

**AN ASSESSMENT OF ENVIRONMENTAL AWARENESS TOWARDS SUSTAINABLE
DEVELOPMENT AMONG SELECTED GRADE TWELVE PUPILS IN LUSAKA DISTRICT.**

BY

MWEETWA MILIMO DAUTI

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DECLARATION

I, Mweetwa, Milimo. D, do hereby make a declaration that the work contained in this dissertation is my own and that it has not been submitted at this or indeed any other tertiary institution and that this dissertation does also not include published material from other dissertations except where due reference or authors have been acknowledged.

SIGNED

DATE

APPROVAL

The dissertation of MWEETWA MILIMO DAUTI is approved as fulfilling part of the requirement for the award of the degree of Master of Education in Education and Development, by the University of Zambia.

EXAMINERS' SIGNATURES

Signed:

Date:

Signed:

Date:

Signed:

Date:

DEDICATION

This work is dedicated to my children Mweembe and Muumbe. It is also dedicated to my dear mother, Bina Nkunwa Bachembele and the whole Mweetwa clan. I also dedicate this work to my brother, Mweetwa Evans for his material support.

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ABSTRACT

This study was undertaken to assess environmental awareness towards sustainable development among selected grade twelve secondary school pupils in Lusaka District. The study used questionnaires, focus group schedules, and semi-structured interviews to collect data from the field. The main respondents in this study were selected grade twelve secondary school pupils. However, information was also collected from teachers and Headteachers.

The objectives of the study were to evaluate levels of pupils' understanding of environmental sustainable development, determine the availability and viability of environmental awareness programmes as well as to establish the challenges faced by secondary schools in carrying out environmental awareness.

The study revealed that environmental awareness levels towards sustainable development in schools was quite poor. Pupils did not have enough information on environmental related issues, especially towards sustainable development because of lack of environmental programmes in their respective schools. Results from this study also revealed that environmental programmes in schools were largely very few and not viable because of lack of funds, reluctance from both learners and their teachers coupled with the absence of well spelt government interventions. Schools faced numerous challenges in their quest to try to improve environmental awareness and the major challenges revealed in this study were those of lack of transport, environmental materials such as magazines and above all lack of funds in schools to support environmental excursions for pupils.

Based on the findings stated above, the following recommendations have been made. Government should design programmes that would motivate the teaching of environmental issues such as introduction of compulsory environmental education subject. The practical part of pupils' learning, which was discovered to be very low in this study should be encouraged since it would inculcate, develop and raise positive environmental perceptions, values, attitudes and skills in pupil. Environmental issues, the world over, have become bedrock of sustainable development with emphasis on the young ones. There is therefore, unwavering need to design an education system that would support sustainable development to prevent natural resources depletion.

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LIST OF ABBREVIATIONS

AAS	Australian Academy of Science
BYEE	Bayer Young Environmental Envoy
DESD	Decade of Education for Sustainable Development
EASD	Environmental awareness for Sustainable Development
EE	Environmental Education
ECAZ	Environmental Conservation Association of Zambia
EEP	Environmental Education Programme
EEAT	Environmental Education, Awareness and Training
FEE	Foundation for Environmental Education
EMU	Environmental Management Unit
FAO	Food and Agriculture Organisation
WCED	World Commission for Environment and Development
LEED	Leadership in Energy and Environmental Design
NCS	National Conservation Strategy
NEES	National Environmental Education Statement
NEMA	National Environmental Management Agency
NGO	Non- Governmental Organisation
PPP	Public Participatory Programmes
SEE	Sustainability and Environmental Education
SEEDS	School Environmental Education Development Strategies

SESA	Sustainable Education for Schools Alliance
SSD	Schooling for Sustainable Development
UNCED	United Nations Conference on Environment and Development
UNEO	United Nations Environmental Organisation
UNEP	United Nations Environmental Programme
WECSZ	Wildlife and Environmental Conservation Society of Zambia
WESSA	Wildlife Environmental Society of South Africa
WWF	World Wide Fund for Nature
ZEEP	Zambia Environmental Education Project
ZEMA	Zambia Environmental Management Agency
ZAWA	Zambia Wildlife Authority

CHAPTER ONE

Background

Concerns on the state of degradation of the global environment have grown with increasing resonance over the past decade. Global warming, deforestation, desertification, air, water and land pollution are major environmental problems with short and long-term impacts on the very survival of planet Earth and all species, humans inclusive (Nath and Kazashka, 2005). Natural environment continues to be degraded hence the adverse environmental feedbacks experienced in the world. These feedbacks include floods, heat waves, droughts, soil erosion and climate change.

It is important to point out from the outset that the blame lies squarely on human being's quest to develop without consideration of natural capital depletion. Martinez (2002) calls these human beings' negative environmental footprints. It should therefore, be the responsibility of people to formulate environmental mitigation measures to resuscitate the lost environmental viability, reliability and status.

Ideally, human activities on planet earth should be done in a sustainable manner hence the importance of advocacy for Environmental Sustainable Development (ESD). Turner (1988), Welford (1995) and Martinez (2002), state that there is great need to embark on environmental awareness to reduce the damage and depletion of the fragile natural resources. Certainly, although there is need for economic development, to conserve the natural resources, it has to be done in a sustainable way.

The call for a halt to environmental destruction and pillage as well as the need for social, education and economic reforms was strongly acknowledged by both the countries in the Northern and Southern Hemispheres during the Earth Summit in Rio de Janeiro in 1992. This led to the adoption of Agenda 21, the environmental blueprint for the twenty-first century (Nath and Talay 1996). Chapter 36 of Agenda 21, a global plan born out of the Earth Summit also known as the United Nations Conference on Environment and Development (UNCED) state that there was need to have a trilogy advocacy to counter the environmental adverse feedbacks. The advocacy should include reorientation of Environmental Education (EE), boosting public awareness and environmental training (Adams, 2006).

The term 'awareness' is used to denote a level of knowledge through one's perception and can as well be synonymous with cognisance which is the recognition of something felt or sensed (Takala, 1991). Therefore, environmental awareness could be defined as an art of imparting knowledge in people so that they develop new environmental perception. In as far as environmental awareness is concerned, three major steps have to be taken according to Cheremisinoff and Bendavid-val (2001); knowledge of the present environmental status, what should be done and how to nurture environmental knowledge. It is through these that environmental awareness which became more prominent in the 1960s would continue playing a significant role in strengthening people's development of values, attitudes, perceptions and behaviour towards the environment.

