85.0% rural respondents disagreed. Sixty point eight percent (60.8%) of urban respondents and 71.7% of rural respondents agreed on the item 'I will rather buy a drink from a shop in a clean cup brought from home than in a container that can be thrown away after being use.' With reference to the statement, 'students should be educated on the importance of recycling', 91.7% urban and 91.7% rural respondents agreed. Additionally, 71.7% urban respondents and 76.7% rural

respondents agreed to buy food wrapped in a paper bag that can be easily recycled. On the statement 'I will buy food with no wrapping but on a clean plate brought from home' 71.7% urban respondents and 65.0% rural respondents agreed. As regards to the statement, 'individuals should use products that can be used again (like cotton handkerchiefs) instead of tissue paper or paper handkerchiefs,' 75.8% urban respondents and 67.2% rural respondents agreed. On the statement, 'rubbish should be separated so that some items like newspapers and bottles could be recycled', 73.3% urban respondents agreed and 70.0% rural respondents also agreed. A t-test showed no significant difference between the opinions of both urban and rural respondents on most of the items. However, there were significant differences on the following items: 'Any student seen dropping pieces of paper anywhere should be punished.' With regard to this statement, 88.3% and 80.8% of urban respondents and rural respondents agreed respectively. Urban respondents showed a more positive attitude towards littering than rural respondents [$M = 4.37$, $SD = 1.05$], $t(238) = 2.46$, $P = 0.05$. 'People should have the freedom to throw off their household waste in a nearby bush close to their house,' 83.3% urban respondents disagreed and 68.3% rural respondents disagreed. On that same statement, 15.0% urban respondents and 25.8% rural respondents agreed. [$M = 4.11$, $SD = 1.15$], $t(238) = 2.37$, $P = 0.05$. T-test showed a statistically significant difference between the opinions of urban respondents and rural respondents.

Thirty percent (30.0%) urban respondents and 10.8% rural respondents agreed with the statement 'I do not feel bad throwing litter at any place where some refuse or litter exists already, however, 56.7% of the urban respondents and 75.8% of the rural respondents disagreed. A t-test showed a statistically significant difference between urban respondents and rural respondents [$M = 4.00$, $SD = 1.11$, $t(238) = -3.60$,] $P = 0.05$. Ninety-five percent (95, 0%) rural respondents and 82.5% urban respondents agreed to the statement that 'control of littering is considered important in the education of students.' A t-test showed a statistically significant difference between the views of the urban and rural respondents [$M = 4.48$, $SD = 0.84$, $t(238) = -2.77$,] $P = 0.05$. Moreover, on the issue of 'I drop pieces of paper unconsciously,' 67.5% urban respondents and 45.0% rural respondents disagreed respectively. A t-test showed a statistically significant difference between the opinions of urban and rural respondents [$M = 2.70$, $SD = 1.25$, $t(238) = -2.81$,] $P = 0.05$. Furthermore, on the statement, 'I drop litter because I think it is fun', 85.8% urban respondents and 69.2% rural respondents disagreed respectively. Again, the difference between the opinions of urban and rural respondents is significant. [$M = 4.13$, $SD = .98$, $t(238) = 2.66$,] $P = 0.05$.

The results of the t-test conducted on items 3 - 34 of the questionnaire on "attitude towards littering" are presented in Table 7.

Table 7: Item-by-item t-test and Mean Attitude Score on Location of School and Attitude Towards Littering. (df = 238, t-tab = 1.96.)

Item	Location	Mean	SD	t-cal
When I see people throwing rubbish like, pieces of paper, orange peels, iced water sachets about, I feel bad.	Urban	3.67	1.61	-0.12
	Rural	3.69	1.65	
I can throw pieces of paper anywhere because someone else is paid to clean up the surroundings	Urban	4.38	0.94	0.20
	Rural	4.36	1.01	
As an individual, I cannot do much in keeping my surroundings clean.	Urban	4.03	1.17	1.27
	Rural	3.86	1.36	
Any student seen dropping pieces of paper anywhere should be punished.	Urban	4.37	1.05	2.46*
	Rural	3.99	1.30	
People should have the freedom to throw off their household waste in a nearby bush close to their house.	Urban	4.17	1.15	2.37*
	Rural	3.78	1.40	
Control of littering is considered to be important in the education of students.	Urban	4.12	1.18	2.77*
	Rural	4.48	0.84	
Litter should be put in dustbins.	Urban	4.43	0.87	0.89
	Rural	4.33	1.02	
Students should not throw away pieces of paper anyhow.	Urban	4.19	1.07	0.84
	Rural	4.08	1.07	

Table 7 continued

Item	Location	Mean	SD	t-cal
I do not feel bad throwing litter at any place where some refuse or litter exist already.	Urban	3.43	1.32	-3.60*
	Rural	4.00	1.11	
Filtered water sachets and carrier bags can be dumped anyhow.	Urban	4.31	1.01	1.73
	Rural	4.06	1.22	
One can put refuse into nearby gutters.	Urban	4.34	1.15	1.40
	Rural	4.13	1.25	
Littering is not an important environmental concern.	Urban	3.36	1.59	-1.08
	Rural	3.58	1.51	
Keeping my surroundings clean is very dear to my heart.	Urban	4.29	1.08	-0.88
	Rural	4.42	1.12	
I litter because I feel lazy to put the rubbish in the dustbin.	Urban	4.00	1.16	1.20
	Rural	3.82	1.20	
I drop pieces of paper unconsciously.	Urban	2.26	1.18	-2.81*
	Rural	2.70	1.25	
I drop litter so that other people will think I am a 'guy'.	Urban	4.33	1.01	0.38
	Rural	4.28	1.04	
Orange and banana peels are dirty, so I drop them so that I do not have to hold them.	Urban	3.94	1.21	0.84
	Rural	3.81	1.24	
Defaecating on the landscape is not a problem since the faeces is washed away by rain.	Urban	4.13	1.25	1.40
	Rural	4.34	1.15	