Environmental awareness programmes therefore, become indispensable in the quest to formulate mitigation measures to reduce environmental degradation in the whole world (Sewall, 1995). Sustainable development is defined as 'That which meets the present needs without damaging the environment or compromising the ability of the future generations also to meet their own needs' (Bruntland Report, 1997; Dale and Hill, 2001; Giddings et al, 2002 and Oneil et al, 2001). It is not debatable that countries world over should meet the present developmental needs using resources harvested from the natural capital or environment. This however, has to be done in a sustainable manner failure to which future environmental crisis would be created, affecting or compromising the lives of future generations.

Harvey (1995) and Young (2000) indicate that public environmental awareness through educational programmes is very significant and essential and step towards the promotion of sustainable development. Because of the significance of environmental awareness towards achieving the concept of sustainable development, many studies and programmes have been embarked on world over.

According to Kassas (1997), De Calvalho et al (1998), Hongyan (2003) and Lumley and Armstrong (2004), the world has seen unprecedented incidences of studies that have been conducted by different scholars to determine, assess and evaluate the levels of environmental awareness among different groups of people in many countries of the world. This is because the world has realised the need to promote environmental sustainable development through prudent use of available resources. It is therefore, imperative for both the developed and developing

countries in the world to look to the future and plan education with training programmes, so as to address environmental problems and challenges. This is so because the concept of environmental sustainable development involves planning for the present to save the future.

As indicated, environmental literacy holds the key and gives window of hope for repairing the damage done to our earth caused by too little knowledge. Environmental awareness can be achieved through planned learning programmes, which would impart knowledge, skills, values and attitudes in order to develop responsible lifestyles that would be in harmony with the environment (Shobeiri, 2005).

In conclusion, global development should go side by side with establishment of quality environmental education that would include environmental knowledge, attitudes, behavioural patterns, literacy and environmental ethics. Inclusion of these aspects of environmental education would maintain environmental quality which in turn would promote continuous extraction of natural capital. Learners should be engaged in different aspects of environmental education which would increase awareness and help them to become citizens who would be empowered with environmental knowledge. Therefore, there is an urgent need for Environmental Education Programmes (EEP) for learners and well-trained educators in environmental education largely to encourage awareness and promote environmental sustainable development (Prajapat, 1996 and Moyo, 2010). It is for this reason or background that this study was conducted in order to make an assessment of environmental awareness towards sustainable development among selected grade twelve secondary school pupils in Lusaka district of Zambia.

1.2 Statement of the problem

Despite global advocacy on environmental awareness at school and community levels, the environment continues to be polluted and degraded. Waste management still remains a challenge in urban areas and deforestation in rural areas continues being rife. Surface and ground waters as well as soils are contaminated and the air is polluted. In other words, the general environment continues to be degraded and the question that seeks to be answered is what human beings are doing and should do to reduce this trend of environmental degradation and destruction.

According to UNESCO (2013), there is need to embark on sensitisation programmes that would emphasise awareness, knowledge, attitudes, values, skills development as well as participation in

environmental issues at all levels of society, school going children inclusive. The Bemba adage actually puts it right that, ‘ *Imitiikulaempanga*’. This means today’s youths are tomorrow’s leaders hence the need to greatly invest in today’s youth to prepare for tomorrow development.

The present state of the environment in tandem with development indicates that while environmental awareness has been growing in several corners of the world, local commitments to address this quest has not been vigorous. Therefore, there is need for countries, Zambia inclusive, to identify environmental sustainable development agenda as an integral part of both national and international sustainable development so that environmental challenges could effectively and efficiently be addressed. To promote environmental sustainable development, it is important to take vigorous environmental learning to schools.

Secondary schools comprise Zambia’s public and private future workers who would also be custodians of promotion of environmental sustainable development. It therefore, became important to assess environmental understanding of secondary school pupils. It was for this reason that an assessment on environmental awareness towards sustainable development among selected grade twelve secondary school pupils was conducted. Grade twelve secondary school pupils were selected because they were the ones that would soon complete their secondary education, join society and become opinion makers in their respective communities.

1.3 Purpose of the study

The main purpose of this study was to make an assessment of environmental awareness towards sustainable development among selected grade twelve secondary school pupils of Lusaka District.

1.4 Objectives of the study

The following were the objectives that guided this study:

1. To evaluate levels of pupils’ understanding of environmental sustainable development in secondary schools.
2. To determine the availability and viability of environmental awareness programmes in secondary schools.

3. To establish the challenges faced by secondary schools in carrying out environmental awareness.

1.5 Research questions

1. What are the pupil's levels of understanding of environmental sustainable development?
2. Are environmental awareness programmes available and viable in schools?
3. What are challenges faced by schools in carrying out environmental awareness programmes?

1.6 Significance of the study

Environmental awareness for sustainable development should take centre stage in the quest for sustainable development promotion. This study concentrated on grade twelve school going pupils who are the leaders of tomorrow and should be sensitised on the need to protect and conserve nature well before they join society. The study adds value to the already existing literature on environmental issues especially on the aspect of sustainable development.

Research findings and discussion may be used to assess the availability and viability of environmental awareness programmes in schools. Policy makers, curriculum designers and other organisations could therefore, use the recommendations from this study to jerk up their efforts in the advocacy for sustainable use of the fragile natural capital and encouraging people to engage in environmentally friendly activities.

1.7 Theoretical Framework

This study was guided by the Gaia theory on nature. The Gaia theory by Margulis, (1979) postulates that humanity faces two choices; Either to indirectly cause our own extinction by the destruction of our life supporting systems, or to recognise humanity's integral role in Gaian systems and reverse the impacts that humanity has had on the natural environment. A more widespread acceptance of the Gaia theory would improve prospects for the collective health of life on this small, blue planet. Thus, one of the best ways of environmental conservation is by creating environmental awareness among societies especially pupils as they are future leaders, custodians, planners, policy makers, and educators of the environment (Thapa, 1999).