Table 7 continued

Item	Location	Mean	SD	t-cal
I drop litter because I do not care.	Urban	4.22	.97	0.00
	Rural	4.22	.98	
Obeying school rules on littering does not make you free.	Urban	3.54	1.45	0.63
	Rural	3.43	1.41	
I drop litter because I think it is fun.	Urban	4.13	0.98	2.66*
	Rural	3.77	1.15	
I do not litter because I am afraid of being punished.	Urban	2.10	1.26	-.15
	Rural	2.13	1.26	
It is wrong to litter.	Urban	3.94	1.37	0.61
	Rural	3.83	1.38	
I will prefer to buy a drink in a container that can be thrown away after use.	Urban	3.66	1.18	1.02
	Rural	3.49	1.35	
I will prefer to buy a drink in a bottle that can be washed and reused.	Urban	4.23	0.92	0.74
	Rural	4.13	0.99	
I will rather buy a drink from a shop in a clean cup brought from home than in a container that can be thrown away after being used.	Urban	3.51	1.30	1.61
	Rural	3.78	1.34	
Students should be educated on the importance of recycling.	Urban	4.36	0.94	0.47
	Rural	4.30	0.97	

Table 7 continued

Item	Location	Mean	SD	t-cal
I will rather buy food wrapped in a paper bag that can be easily recycled.	Urban	3.73	1.23	-1.78
	Rural	3.85	1.25	
I will buy food with no wrapping but on a clean plate brought from home.	Urban	3.81	1.15	1.41
	Rural	3.58	1.31	
Individuals should use products that can be used again. (like cotton handkerchiefs) instead of tissue paper or paper handkerchiefs.	Urban	3.78	1.28	0.85
	Rural	3.68	1.30	
Rubbish should be separated so that some items like newspapers and bottles could be recycled.	Urban	3.73	1.17	0.20
	Rural	3.69	1.38	

Urban = 120 Rural = 120 df = 238 $P < 0.05$. t-tab = 1.96.

*Significant

Hypothesis 2

It was hypothesized that:

Ho: There is no significant difference between JSS 3 students in urban and rural schools' attitude towards littering.

Hi: There is a significant difference between JSS 3 students in urban and rural schools' attitude towards littering.

The t-test was used to test the data in Table 8 using items 3 - 34 of the questionnaire in APPENDIX A, under the heading "attitude towards littering."

The results in Table 8 showed that the calculated t- value of 0.54 was less than the tabulated value of 1.96 at 238 degrees of freedom and 0.05 level of significance. The null hypothesis was therefore accepted. This means there is no significant difference between urban and rural JSS 3 students' attitude towards littering. From Table 8, the mean attitude score shows that both urban and rural JSS 3 students have positive attitude towards littering.

Table 8: t-test and Mean Attitude Score of Urban and Rural JSS3 Students and Attitude towards Littering

Location of School	F	Mean raw score	t-cal	t-tab	Df	Mean Attitude score	Conclusion
Urban	120	124.21	0.54	1.96	238	3.93	Positive Attitude
Rural	120	123.28				3.91	Positive Attitude

Research Question 3

How do male and female JSS 3 students perceive the effects of littering?

Analysis of data relating to this question was based on items 35 - 52 of the questionnaire in APPENDIX A. The results are presented in Table 9.

Table 9: Percentage Distribution on the Responses of Gender and the Effects of Littering

Item	Gender	Percentage Responses		
		D %	U %	A %
Throwing iced water sachets and banana peels anyhow, leads to the spread of diseases.	Male	14.2	4.2	81.7
	Female	15.8	0.8	83.3
Throwing away empty tins and plastic bags can collect rainwater, which serves as breeding grounds for mosquitoes.	Male	15.0	4.2	80.0
	Female	16.7	0.8	82.5
Indiscriminate disposal of solid waste into gutters does not cause flooding.	Male	80.8	6.7	12.5
	Female	72.5	10.8	16.7
Garbage makes the environment attractive.	Male	77.5	8.3	14.2
	Female	77.5	5.0	17.5
Plastics in the soil decrease soil fertility.	Male	36.7	12.5	50.8
	Female	44.2	6.7	49.2
Throwing refuse about attracts flies, which transmit diseases.	Male	14.2	2.5	83.3
	Female	16.7	1.7	81.7
Broken glass and tins found for example on beaches and parks can cause injury.	Male	11.7	0.8	87.5
	Female	14.2	1.7	84.2
Waste pollutes water bodies.	Male	9.2	5.0	85.8
	Female	13.3	5.0	81.7
Birds, domestic animals and fishes can be injured and killed when they eat indigestible litter items like plastic bags.	Male	12.5	6.7	80.8
	Female	18.3	9.2	72.5

Table 9 continued

Item	Gender	Percentage Responses		
		D %	U %	A %
Litter contains poisons.	Male	9.2	7.5	83.3
	Female	12.5	5.0	82.5
Litter contains germs.	Male	10.0	5.8	84.2
	Female	10.0	1.7	88.3
Litter causes accident on roads.	Male	18.3	15.8	65.8
	Female	22.5	5.8	71.7
Litter smells bad.	Male	10.8	7.5	81.7
	Female	13.3	5.0	81.7
Litter spoils the appearance of a place.	Male	7.5	4.2	88.3
	Female	14.2	0.8	85.0
Litter makes a place look ugly.	Male	13.3	4.2	82.5
	Female	14.2	1.7	84.2
Improper disposal of polythene bags prevents investors into the country.	Male	22.5	7.5	70.0
	Female	25.7	6.7	65.8
Litter prevents visitors from visiting the country.	Male	22.5	5.0	72.5
	Female	19.2	2.5	78.3

Males = 120, Females = 120, D = Disagree, U = Undecided, A = Agree.

As could be seen from Table 9, large proportions of both male and female students objected to suggestions that sought to ascribe littering to them and to statements that played down on the problem of littering. These included the following: 'throwing iced water sachets and banana peels anyhow, leads to the spread of diseases,' 81.7% of the males agreed while 83.3% of the females also agreed. 'Throwing away empty tins and plastic bags can collect rainwater, which

serves as breeding grounds for mosquitoes,' 80.0% of the males agreed while 82.5% of the females agreed. 'Plastics in the soil decrease soil fertility' 50.8% of the males agreed, while 49.2% of the females agreed. However, 36.7% of the males and 44.2% of the females disagreed.

Majority of the respondents, 83.3% of the males and 81.7% of the females, agreed with the statement 'throwing refuse about attracts flies, which transmit disease.' In reacting to the statement, 'Broken glass and tins found for example on beaches and parks can cause injury,' 87.5% of the males and 84.2% of the females agreed. Concerning the statement, 'Waste pollutes water bodies,' 85.8% of the males and 81.7% of the females agreed. About the statement, 'birds, domestic animals and fishes can be injured and killed when they eat indigestible litter items like plastic bags,' 80.8% of the males and 72.5% of the females also agreed. However, 18.3% of the females disagreed as compared to 12.5% of the males who also disagreed. In addition, 81.7% of the males and 80.8% of the females agreed that 'Litter blocks drains.' On the statement 'Litter causes accident on roads,' 65.8% of the males and 71.7% of the females agreed. However, 18.3% and 22.5% of the females disagreed. Again, on the statement 'litter contains poisons,' 83.3% of the males and 82.5% of the females agreed. Majority of the respondents, 88.3% males and 85.0% females, agreed with the statement 'Litter spoils the appearance of a place'. Seventy percent (70.0%) of the males and 65.8% of the females agreed with the statement, 'improper disposal of polythene

bags prevents investors into the country.’ However, 22.5% of the males and 25.7% of the females disagreed. In responding to the statement, ‘Litter prevents visitors from visiting the country,’ 72.5% of the males and 78.3% of the females agreed. However, 22.5% males and 19.2% females disagreed.

As shown in Table 10, though there were slight variations in the views of the respondents, results of a t-test showed no significant differences between gender and the effects of littering. The opinions expressed were not dependent on the sexes of the respondents. The results of the t-test are shown in Table 10.

The results of the t-test conducted on items 35 - 52 of the questionnaire on “effects of littering” are presented in Table 10.

Table 10: Item-by-item t-test Results on Gender and the Effects of Littering

Item	Gender	Mean	SD	t-tab
Throwing iced water sachets and banana peels anyhow, leads to the spread of diseases.	Male	4.13	1.19	0.05
	Female	4.12	1.22	
Throwing away empty tins and plastic bags can collect rainwater, which serves as breeding grounds for mosquitoes.	Male	4.07	1.27	-.15
	Female	4.09	1.29	
Indiscriminate disposal of solid waste into gutters does not cause flooding.	Male	4.15	1.11	1.38
	Female	3.94	1.23	
Garbage makes the environment attractive.	Male	4.10	1.29	-.46
	Female	4.17	1.25	
Plastics in the soil decrease soil fertility.	Male	3.23	1.45	1.38
	Female	2.97	1.45	

Table 10 continued

Item	Gender	Mean	SD	t-tab
Throwing refuse about attracts flies, which transmit diseases.	Male	4.13	1.19	0.89
	Female	3.99	1.26	
Broken glass and tins found, for example, on beaches and parks can cause injury.	Male	4.23	1.10	1.02
	Female	4.08	1.19	
Waste pollutes water bodies.	Male	4.18	1.12	0.56
	Female	4.09	1.20	
Birds, domestic animals and fishes can be injured and killed when they eat indigestible litter items like plastic bags.	Male	3.99	1.11	1.14
	Female	3.80	1.37	
Litter blocks drains.	Male	4.01	1.21	0.05
	Female	4.00	1.22	
Litter contains poisons.	Male	4.12	1.01	1.07
	Female	3.97	1.13	
Litter contains germs.	Male	4.16	1.10	-0.06
	Female	4.17	1.09	
Litter causes accident on roads.	Male	3.71	1.25	-0.80
	Female	3.84	1.34	
Litter smells bad.	Male	4.05	1.10	-0.40
	Female	4.11	1.16	
Litter spoils the appearance of a place.	Male	4.12	1.22	0.05
	Female	4.13	1.19	
Litter makes a place look ugly.	Male	4.13	1.10	0.17
	Female	4.10	1.16	
Improper disposal of polythene bags prevents investors into the country.	Male	3.73	1.37	0.42
	Female	3.65	1.41	
Litter prevents visitors from visiting the country.	Male	3.82	1.40	-1.10
	Female	4.01	1.29	

Male = 120, Female = 120, df = 238, P < 0.05, t-tab = 1.96,

Hypothesis 3

It was hypothesized that:

Ho: There is no significant difference between male and female JSS 3 students' perception about the effects of littering.

Hi: There is a significant difference between male and female JSS 3 students' perception about the effects of littering.

The t-test was used to test the data in Table 11 using items 35 - 52 of the questionnaire in APPENDIX A, under the heading "effects of littering." The results in Table 11 show that the calculated t-value of 0.66 is less than the tabulated value of 1.96 at 238 degrees of freedom and 0.05 level of significance. The null hypothesis was therefore accepted. This means there is no significant difference between male and female JSS 3 students in their perception about the effects of littering.

Table 11: t-test Result on Responses of Gender and the Effects of Littering

Gender	F	Mean	SD	t-cal	t-tab	Df
Male	120	72.15	11.45	0.66	1.96	238
Female	120	71.20	10.88			

Research Question 4

How do urban and rural JSS 3 students perceive the effects of littering?

Analysis of the results was based on items 35 - 52 of the questionnaire

APPENDIX A. The results are presented in Table 12.