The Gaia theory also alludes to the fact that society has to be made aware of environmental risks and that people should change their perception so that they embrace environmental conservation which in turn would support and promote sustainable development (Margulis, 1979). Environmental awareness from the aspect of Pragmatism therefore, becomes very fundamental and holds the key to imparting the much needed knowledge on sustainable development.

Consequently, within the context of education and environmental awareness, the implementation of the environmental values among pupils can be carried out by giving them the experience through basic activities such as working together. For instance, there are several ideologies and philosophies that have been introduced in conformity with the Gaia theory, such as the programme of “green consumerism” by the consumer association and “green chemistry” that were introduced by the chemists in order to reduce the effect of environmental damage (Richards, 1999). All the other disciplines should largely coin an aspect of environmental awareness towards achieving the goals of sustainable development.

Environmental awareness therefore, becomes an important and integral part especially in communities and in schools because it is in schools where the young ones who are the future leaders are found. Since sustainable development is to a larger extent futuristic, it becomes vital to inculcate environmental pragmatism into the young ones from whom society would benefit in the decades ahead. This study therefore, was guided by Gaia theory especially on the aspect of environmental awareness which gives people more environmental knowledge.

1.8 Delimitation of the study

Creswell (1994), states that delimitations are used to address how studies can be narrowed down in scope. This study therefore, confined itself to assessing environmental awareness among selected grade twelve secondary school pupils in the district of Lusaka. Some of the components such as research findings in this study may therefore, not apply to the whole country because the study was conducted in an urban set up.

1.9 Limitations of the study

The following were the limitations encountered:

Accessing the respondents especially pupils was difficult because of the procedures that were involved where the researcher had to seek permission from school managers. Several visitations in two schools proved futile because the school managers had some other commitments. However, after contacting them through telephone, arrangements were made and eventually the researcher was allowed to meet the respondents even in the absence of the Headteachers.

For focus group discussions, in two of the schools visited, pupils were very difficult to convince to take part stating that they did not have time to do so. However, after telling them that refreshments would be provided during the discussions, the number of those interested was overwhelming.

Teachers were also reluctant to answer questions with such clumsy excuses that they were busy. After long persuasion, lucidly elucidating the importance of the study, the targeted thirty two teachers, eight from each school, accepted to be interviewed.

Headteachers to be interviewed were also hard to access because they were busy with examination preparations since data collection was done during the examination period. In two schools, the researcher however, interviewed Deputy Headteachers who were very welcoming and cooperated well during interviews. It is important to state that this did not apply to all the schools. In the other two schools, the Headteachers were readily available after making appointments. Indeed, despite all the stated limitations, the researcher managed to get all the information.

Summary

Chapter one dealt with background, problem statement, purpose, objectives, research questions, significance and theoretical framework. Each of these was adequately presented as a single entity. Chapter two which follows would review literature in relation to environmental awareness giving special attention to school based environmental programmes.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The previous chapter looked at the background, problem statement, the purpose, objectives, research questions, rationale and limitations of the study. This chapter deals with literature review. According to Berdie and Anderson (1994) literature review is defined as a crucial summary and an assessment of the current state of knowledge or state of the art in a particular field. Cowell (1999: 34) also defines literature review as, “summarised published information on a particular subject matter at a given period of time”. The layout of the literature review in this study starts with the global perspective of environmental awareness in schools, continental (African) perspective and finally the national (Zambian) perspective.

2.2 History of environmental awareness

According to Otiende et al (1997), environmental awareness started back in the 1960s and largely resulted from the major world conferences. These world conferences such as the ones that were held in Stockholm in 1972, in Belgrade in 1975 and Tbilisi in 1977, created a totally new awareness about the environment in the world today. The principal Intergovernmental conference on environmental education meant to create awareness was sponsored by UNESCO-UNEP and held in Tbilisi in 1977 (UNESCO, 2013). One of the recommendations of the Tbilisi conference was the promotion and development of curricula and the training of teachers by member states and inter-governmental organizations, (Fien, 1993 and Kelly, 1984). This was meant to arm teachers with the needed knowledge about the environment which would later be taught or disseminated to pupils. The young should appreciate the environment and be part of using the resources in a sustainable way so that even the future generations would be able to use the same type of resources to improve their living standards.

Many world conventions and gatherings have been recommending the great need and urgency of environmental education to promote awareness among the communities of the world. The Moscow Congress of 1972, WCED which dubbed ‘Our Common Future’, Brundtland report of 1987, Earth Summit which produced Agenda 21 of 1992 and Tbilisi Conference have all

recommended that there was need for environmental global awareness, largely starting with the school going children (Turner, 1988 and Young, 2000).

Marthar (2006) alludes to the fact that Environmental Education for Awareness Programmes (EEAPs) are very important in this era which has started experiencing unfolding environmental feedbacks such as unpredictable regional and global climatic changes. It is for this reason therefore, that relentless programmes to educate the world population on environmental issues should be done without hesitation. Tilbury (2005) states that environmental effects to a larger extent, have no boundaries hence the need for all the regions, countries and communities in the world to be involved in the promotion of protecting our fragile planet earth from shrinking to levels that will dwindle its capabilities of providing the ever much needed natural resources. Indeed, environmental awareness which will give rise to pro-activeness not reactiveness is the key.

2.3 Global environmental awareness

There is no other strategy that would to a larger extent reduce the damages that have been done to the natural environment apart from embarking on mass environmental awareness programmes throughout the world. (Tilbury, 2005), observes that from global formulation of treaties, it should trickle down to the personal level. Environmental programmes in schools have been active in many countries of the world. The whole idea is to educate the young ones on developing values that would make them appreciate the environment they live in. Hwang-Kim&Jeng (2002), Tilbury (2005) and Marthar (2006) all state that schools in the world should be used to engineer and kick start the gear of programmes that promote Environmental Sustainable Development (ESD).

2.3.1 Environmental awareness in the Malaysian schools

Malaysia in the East Indies realised the need for public awareness on environmental protection and conservation after recognising that the country was losing its natural resources such as the forest reserves faster than expected. Programmes meant to teach environmental issues especially to the school going pupils were identified as the best tool to counter the environmental problems in future. According to Hassan (2009) the government included the learning of environmental issues in the curriculum so that the young ones could be armed with environmental knowledge

before they were fully integrated in their communities. Environmental lessons in some parts of the country became compulsory for all the pupils to learn. This was done so that pupils could be empowered with environmental knowledge.