Table 12: Percentage Distribution on the Responses of Location of School and the effects of Littering

Item	Location	Percentage Responses		
		D %	U %	A %
Throwing iced water sachets and banana peels anyhow, leads to the spread of diseases.	Urban	13.3	3.3	83.3
	Rural	16.7	1.7	81.7
Throwing away empty tins and plastic bags can collect rainwater, which serves as breeding grounds for mosquitoes.	Urban	13.3	2.5	84.2
	Rural	18.3	2.5	79.2
Indiscriminate disposal of solid waste into gutters does not cause flooding.	Urban	80.0	10.8	9.2
	Rural	73.3	6.7	20.0
Garbage makes the environment attractive.	Urban	67.5	10.0	22.5
	Rural	87.5	3.3	9.2
Plastics in the soil decrease soil fertility.	Urban	39.2	7.5	53.3
	Rural	41.7	11.7	46.7
Throwing refuse about attracts flies, which transmit diseases,	Urban	16.7	1.7	81.7
	Rural	14.2	2.5	83.3
Broken glass and tins found, for example on beaches and parks can cause injury.	Urban	15.0	1.7	83.3
	Rural	10.8	0.8	88.3
Waste pollutes water bodies.	Urban	8.3	5.0	86.7
	Rural	14.2	5.0	80.8
Birds, domestic animals and fishes can be injured and killed when they eat indigestible litter items, like plastic bags.	Urban	15.0	7.5	77.5
	Rural	15.8	8.3	75.8

Table 12 continued

Item	Location	Percentage Responses		
		D	U	A
		%	%	%
Litter blocks drains.	Urban	15.8	5.8	78.3
	Rural	14.2	1.7	84.2
Litter contains poisons.	Urban	10.0	5.8	84.2
	Rural	11.7	6.7	81.7
Litter contains germs.	Urban	10.0	3.3	86.7
	Rural	10.0	4.2	85.8
Litter causes accident on roads.	Urban	25.0	12.5	62.5
	Rural	15.8	9.2	75.0
Litter smells bad.	Urban	12.5	6.7	80.8
	Rural	11.7	5.8	82.5
Litter spoils the appearance of a place.	Urban	10.0	2.5	87.5
	Rural	11.7	2.5	85.8
Litter makes a place look ugly.	Urban	12.5	4.2	83.3
	Rural	15.0	1.7	83.3
Improper disposal of polythene bags prevents investors into the country.	Urban	30.0	7.5	62.5
	Rural	20.0	6.7	73.3
Litter prevents visitors from visiting the country.	Urban	19.2	4.2	76.7
	Rural	22.5	3.3	74.2

Urban = 120. Rural = 120. D = Disagree. U = Undecided. A = Agree.

The results in Table 12 indicate that majority of the respondents, 83.3% of the urban respondents and 81.7% of the rural respondents agreed with the statement, 'throwing iced water sachets and banana peels anyhow leads to the spread of diseases.' On the statement 'throwing away empty tins and plastic bags can collect rainwater, which serves as breeding grounds for mosquitoes,' 84.2% of the urban respondents and 79.2% of the rural respondents agreed. In reacting to the statement, 'plastics in the soil decrease soil fertility', 53.3% of the urban respondents and 46.7% of the rural respondents agreed, While 39.2% of the urban respondents and 41.7% of the rural respondents disagreed.

Concerning the statement 'throwing refuse about attracts flies, which transmit diseases,' 81.7% of the urban and 83.3% of the rural respondents agreed. About the item 'Broken glass and tins found, for example, on beaches and parks can cause injury,' 83.3% of the urban and 88.3% of the rural respondents agreed. The results show that 86.7% of the urban respondents and 80.8% of the rural respondents agreed with the statement that 'Waste pollutes water bodies.' On the item 'Birds, domestic animals and fishes can be injured and killed when they eat indigestible litter item like plastic bags,' 77.5% of the urban respondents and 75.8% of the rural respondents agreed. With respect to the statement, 'Litter block drains', 78.3% of the urban and 84.2% of the rural respondents agreed. Similarly, on the statement 'Litter contains poisons', 84.2% of the urban respondents and 81.7% of the rural respondents agreed. Majority of the respondents, (86.7%) of the urban respondents and 85.8% of the rural respondents agreed that 'Litter

contains germs'. Most of the respondents, (80.8%) urban respondents and 82.5% of the rural respondents agreed that 'Litter smells bad'.

On the statement, 'Litter spoils the appearance of a place', 87.5% of the urban respondents and 85.8% of the rural respondents agreed. As regards on the statement, 'Litter prevents visitors from visiting the country,' 76.7% of the urban respondents and 74.2% of the rural respondents agreed. Eighty percent (80.0%) of the urban respondents and 73.3% of the rural respondents disagreed to the statement, 'indiscriminate disposal of solid waste into gutters does not cause flooding.' With reference to the item 'Litter makes a place look ugly,' 83.3% of urban respondents and 83.3% of rural respondents agreed.

As shown in Table 13, a t-test showed no significant difference between the opinions of both urban respondents and rural respondents on most of the items. However, there were significant differences on the following items: 'Litter causes accident on roads', 62.5% and 75.0% of the urban respondents and rural respondents agreed, respectively. A t-test showed a statistically significant difference between urban respondents and rural respondents [$M = 3.98$, $SD = 1.25$, $t(238) = 2.12$,] $P = 0.05$. The opinions of the urban and rural respondents were dependent on the places of residence, which is urban or rural. Also in responding to the statement 'improper disposal of polythene bags prevent investors into the country,' 62.5% of the urban respondents and 73.3% of the rural respondents agreed. A t-test showed a statistically significant difference between urban respondents and rural respondents [$M = 3.88$, $SD = 1.31$, $t(238) = -2.12$,] $P = 0.05$. With reference to the statement, 'garbage makes the environment

attractive', 67.5% of the urban respondents and 87.5% of the rural respondents disagreed. On that same statement, 22.5% of the urban respondents and 9.2% of the rural respondents agreed. A t-test showed a statistically significant difference between urban respondents and rural respondents [$M = 4.43$, $SD = 1.11$, $t(238) = -3.60$,] $P = 0.05$. The results of the t-test conducted on items 35 - 52 of the questionnaire on "effects of littering" are presented in Table 13.

Table 13: Item-by-item t-test Results of Urban and Rural JSS 3 Students and the Effects of Littering

Item	Location	F	Mean	SD	t-cal
Throwing iced water sachets and banana peels anyhow, leads to the spread of diseases.	Urban	120	4.21	1.16	1.13
	Rural	120	4.03	1.24	
Throwing away empty tins and plastic bags can collect rainwater, which serves as breeding grounds for mosquitoes.	Urban	120	4.03	1.19	0.56
	Rural	120	4.03	1.36	
Indiscriminate disposal of solid waste into gutters does not cause flooding.	Urban	120	4.18	0.98	1.71
	Rural	120	3.12	1.33	
Garbage makes the environment attractive.	Urban	120	3.85	1.36	-3.60*
	Rural	120	4.43	1.11	
Plastics in the soil decrease soil fertility.	Urban	120	3.18	1.41	0.93
	Rural	120	3.01	1.49	

Table 13 continued

Item	Location	F	Mean	SD	t-cal
Throwing refuse about attracts flies, which transmit diseases.	Urban	120	4.03	1.24	-0.36
	Rural	120	4.09	1.22	
Broken glass and tins found for example on beaches and parks can cause injury.	Urban	120	4.04	1.16	-1.47
	Rural	120	4.26	1.13	
Waste pollutes water bodies.	Urban	120	4.20	1.10	0.89
	Rural	120	4.06	1.21	
Birds, domestic animals and fishes can be injured and killed when they eat indigestible litter items like plastic bags.	Urban	120	3.88	1.25	-0.31
	Rural	120	3.93	1.24	
Litter blocks drains.	Urban	120	3.92	1.20	-1.12
	Rural	120	4.09	1.22	
Litter contains poisons.	Urban	120	4.05	1.04	0.12
	Rural	120	4.03	1.11	
Litter contains germs.	Urban	120	4.16	1.10	-0.06
	Rural	120	4.17	1.09	
Litter causes accident on roads.	Urban	120	3.56	1.31	-2.42*
	Rural	120	3.98	1.25	

Table 13 continued

Item	Location	F	Mean	SD	t-cal
Litter smells bad.	Urban	120	4.06	1.12	-.29
	Rural	120	4.10	1.15	
Litter spoils the appearance of a place.	Urban	120	4.19	1.10	0.23
	Rural	120	4.16	1.16	
Litter makes a place look ugly.	Urban	120	4.12	1.07	0.06
	Rural	120	4.11	1.18	
Improper disposal of polythene bags prevents investors into the country.	Urban	120	3.50	1.44	-2.11*
	Rural	120	3.88	1.31	
Litter prevent visitors from visiting the country.	Urban	120	3.97	1.37	0.62
	Rural	120	3.86	1.33	

Urban = 120, Rural = 120, df = 238, t-tab = 1.96, P < .05, * Significant

Hypothesis 4

It was hypothesized that:

Ho: There is no significant difference between JSS 3 students in urban and rural schools' perceptions about the effects of littering.

Hi: There is a significant difference between JSS 3 students in urban and rural schools' perceptions about the effects of littering.

The t-test was used to test the data in Table 14 using items 35 - 52 of the questionnaire in APPENDIX A, under the heading “effects of littering.” The results in Table 14 show that the calculated t-value of 0.62 is less than the tabulated value of 1.96 at 238 degrees of freedom and 0.05 level of significance. The null hypothesis was therefore accepted. This means there is no significant difference between urban and rural JSS 3 students’ perceptions about the effects of littering.

Table 14: t-test Result on Responses of Urban and Rural JSS 3 Students and the Effects of Littering

Location	F	Mean	SD	t-cal	t-tab	Df
Urban	120	71.23	10.93			
				-0.62	1.96	238
Rural	120	72.13	11.39			

Findings

The following findings emerged from the study:

Attitude of JSS 3 Male and Female Students towards Littering

The results of the study revealed that generally, both male and female JSS 3 students had positive attitude towards littering. That is, they were against littering. Majority of the respondents, 89.2% males and 87.5% females disagreed with the statement that they could throw pieces of paper anywhere, because someone else was paid to clean up the surroundings. The statement ‘I drop pieces of paper unconsciously,’ indicated a negative attitude with a mean attitude score

of 2.55 for males and 2.41 for females. The item 'I do not litter because I am afraid of being punished,' also showed a negative attitude, with a mean attitude score of 2.15 for males and 2.08 for females. Again, it was also revealed that littering was an important environmental concern. Furthermore, the study revealed that laziness and apathy were not major factors in littering. The results of the study further indicated that lack of dustbins was a major factor in littering and respondents accepted dropping rubbish anywhere, because there were no dustbins. The mean attitude score showed that both males and females have positive attitude towards littering. The mean attitude scores are 3.90 and 3.94 for males and females respectively. A t-test showed no significant difference between male and female, JSS 3 students' attitude towards littering.

Attitude of Urban and Rural JSS 3 Students towards Littering

The results of the study revealed that generally both urban and rural JSS 3 students disliked littering. The results further indicated that, 56.7% and 75.8% of urban respondents and rural respondents respectively disagreed to the statement 'I do not feel bad throwing litter at any place where some litter or refuse exists already'. Respondents had negative attitude towards the following items:

1. 'I drop pieces of paper unconsciously,' with a mean attitude score of 2.26 for urban respondents and 2.70 for rural respondents.
2. 'I do not litter because I am afraid of being punished,' with a mean attitude score of 2.10 for urban respondents and 2.13 for rural respondents.

The mean attitude score showed that both urban and rural JSS 3 students have positive attitude towards littering. The mean attitude scores were 3.93 and 3.91

for urban respondents and rural respondents respectively. A t-test showed no significant difference in general between urban and rural JSS 3 students' attitude towards littering.

Perceptions of Male and Female Students on the Effects of Littering

The results of the study revealed that generally, both male and female JSS 3 students were aware of the effects of littering with a mean of 72.15 for males and 71.20 for females. They saw the effects of littering as harmful to the wider environment. Specifically, the study showed that students are aware that:

- (1) indiscriminate disposal of solid waste into gutters cause flooding,
- (2) throwing refuse about attracts flies, which transmit diseases,
- (3) broken glass and tins could cause injury,
- (4) birds, domestic animals and fishes could be injured and killed when they eat indigestible litter items like plastic bags,
- (5) improper disposal of polyethene bags prevents investors into a country,
- (6) litter prevents visitors from visiting the country.