2.3.2 Environmental awareness in the Japanese schools

Barton (2009) says that in Japan, environmental awareness programmes in schools had been given a lot of attention and all schools were affiliated to the national green school programme. School going children were taught environmental issues so as to build a sense of environmental sustainability and responsibility in the young ones who would eventually promote and appreciate the natural beauty of the environment. Japan actually, has been experiencing environmental problems such as pollution, hence the need for environmental awareness. The country encourages green schooling where pupils are inculcated with skills and attitudes to appreciate nature and natural capital.

2.3.3 Environmental awareness in India

For thousands of years people in India had been cutting branches from trees and bushes to provide fuel for cooking their food (Gupta, 2001). Many forests have disappeared in recent years because people have cut so many trees and bushes for production of wood-fuel for domestic use. According to Gupta (2001), the government of India embarked on programmes of environmental awareness in schools to teach the young ones the need to preserve natural capital especially the forest reserves. Students are encouraged to practice re-forestation to replace the cleared trees and promote the green earth clubs in schools. According to Pillai (2012) pupils were not only taught greening of their environment but also cleaning their surroundings to reduce incidences of waste related disease which had been endemic in the densely populated settlements in the country.

2.3.4 Environmental awareness in China

Stimpson & Yau (2003) state that the government of China formulated a well calculated programme to encourage people to look after trees, animals and other important natural resources. Chi-Kin Lee (2008) also observed that to promote environmental awareness in the education system in China, Schooling for Sustainable Development (SSD) in the communities

and schools had been a core response, all meant to promote environmental protection that had been declining.

Cheremisnoff&Bendavid- val (2001), Dale & Hill (2001) and Hwang-Kim&Jeng (2002) put China as one of the countries in the Asian Bloc that had vigorously embarked on school development through what was dubbed School Environmental Education Development Strategies (SEEDS). SEEDS, in the world are meant to inculcate a sense of responsibility in the young ones who are the future generations to learn to look after the fragile environment. It is in this vein that China has included, in the curricular, environmental education to increase environmental awareness in the young ones a move which should be emulated by all the countries in the world.

2.3.5 Environmental awareness in the Amazon

In the Amazon, which is the world's major forest and carbon purifier, unprecedented disappearance of the forest reserves has made the countries in the equatorial corridor to raise environmental alarm and embark on mass sensitisation programmes in the communities and the schools. Palmer (1998) stated that there had been a campaign dubbed ' Save the Forest of the Amazon' which promoted the use of natural capital in a sustainable manner by both the indigenous people whose lives were holistically anchored on the Amazon biosphere and the commercial loggers who were just bent towards maximisation of profits. Local children were encouraged to attend school where they were taught new methods of earning a living and sound extraction of natural capital.

Tilbury (2005) also observed that the Amazon Equatorial region had attracted international organisations such as United Nations Environmental Organisation (UNEO) in trying to protect the major world forest carbon purifier through excessive harvesting of the natural resources especially the valuable tree species for example, the Mahogany, ebony and greenheart. The marine resources such as fish in this region are also dwindling at an alarming rate because of unsustainable continuous extraction. The interventions by the UNEO and many other groupings have had positive results since the children who never used to attend school in preference to either lumbering, hunting or fishing have now started attending school where they are taught environmental issues. This increased awareness, which in turn made both pupils and the

communities as a whole, to appreciate the need for them to protect their environment for tomorrow's use thereby promoting sustainable development (Tilbury, 2005)

2.3.6 Environmental awareness in the United States of America

The United States of America also emphasises the need to educate the young ones on environmental issues so as to increase their understanding and appreciation of their environment. Young ones are therefore, taught how to look after their environment through their communities but the conventional, formal education system gives them more knowledge and scientific awareness which is used in their communities. Environmental awareness and activities in the United States are taken very seriously. According to Fraenkel&Wallen (1996), environmental education and awareness in the USA starts from the early stages in education and rises up to tertiary level where implementation of what has been learnt all along becomes predominant as the graduates become adults in their respective communities.

The United States have introduced the county action logo in schools and communities dubbed 'leading by example'. This is done through Public Participatory Programmes (PPP) where people are encouraged to cut down on energy use, using more renewable energy (wind and solar energy projects), enhancing green building policy as well as emphasising recycling (Fraenkel&Wallen, 1996). This of course had been done through massive indoor and outdoor class activities for the young ones in schools and through well-established county organisations. Environmental awareness in USA is well articulated both in the communities as well as in the schools.

2.3.7 Environmental awareness in Australian schools

According to Marthar (2006) Environmental Education (EE), to increase awareness, had been part of Australian schooling for more than forty years. It is an evolving idea in which Australians have influenced, and continued to be influenced by, national and international developments in relation to the environment and education systems. Australia's first environmental education conference was convened by the Australian Academy of Science (AAS) in April 1970, with the title 'Education and the Environmental Crisis'. The outcome of this conference was to arm the education sector with the much needed environmental education which would train the students to foster clear awareness of, and concern about, economic, social, political and ecological interdependence both in urban, peri-urban and rural schools.

Tilbury (2005) observed that Australian environmental awareness provided every pupil with opportunities to acquire knowledge, values, attitudes, commitment and skills needed to protect and improve the environment. Tilbury (2005) also stated that National Environmental Education Statement (NEES) for Australian Schools provided a nationally agreed description of the nature and purpose of environmental education for sustainability through all years of schooling, which included a vision and a framework for its implementation. It was intended for teachers, schools and their communities, education systems and developers of curriculum materials. It is therefore, correct to state that environmental awareness in schools of Australia is taken seriously.

2.3.8 Environmental Awareness in United Kingdom schools

Environment Education, Awareness and Training (EEAT) is a central scheme in the United Kingdom which is designed to carry out campaign using the formal education system to educate, make aware and train the young ones to protect their environment and promote sustainable development (O’Neil et al, 2003). Other environmental education strategies such as SEEDS which encourage sustainable curriculum were initiatives to create environmental consciousness in pupils and also to helped schools develop their local school curriculum.

Greening schools is actively encouraged and all school going children are taught issues to do with environmental sustainability. Environmental education meant to raise awareness vigorously became prominent when it was included in the education reforms of 1988 in the United Kingdom especially in England (O’Neil et al, 2003). It became imperative to include environmental issues in the national curriculum for both primary and secondary education systems so that the learners could be empowered with the knowledge, skills, attitudes, motivations, commitment to work individually and collectively towards environmental solutions of the current challenges and prevention of the new ones.

Marvin (2011) states that in England, Sustainable Environment Schools Alliance (SESA) was launched in March 2011, with support from government and by a working party of the National Children’s Bureau (NCB) and Think Global. The alliance’s goal was to continue to drive change in the education system so that all schools put sustainability at the heart of their curriculum, their campus and their community. The other active organisation is Sustainability and Environmental Education (SEE) which is a registered charity that identifies, promotes, enables and supports

environmental education and education for sustainable development the schools of the UK. According to Marvin (2011), this was also backed by the sentiment from Schools Minister during the launch of Sustainable Schools Alliance in 2011, Lord Hill who said:

Sustainability issues are an increasingly important part of our everyday life. That's why I welcome the new Sustainable Environment Schools Alliance, which will help make these issues an increasingly important part of school life. There are already some great schools working to get their local community involved in doing simple things like growing their own vegetables and better energy management. We want to encourage more of this and I hope this Alliance will be the driving force behind that.

In urban schools, pupils are taught recycling and reusing such waste as biodegradables as well as the non-biodegradables. Pupils make composite fertilizers using biodegradables waste which they use to fertilise their fields and other vegetation within the school environment. All this is meant to reduce on the waste which also had been a major cause of worry especially in the fast growing cities of the world. Students are taught on the need to keep their local environment not only clean but also green by planting ornamental trees to beautify the environment. One example is that of North University where environmental awareness programmes are compulsory and every week an hour is set aside where students are involved in greening and cleaning the campus environment (Barbier, 2010).

2.4.0 African perspective

UNESCO-UNEP (1987) agreed that environmental education, to improve awareness, especially in schools should simultaneously attempt to create in-depth comprehension of both the local and outside environment for appreciation and protection of both fauna and flora in the quest of promoting sustainable development. This should be done through transmission of information, imparting environmental knowledge, developing habits and skills, promoting values, providing criteria and standards as well as presenting guidelines for problem-solving and decision-making.

In pupils, environmental awareness through both formal and informal education becomes important. Therefore, environmental awareness does aim at both cognitive and affective behaviour modification on the part of pupils. The latter necessitates both classroom and field activities and the former comprehension of environmental issues. This is an action-oriented, project-centred and participatory process leading to self-confidence, positive attitudes and

personal commitment for environmental protection. At the core of all tasks undertaken by sustainable development, is the need to raise awareness of environmental issues.

2.4.1 Eco Schools in Africa

Eco School programmes are international initiatives designed to encourage the whole-school action for the environment. Marvin (2011) states that Eco schools are recognised award schemes that accredit schools which make commitment to continuously improve their environmental performance. It is also a learning resource that raises awareness of environmental and sustainable development issues throughout activities linked to curricular subject areas. The aim of the Eco Schools (ES) programme is to make environmental awareness and action an intrinsic part of the life and ethos of the school for both pupils and for staff which eventually spreads to engage the wider community.

According to UNEP News print (2012) there were currently about forty one countries throughout Europe and Africa involved in Eco Schools and there was also much interest beyond .United Nations Environment Programme (UNEP) was also very supportive of the programme and is an institutional partner of FEE. To that effect, environmental awareness in the continent of Africa has also been well pronounced in certain countries.

2.4.2 Zimbabwe environmental awareness

According to Turnham (2002) Zimbabwean school system underscored the salience of environmental awareness crisis by making environmental education towards a holistic environmental awareness worthwhile. This is done through the introduction of environmental science school knowledge geared towards providing equitable and sustainable environmental management choices in the pupils and students. However, in secondary school, environmental education was not offered as a distinct discipline, but is subsumed in science subjects.

The successful use of an interdisciplinary approach, presupposes flexibility and readiness to include appropriate aspects of environmental education within existing curricula. Environmental issues had been formulated in the new curricula that require teachers and learners to place themselves in situations that were really related to environmental problems both in schools and

communities they belonged. The promotion of the much needed eco schools in Zimbabwe was to some extent emphasised so that pupils developed values of environmental passion from school.

Research carried by Moyo (2010) revealed that in Zimbabwe, the education system lacked appreciation of the importance of environmental education. This was largely because of shortage of adequately trained educators, insufficient educational materials, lack of financial assistance for teacher's and learners to use, inadequate opportunities for field studies, no continuum from primary to secondary school in subjects where elements of environmental education were taught. For example Geography, Biology and Science were not compulsory subjects at secondary school thereby delinking some of the pupils at secondary level to continue acquiring more knowledge in environmental issues.

2.4.3 The Nigerian schools

Since inception, environmental education has remained a major strategic approach of the Nigerian Conservation Foundation (NCF). With the main objective of promoting environmental education and awareness amongst all strata of the Nigerian society, NCF embraced three major thematic interventions to achieve the main objectives of environmental education. According to Babaola (2009) the thematic environmental intervention included a Nationwide Schools Conservation Programme and Promotion of environmental learning through publications, education materials and environmentally related events and campaigns.

School Programmes that involve conservation clubs, continued to be an effective tool in the promotion of environmental education in Nigeria. Through this nationwide network of conservation clubs in schools, NCF created awareness on the environment and continued to sensitise young minds about humans' relationship and responsibility to the environment.

2.4.4 Environmental awareness in South Africa

With climate change now widely recognised as the major environmental problem facing the world, South African government is taking awareness to schools with plans to incorporate more environmental studies into the school curricula. There are many programmes to promote environmental awareness, such as the Eco-Schools Programme that is managed by the Wildlife and Environmental Society of South Africa (WESSA). Through these programmes, students are

taught, butterfly garden, bird garden, planting indigenous trees, reducing energy consumption, reducing paper use, waste recycling and reusing (Gruen and Jamieson, 1994).