On the item 'plastics in the soil decreases soil fertility,' results of the mean of 3.23 for males and 2.97 for females showed that students were not all that aware of the harm caused to the soil by plastics. A t-test showed no significant difference between male and female JSS 3 students in their perceptions about the effects of littering.

Perceptions of Urban and Rural Students on the Effects of Littering

The results of the study revealed that generally both urban and rural JSS 3 students were aware of the effects of littering with a mean of 71.23 for urban respondents and 72.13 for rural respondents. Almost all of them knew the dangers caused by litter to the environment. A t-test showed no significant difference between urban and rural JSS 3 students' perceptions about the effects of littering.

Discussion of Research Findings

The aforementioned results indicated that both male and female JSS 3 students were against littering. This is consistent with the study by Lucas (1981) who found out that the attitude of secondary school students to the environment tended to be positive. The result is also consistent with the assertion by EPA (2000) that males and females under age 15 are least likely to litter.

As revealed by the results, lack of dustbins is a major factor in littering. This supports the views of Bonnett and Williams (1998) who observed that scarcity of litterbins led to littering. The current finding, however, contradicts those of Colman (2000) and EPA (2000) who observed that lack of dustbins is not a major factor in littering, because most littering occurs within 5 meters of a bin. The results further revealed that laziness, and a feeling that someone else is paid to clean up the litter were not major factors in littering. The results also showed that litter is an important environmental concern. These findings, contradict the assertion by Bonnett and Williams (1998), who found out that litter is not an important environmental concern. The current findings, however, support EPA (2000), assertion that, littering is an important environmental concern. A t-test

conducted attested to the fact that there was no significant difference between male and female JSS 3 students in their attitude towards littering. This means that the opinions expressed by the students were not dependent on their sex. This result is consistent with the conclusion by Chanda (1999), who found gender as a poor predictor of environmental concern. However, it contradicts that of Thrall (1996) who, in a study of middle and high school students, showed that gender and age of students had effects upon the formation of positive attitudes about the environment. The result also contradicts that of Jing-Shin (1993) who showed that females' attitudes towards the environment were more positive than males.' The result also contradicts those of a study by Chanda (1999) who showed that women were less concerned about environmental issues than men were.

The results of the study revealed that both urban and rural JSS 3 students do not like littering. A t-test showed no significant difference between the opinions of students of urban and rural schools. This is consistent with the findings of Bonnett and Williams (1998) who observed that expressing strong positive concern about the environment carried a high degree of consensus and detected no significant difference in general on this between urban and rural schools.

The results of the study also indicated that generally both male and female students were aware of the effects of littering and felt littering was not good. It was revealed that students were not all that aware that plastics in the soil decreased soil fertility. In addition, some of them did not know that indiscriminate disposal of solid waste into gutters caused flooding. This confirms the submission

by Menon and Shankar (1997) who showed that plastic waste caused infertility of land, contaminated ground water and clogged drains; but contradicts the assertion by these co-authors that plastic waste caused infertility of land.

The results of the study showed that throwing refuse about attracted flies, which transmitted diseases. This supports the views of Songsore and Mcgranaham (1993), that the problems associated with sanitary conditions in rapidly expanding urban areas had provoked the spread of malaria, diarrhoea, intestinal worms and upper respiratory diseases. Again, it was revealed that broken glass and tins could cause injury. This is consistent with the observation of EPA (1997) that some forms of litter could be a threat to human safety. For instance, broken glass and tins could cause injuries in the recreational areas such as beaches and parks. The results further revealed that birds, domestic animals and fishes could be injured and killed when they ate indigestible litter items like plastic bags. This confirms the assertion of Keelson (2003) that some animals died, because of swallowing and being choked with plastic waste. Sara, Katie, Tim, Christina and Devon (1998) supported this view and stated that litter was a possible threat to wild animals and natural plant life.

The findings further revealed that improper disposal of polythene bags could prevent investors and visitors into a country. This is consistent with Balance *et al.* (2000) who, in a study, found out that litter densities of more than 10 large items per meter of beach deterred 40% of foreign and 60% of domestic tourists from returning to Cape Town beach in South Africa. This had a great impact on the regional economy, leading to loss of billions of rands each year. A t-test

showed no significant difference between male and female JSS 3 students in their perceptions about the effects of littering.

General Discussions

The positive attitude shown by male and female JSS 3 students in the current study might have been attained as a result of the high level of environmental education campaign or programmes that have been mounted by the Ministry of Environment in the media. Besides, the involvement of environmental education themes such as littering in the syllabus of the JSS might also be a contributory factor.

However, despite the positive attitude of the JSS 3 students, the intensity of the attitudes exhibited was not strong enough. In other words, their performance for a litter-free environment or their dislike for littering was not strong enough. This was indicated by the overall cut-off point of 96 for the raw scores on the attitude scale. The distribution on the attitude scale ranges from 32 to 160. The more the mean of the raw score of respondents approached 160, the more positive their attitude would be. Clearly, the raw scores of respondents were closer to the cut-off point of 96 than the maximum score of 160 (that is, mean raw scores of 122.83 and 124.66 for males and females, respectively). This is an indication that, the present over-all attitude of the JSS 3 students in the study was not too high. Thus, the present attitude of JSS 3 students could easily slack to neutral and slip into negative attitude, if education is not intensified. According to Lindzey, Hall and Thompson (1976), attitude once formed may remain relatively stable for long periods but they can be changed. This is where education becomes

necessary. Inculcating attitudes and helping their growth are important parts of education. The present attitude of JSS 3 students towards littering can be modified or changed to make it more positive. This could be done through intensive education. Hungerford and Volk (1990) however, argue that in order to change behaviour, instruction must go beyond an 'awareness' or 'knowledge' of issues alone. This will provide students with the opportunity to develop a sense of 'ownership' and 'empowerment' necessary to promote responsible action. According to lozzi (1989), appropriate educational techniques to achieve this in learners, include affective domain learning and values education, whereby learners address environmental issues on an emotional as well as a cognitive level. By developing strong personal values towards the environment, behavioural change is more likely to follow (lozzi, 1989).