South Africa is one country where eco school programmes are quite prevalent and vigorous. The programme is about improving environmental management at school, as well as learning, and interaction with the broader community. Eco-Schools in South Africa have specific criteria which schools need to meet within at least, five years. Progress in the areas of curriculum, action and community is reviewed annually and successful schools are awarded a flag or certificate to mark their school's eco-school status in the five-year award system.

The curriculum component raises awareness of, and supports, action in environmental and sustainable developmental issues through lesson plans and activities linked to environmental curriculum learning areas. The action component encourages learners to take an active role in running their school for the benefit of the environment. It teaches the learners to take responsibility for issues that relate to their immediate surroundings. The community component extends learning beyond the classroom and develops responsible attitudes and commitment both at home and in the wider community.

Turnham (2010) stated that South African young people were encouraged to take part in the Bayer Young Environmental Envoy Programme (BYEE). The BYEE is a global project formed in partnership with the United Nations Environment Programme (UNEP) to encourage the youth to be more environmentally aware in their communities. The programme creates an opportunity for aspiring young environmentalists to share ideas and exchange experiences with their counterparts from nineteen countries during the BYEE programme (Turnham, 2002).

The study carried by Moleko (2010) on the change of curriculum in South Africa to spell out Life-long skills such as environmental awareness showed that the country has correctly adhered to many world conventions to increase environmental awareness in schools. Indeed, to this day South African schools have joined hands in promoting environmental education in schools with an idea to educate the young ones on the importance of the looking after the fragile environment. Pupils are equipped with environmental knowledge before they graduate into their communities.

2.4.5 East African Environmental Awareness in Schools

Some schools in East African countries have been transformed into model green schools following the pilot project aimed at teaching environmental management to schools. This followed the joint venture between Panasonic Marketing Middle East and Africa and the World Wild Fund for nature (WWF) under Lake Victoria Catchment Environment Education Programme (Otiende et al, 1997).

Kisawe (2009) stated that under these programmes, three schools, one from Tanzania, Uganda and Kenya in particular developed into green model schools, where students were encouraged to develop green ideas, be environmentally responsible and take action to protect their local school environment. These programmes, which were initiated by Panasonic's joint project, with WWF, were designed to empower and help catchment communities, schools and regional partners to develop the knowledge to better sustain and manage natural resources (Otiende et al, 1997)

According to Brennan (2009) Kenya seized the opportunity to use the UNESCO-UNEP Decade of Education for Sustainable (DESD) to set the pace towards improved delivery of ESD. The National Environmental Management Authority (NEMA) recognised the need to develop a national framework to promote Environmental Sustainable Development (ESD) Strategy for Kenya in the country's education system. The strategy focused on key domains of ESD namely basic education, reorienting existing education programmes, developing public awareness and understanding of sustainability as well as training in achieving sustainable development.

However, an assessment of the progress made by Kenya in implementing Agenda 21 objectives and principles of Education for Sustainable Development (ESD) revealed that environmental education in Kenya was not adequately addressed according to Kisawe (2009). This had been partly due to lack of a comprehensive curriculum change backed by a national policy statement as the case with the South African situation, which successfully kick started the Eco schooling programmes.

The school outreach programme in Africa had been a way of promoting environmental education in schools. Environmental awareness programmes, which also promote environmental sustainable development, have been prevalent in quite a number of countries. According to Adams (2006) the countries that benefit from the Nile agreed to teach communities through

schools on the importance of the Nile biodiversity and the need to preserve the viability of the mighty river. In Uganda, Sudan and Egypt, awareness programmes to promote sustainable development were embedded in the school curriculum to teach the pupils on the importance of the environment and Nigeria has also done the same in their schools (Adams 2006).

2.5. Zambian perspective

According to GRZ (1997), Aongola (1997) and United Nations (2002) environmental Awareness in Zambia was strengthened by the increase in the number and quality of environmental education and awareness campaigns as well as activities including environmental articles in the print media, environmental programmes aired on radio and television. Kantashula (2005) also stated that it was widely recognised that effective environmental education increased public awareness and knowledge of the relevant issues thereby leading to a better understanding of how individual and collective actions affected the environment. This created a personal responsibility for the preservation and restoration of the environment in the quest of promoting sustainable development.

Zambia, like many other countries in Africa and the world as a whole has too, been trying hard to take environment awareness to school level. GRZ (2006) and Kantashula (2005) observed that to increase environmental awareness in the education system programmes at primary, secondary and tertiary levels had been formulated to make the youth become aware of the need to promote sustainable development. The inclusion of environmental education in training courses for students at tertiary level such as at the University of Zambia is good evidence of increased environmental awareness among the public in Zambia.

Chipungu (1997) states that Zambia has also been adversely affected by climate change and that the country has been experiencing droughts, especially in the southern part of the country where unsound methods of farming have been more pronounced. In certain areas, flash floods have been experienced. In urban areas such as Lusaka, urban flooding has been causing havoc during the rainy season bringing waterborne perennial diseases such as cholera especially in the densely settled unplanned urban settlements. Environmental education which is meant to increase awareness therefore, becomes inevitable.

Some Non-Governmental Organisations (NGOs) and the private sector organisations have also increased their involvement in conservation and prudent use of natural resources. Examples of private sector involvement are more noticeable in the tourism sector where government has contracted the management of some National Parks and Game Management Areas. Some private companies have opened up game ranches, crocodile farms, aviaries and botanical gardens all meant to promote and conserve certain wild animals (GRZ, 2006).

NGOs that were vigorous in conservation of biological diversity include the Zambia Environmental Education Project (ZEEP), and Wildlife and Environmental Conservation Society of Zambia (WECSZ) whose mission statement is ‘to spearhead environmental awareness at all levels of the community, promote the wise use of natural resources and to become the most effective independent environmental action group in Zambia’ (GRZ 2006). Others were Environmental Conservation Association of Zambia (ECAZ), the Ornithological Society of Zambia (OSZ), and many other professional associations spread throughout the country. However, some of these are still functional to date whilst others are no longer operational.

According to Aongola (1997) public institutions involved in promoting public awareness on conservation include Ministry of Lands and Natural Resources, Ministry of Arts and Tourism, Environmental Council of Zambia (ECZ) which is now known as Zambia Environmental Management Agency (ZEMA), Species Protection Commission (SPC), and sector Ministries Departments. The sector ministry Departments includes Zambia Wildlife Authority (ZAWA) and Forestry Department. All these have numerous activities that include formal environmental education in schools, workshops, and communication through electronic and print media.

Bwalya (2002) and GRZ (2006) however, contend that despite all these achievements in public awareness, there still is a big challenge in terms of changing people’s attitudes by equipping them with knowledge of the environment and ensuring their participation in solving environmental problems. In practice, these are the issues which the government of Zambia, Ministry of Education and Ministry of Tourism, Environment and Natural Resources should consider in their policy planning for climate change adaptation and education in trying to increase awareness especially among the young ones in schools.

The objectives of the Zambia National Adaption Programme on action and climate change response strategy would not be successfully implemented without mainstreaming responsive, relevant, quality and sustainable education for adaptation learning to bring about behavioral and social change for the environment. Marthar (2006) argues that environmental response is a function of people's environmental behaviour.

Scrutinising the quality and relevance of education to shape that behavior and social change is very crucial in meeting goal number seven of the Zambia National Policy Document on Education 'Educating Our Future', which aims at learning for the protection of ecosystems and biodiversity in near and distant places (especially in the face of climate change) (GRZ 2007). Irrespective of a variety of fields of education and issues that have been discussed, one cardinal point coming out clearly is that there is great need to increase environmental awareness in the global concept of sustainable development.

To increase environmental awareness in schools in the dearth of information on environmental issues should be well pronounced in schools and amongst the general public. There is need to look to the future and formulate environmental courses and programmes in schools just like what Environmental Management Unit (EMU) used to do. According to GRZ (2007) the EMU used to provide environmental programmes to schools on a roster basis. The unit mounted self-contained vehicles with a power generator, film or video projector, screen and cameras as well as distribute pamphlets and other materials to school children and teachers. The EMU's main objective was to screen environmental information to help educate both children and their parents from schools on the need to protect their environment. Programmes of this nature should be sustainable because they are very important.

FAO (2007) stated that schools in Zambia should be encouraged to have some micro-projects that may be undertaken in school gardens which may have heritage orchards, vegetable production, tree nurseries, and conservation agriculture trials for the learners. According to the FAO report of 2007, urban schools in Zambia were not making efforts in outdoor activities such as the ones stated above. The recommendations were that the pupils in urban areas should learn environmental based issues and practice them even using limited pieces of spaces in schools.

Mweemba and Moonga (2011) allude to the fact that Zambia is already dealing with the early impacts of climate change and the country has become proactive with a paradigm shift from just talking to being practical. In urban areas, waste management which remains to be a big environmental problem has received attention from respective municipal councils which have formed a unit called Waste Management Unit (WAMU) to deal with heaps of accumulating waste.

Aongola (1997) says that government has formed Environmental Council of Zambia (ECZ), which has been transformed into Zambia Environment Management Agency (ZEMA) to regulate industrial discharge and carry out Environmental Impact Assessments (EIA) to advise government on whether to go ahead with certain projects or not. All these efforts are to increase environmental awareness of course not only in schools but the communities as well.

At primary level, pupils learn environmental issues in science and social studies and at secondary level in Zambia, environmental issues are learnt in Geography and Biology as well as Agricultural Science. At tertiary level, the highest institution of learning, University of Zambia, Great East Campus offers environmental courses in the School of Natural Sciences, Department of Geography and the School of Education has designed a special programme that concentrates on Environmental Education increasing environmental awareness programmes in the country. All these programmes are meant to make it possible to disseminate environmental knowledge to the people of Zambia so that they begin to appreciate environmental sustainability.

As already indicated, there is need to clearly promote environmental awareness in schools through deliberate government policy such as formulating topics in all the subjects that deal with environmental issues. This is being advanced in the whole world and more governments are advocating for curriculum tilted towards acquiring learning and teaching materials on many concepts of sustainable development (Sauvé 2002). The world has to develop, but this has to be done in a sustainable manner so that the next generations should also benefit from the natural capital to meet their needs (Dryzek, 2010).

Summary

The chapter discussed in detail literature on environmental awareness in schools of different countries in the world. Globally, many countries have strived in their quest to respond to world

environmental gatherings that have been advocating for comprehensive environmental education that would raise awareness. Some countries in Africa also have been advancing programmes and project in schools to promote sustainable development. The next chapter would deal with methodology of the study.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

The previous chapter reviewed literature on environmental awareness. The purpose of this chapter is to show how the study was conducted and to describe various methods that were used during the research. The chapter discusses methods and research designs used. It also looks at the sampling frame, sample size and sampling methods that were used. Further, the chapter also dealt with data collection instruments and methods of administering data collection instruments as well as analysing techniques.

3.2 Research design

The study employed both qualitative and quantitative strategies. Qualitative approach allowed the researcher to get in-depth information from respondents using one to one interviews and focus group discussions. Quantitative methods of data collection also made the researcher get data which was presented using frequencies and pie charts.

3.3 Target population

The main target population of the study was secondary school pupils. It was from this population that one hundred grade twelve secondary school pupils were selected from four schools that were picked. However, teachers were also targeted from which thirty two were interviewed and four school managers.

3.4 Research Sample size

The sample size for this study was one hundred grade twelve pupils selected as respondents for structured interviews and eight from each school for focus group discussion. Thirty two teachers and four school managers from the same selected schools were interviewed. Furthermore, one officer from Wildlife Conservation and Environmental Society of Zambia was also interviewed.

3.5 Sampling Procedures

In this study, random sampling of secondary schools in Lusaka district was conducted. Firstly, names of the schools were written and then put in an envelope to pick four schools. Each school in this context had the same chance of being selected.

Twenty five grade twelve pupils from each school were selected as respondents making a total of one hundred since the study was conducted in four schools. Systematic sampling was used with the help of grade twelve final examination register. This was done by dividing the number of respondents needed with the total number of grade twelve entrants to determine the starting point or number. For example one school had 511 registered grades twelve. Therefore, $511 / 25$, equals 20. Therefore, every 20th pupil on the register was picked as respondent for structured interview. Kothari (2004) state that systematic sampling is suitable for a large population and the respondents selected are spread more evenly. This explains therefore, why the researcher used systematic sampling to select twenty five grade twelve pupils from each school.