If the main goal of environmental education is the development of the student's ability to act and effect change, the knowledge and insight should be action oriented (Jensen, 2002). In order to deal with the real and immediate environmental problems, the students should be actively involved in activities including projects, group work and field trips which will expose them to the effects of littering. Special emphasis should be placed on self and independent projects concerning the environment and ecologically related issues (Zoller, 1984).

Summary

Two hundred and forty (240) respondents completed the questionnaire on the attitude of JSS 3 students towards littering in the Cape Coast municipality.

The main findings showed that JSS 3 students had positive attitude towards littering and were aware of the effects of littering. The attitude of the students towards littering is neither dependent on gender nor location of school. This is because there is no significant difference between gender and attitude towards littering. There is also no significant difference between location of school and attitude towards littering. Both urban and rural JSS 3 students are aware of the effects of littering.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the summary of the study, conclusions drawn from the study and recommendations to improve on the attitude of students towards littering. Finally, suggestions for future research are presented.

Summary

The research was conducted to assess the attitude of JSS 3 students towards littering. A descriptive sample survey was conducted in 12 JSS in the Cape Coast municipality of Ghana. A questionnaire was designed with the assistance of the principal and co-operative supervisors at the Department of Science Education, of the University of Cape Coast. The questionnaire was pilot tested using 42 JSS 3 respondents (21 males and 21 females) from Bakartsir JSS in the Cape Coast municipality of Ghana. This made it possible for the research instrument to be modified before the main study. The Cronbach coefficient alpha was used to calculate the internal consistency of the items. A reliability coefficient of 0.83 was obtained. The sample for the study consisted of 240 JSS 3 students made up of 120 males and 120 females. The stratified random sampling was used to ensure that the characteristics that were considered in the study were represented in the sample (that is, gender and location of school). The questionnaires were hand delivered. All the 240 questionnaires collected were administered personally, thereby achieving a 100% delivery. The data collected

were analyzed using percentages, mean and independent t-test at a significance level of 0 .05.

The results of the study revealed, among others, that:

1. male and female JSS 3 students are against littering,
2. urban and rural JSS 3 students do not like littering,
3. male and female JSS 3 students are aware of the effects of littering,
4. urban and rural JSS 3 students are aware of the effects of littering,
5. littering is an important environmental issue,
6. lack of dustbins is a major factor in littering,
7. there is no significant difference between male and female JSS 3 students in attitude towards littering,
8. there is no significant difference between urban and rural JSS 3 students in attitude towards littering,
9. there is no significant difference between male and female JSS 3 students in their perceptions about the effects of littering, and
10. there is no significant difference between urban and rural JSS 3 students in their perceptions about the effects of littering.

Conclusions

The following conclusions can be drawn from the findings of the study:

- i . male and female JSS 3 students are against littering,
- ii . urban and rural JSS 3 students are against littering,
- iii . male and female JSS 3 students are aware of the effects of littering,
- iv . urban and rural JSS 3 students are aware of the effects of littering,

- v. there is no significant difference between male and female JSS 3 students in attitude towards littering,
- vi. there is no significant difference between urban and rural JSS 3 students in attitude towards littering,
- vii. there is no significant difference between male and female JSS 3 students in their perceptions about the effects of littering and,
- viii. there is no significant difference between urban and rural JSS 3 students in their perceptions about the effects of littering.

Recommendations

Based on the findings the following recommendations were made

1. The JSS 3 students generally have positive attitude towards littering and are aware of the effects of littering. However, efforts should be made to increase awareness among students on the effects of littering.
2. Since lack of dustbins is a major factor in littering, there should be more dustbins. Students should be encouraged to look for dustbins to dispose litter. Also, immovable bins (bins that cannot be kicked about) should be used.

Suggestions

The litter problem can be addressed with some simple strategies and education. There should be coordinated programmes of picking up litter. Emphasis must also be on reducing litter before it accumulates. The following strategies could be used.

1. People should be encouraged to use containers that do not generate rubbish, for example, the use of reusable plastic containers and drink bottles.
2. The GES could build more litter education into the curriculum. Posters should be put up at vantage points to increase the awareness of littering. Guest speakers could be used in schools to raise awareness of students on littering. Dustbins could be decorated and placed at vantage points to attract students to use them.
3. Environmental legislation and policy should be made part of the concepts to be taught in environmental education in schools.
4. There should be community education encouraging people to take responsibility for preventing littering.
5. Community-based litter prevention programmes should be funded by the government.
6. Students should be made aware of the consequences of litter. There should be posters showing the consequences of littering.
7. More sanitary inspectors should patrol to cause the arrest of litterers.
8. Curriculum developers should re-examine the JSS syllabus and add certain topics on the consequences of littering which have not been adequately covered.
9. Litter should be recycled.
10. Government and individual textbook writers should design learning activities and exercises that will encourage students to reflect more

on their attitudes and behaviour, and become more committed to actions for the solution of environmental problems.

11. Dustbins should have lids, and be emptied regularly.
12. Dustbins should have lids, in order to reduce wind blown litter and also to stop birds and other animals from getting onto the litter.
13. Local authorities should encourage individuals to take pride in their area, provide disposal facilities and organize litter collection.

Implications

The conclusions indicate that JSS 3 students are against littering and are aware of the effects of littering. An educational implication from the study is that, education is a vital part in litter prevention. Providing information about the problem and highlighting what individuals can do to help prevent littering could promote change in the attitude of people towards littering. Education should be intensified in this direction to increase the awareness on the effects of littering, since littering is an ongoing problem in Ghana.

Areas for Further Research

1. To generalize the findings of the study, there is the need to extend the sample to cover all JSS students in Ghana.
2. For a related research in the Cape Coast municipality, the use of research tools such as open- ended questionnaires, individual interviews and observations could probe the attitude of JSS 3 students towards littering.
3. For better understanding of the magnitude of the problems of littering in the Cape Coast municipality, the causes of littering, the type and amount

of litter usually found in the environment of Cape Coast municipality
could be probed.

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APPENDICES

APPENDIX A

Attitude of JSS 3 Students towards Littering

Student's Questionnaire.

Dear Student,

A study is being conducted on the topic "attitude of JSS 3 students towards littering in the Cape Coast municipality." This questionnaire forms part of the study. Please answer as you really think and feel. This is not a test; there is no right or wrong answer. Be assured that the information which you will provide will remain confidential. Note that your name is not required.

PART I

PERSONAL DATA

DIRECTIONS: Please tick [] the box corresponding to your choice or write the requested information concerning each statement below.

1. Your sex, Male [] Female []
- 2 Name of your school:.....

PART II

DIRECTIONS: The following are a number of statements that relate to attitude towards littering. Please read the statements carefully and circle the appropriate column, the extent to which you agree or disagree with each statement.

- Circle 'SD' if you Strongly Disagree.
- 'D' if you Disagree.
- 'U' if you are Undecided.
- 'A' if you Agree.
- 'SA' if you Strongly Agree

A. ATTITUDE TOWARDS LITTERING

3. When I see people throwing rubbish like, pieces of paper, orange peels, iced water sachets about, I feel bad.	SD	D	U	A	SA
4. I can throw pieces of paper anywhere because someone else is paid to clean up the surroundings.	SD	D	U	A	SA
5. As an individual, I cannot do much in keeping my surroundings clean.	SD	D	U	A	SA
6. Any student seen dropping pieces of paper anywhere should be punished.	SD	D	U	A	SA
7. People should have the freedom to throw off their household waste in a nearby bush close to their house.	SD	D	U	A	SA
8. Control of littering is considered to be important in the education of students.	SD	D	U	A	SA
9. Litter should be put into dustbins	SD	D	U	A	SA
10. Students should not throw away pieces of paper anyhow.	SD	D	U	A	SA
11. I do not feel bad throwing litter at any place where some refuse or litter exist already.	SD	D	U	A	SA
12. Filtered water sachets and carrier bags can be dumped anyhow.	SD	D	U	A	SA
13. One can put refuse into nearby gutters.	SD	D	U	A	SA

14. Littering is NOT an important environmental concern.	SD	D	U	A	SA
15. Keeping my surroundings clean is very dear to my heart.	SD	D	U	A	SA
16. I litter because I feel lazy to put the rubbish in the dustbin.	SD	D	U	A	SA
17. I drop litter anywhere because I cannot find a dustbin.	SD	D	U	A	SA
18. I drop pieces of paper unconsciously.	SD	D	U	A	SA
19. I drop litter so that other people will think I am a 'guy'.	SD	D	U	A	SA
20. Orange and banana peels are dirty and so I drop them so that I do not have to hold them.	SD	D	U	A	SA
21. Defecating on the landscape is NOT a problem, since the faeces is washed away by rain.	SD	D	U	A	SA
22. I drop litter because I do not care.	SD	D	U	A	SA
23. Obeying school rules on littering does NOT make you free.	SD	D	U	A	SA
24. I drop litter because I think it is fun.	SD	D	U	A	SA
25. I do not litter because I am afraid of being punished.	SD	D	U	A	SA
26. It is wrong to litter.	SD	D	U	A	SA
27. I will prefer to buy a drink in a container that can be thrown away after use.	SD	D	U	A	SA

28. I will prefer to buy a drink in a bottle that can be washed and reused.	SD	D	U	A	SA
29. I will rather buy a drink from a shop in a clean cup brought from home, than in a container that can be thrown away after being used .	SD	D	U	A	SA
30. Students should be educated on the importance of recycling.	SD	D	U	A	SA
31. I will buy food wrapped in a paper bag that can be easily recycled.	SD	D	U	A	SA
32. I will buy food with no wrapping but on a clean plate brought from home.	SD	D	U	A	SA
33. Individuals should use products that can be used again, (like cotton handkerchiefs) instead of tissue paper or paper handkerchiefs.	SD	D	U	A	SA
34. Rubbish should be separated so that some items, like newspapers and bottles could be recycled.	SD	D	U	A	SA

B. EFFECTS OF LITTERING					
RESPONSES					
35. Throwing iced water sachets and banana peels anyhow, leads to the spread of diseases.	SD	D	U	A	SA
36. Throwing away empty tins can collect rainwater, which serves as breeding grounds for mosquitoes?	SD	D	U	A	SA
37. Indiscriminate disposal of solid waste into gutters does NOT cause flooding.	SD	D	U	A	SA
38. Garbage makes the environment attractive.	SD	D	U	A	SA
39. Plastics in the soil decrease soil fertility.	SD	D	U	A	SA
40. Throwing refuse about attracts flies, which transmit diseases.	SD	D	U	A	SA
41. Broken glass, and tins found for example on beaches and parks can cause injury.	SD	D	U	A	SA
42. Waste pollutes water bodies.	SD	D	U	A	SA
43. Birds, domestic animals and fishes can be injured and killed when they eat indigestible litter items like plastic bags.	SD	D	U	A	SA
44. Litter blocks drains.	SD	D	U	A	SA
45. Litter contains poisons.	SD	D	U	A	SA
46. Litter contains germs.	SD	D	U	A	SA
47. Litter causes accident on roads	SD	D	U	A	SA

48. Litter smells bad.	SD	D	U	A	SA
49. Litter spoils the appearance of a place.	SD	D	U	A	SA
50. Litter makes a place look ugly.	SD	D	U	A	SA
51. Improper disposal of polythene bags prevents investors into the country.	SD	D	U	A	SA
52. Litter prevents visitors from visiting the country.	SD	D	U	A	SA

APPENDIX B

DEPARTMENT OF SCIENCE EDUCATION

FACULTY OF EDUCATION

UNIVERSITY OF CAPE COAST

Our Ref: SED/49.1/

8th January, 2004

TO WHOM IT MAY CONCERN

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

RESEARCH VISIT

We are introduction the bearer ANGELINA OCANSEY (MRS), who is a student of this Department embarking on a research, which will require the participation of the staff in your department.

We would be very grateful if you could give her your usual co-operation.

Thank you.

Yours faithfully,

Sgd.

HEAD OF DEPARTMENT