For focus group discussion, purposive sampling was used where the researcher purposively selected prefects and members of environmental, Geography or wildlife clubs. This procedure was picked so that in-depth information could be derived from the discussants.

To select teacher respondents, convenient sampling was used. This was to make sure that nearly all the departments were catered for. Headteachers of selected schools were automatically selected to be interviewed.

3.6.0 Research instruments

The research instruments that were used to collect data from the field were semi-structured interview guides, questionnaires, focus group schedule and observation schedule. How each one was used is elucidated below.

3.6.1. Semi-structured interview guide

This technique helped the researcher to conduct one to one interviews that required detailed responses. The guide also helped the researcher to relate with respondents which helped to make the respondents give valid and detailed raw data. Semi-structured interviews were conducted with teachers, Headteachers and an officer from WECSZ to get in-depth data on what was being done in schools to promote environmental awareness.

3.6.2 Questionnaires

Questionnaires were administered to pupil respondents. Open ended and closed questions were asked so as to get information for both qualitative and quantitative data respectively. One hundred pupils were administered these questionnaires.

3.6.3 Focus Group Guide

Hart (1998) states that a focus group is formed of eight to twelve persons who may be selected keeping in view the targeted issue or the topic under study. Questions were asked in an interactive-group-setting where members were free to discuss. Eight pupils (discussants) were selected purposively for the discussions from each school making a total of thirty two.

3.6.4 Observation schedule

This data collection technique was used as the researcher went round the selected schools to observe how the surroundings were so as to determine the direct environmental activities that pupils were involved in at the school level. Observation was conducted after interviews from the teaching staff to assess whether what was stated by the teachers as well as the Headteachers was true.

3.6.5 Document analysis schedule

This involved reading the existing literature. Books, magazines, journals and many other written materials were used to help in the interpretation and discussion of data. Documents that were analysed included those with data on general environmental awareness in communities and schools not only in Zambia but the whole world.

3.7 Data analysis

Raw data collected from the field was analysed in different ways based on the type of data. Quantitative data was analysed using excel for diagrammatic presentation of the findings. Tables and charts were used to present quantifiable data collected. Qualitative data was however, analysed and presented in prose since it was largely descriptive in nature. Verbatim was also used for qualitative data collected using the semi-structured interviews and focus group extracts.

3.8 Ethical considerations

During the study, the researcher observed ethical considerations by respecting the rights and views of participants. The researcher also sought written consent from The University of Zambia in order to conduct this study. Permission to conduct research and interview pupils as well as teachers was sought from the District Education Board Secretary (DEBS) and also from administration of respective selected schools. Respondents' names and schools were not revealed which was an indication of high confidentiality. They remained anonymous since the information they provided was strictly for academic purposes.

3.9 Validity and reliability of the instruments

Validity refers to the degree to which the study conclusions based on the findings were empirically comprehensive (Hart 1998). A pilot survey to test the instruments especially the questionnaires and semi-structured schedules was conducted to test the validity and reliability of the instruments.

Summary

The chapter dealt with research design, target population, sample size, sampling procedures, research instruments, data analysis, ethical considerations as well as validity and reliability of the instruments in the study. It was in this chapter where the instruments for collecting data were discussed and how respondents were selected from the target population. The chapter that follows presents the research findings.

CHAPTER FOUR

RESEARCH FINDINGS

4.1 Introduction

The previous chapter looked at the methodology of the study. This chapter deals with the presentation of research findings from the field on environmental awareness in schools towards sustainable development. Mardson (2009) states that the best way of presenting results collected from the field is by way of reflecting on the objectives that were formulated. In this study therefore, the researcher presented data using the objectives as well as the corresponding research questions. Diagrams such as pie charts and tables were used to present data especially quantifiable data. Qualitative data however, was presented in prose and verbatim.

4.2 Respondents' by gender and residential areas

The gender and residential areas of the respondents are shown in table 1.

Table 1: Gender and residences of the respondents

	Residences of respondents			
Gender	High Density	Medium Density	Low Density	Total
Females	17	14	09	40
Males	33	13	14	60
Total	50	27	23	100

Source: Field data (2012)

From Table 1 above, out of one 100 pupils interviewed through questionnaires, 40% were females and the remaining 60% were males. Pupils were also asked to indicate where they lived and their residences were segmented into three which were high, medium and low density areas as indicated in Table 1.

4.3 Pupils' understanding of environment

In focus group discussion, pupils were asked to explain what they understood about the environment and they explained clearly that the environment constituted everything found in

nature. They gave such examples as vegetation and wild animals. One discussant in focus group discussion said, “*Environment constitutes everything found in nature that includes vegetation such as trees and wild animals*”.

Pupils were also asked in focus group discussion what they understood about the connection between environmental awareness and the concept of sustainable development. Their responses on this one was lukewarm with some of the discussants showing no clear cut comprehension of how the two were connected. However one pupil said:

Environmental awareness leads to development of certain environmental values and appreciation making citizens not only be aware but use natural resources sparingly so that others can also access the same resources. This is what it implies to promote sustainable development through such activities as environmental awareness.

Table 2: Pupils’ ratings ontheir understanding of the environment

Choices of rating	Respondents	Percentage (%)
Very good	75	75
Good	12	12
Poor	8	8
Very poor	5	5
Total	100	100

Source: Field Data (2012)

Respondents in the questionnaire were asked to rate their understanding of the termenvironment. Out of 100 pupil respondents, 75% stated that their understanding of the environment was very good with 12% stating that they had good understanding of the environment. However, 8% said their understanding was poor with 5% stating that they had very poor understanding of environment as indicated in Table 2.

4.4 Respondents' understanding of sustainable development

During focus group discussion, pupils were asked to define sustainable development. One discussant stated that sustainable development dealt with using resources in a sustainable manner so that they do not get finished. However, other pupils could not define what the phrase meant and stated that it was a new phrase to them.

Table 3: Pupils' ratings on their understanding of environmental sustainable development.

Responses	Respondents	Cumulative responses	Percentage	Cumulative percentage
Very poor	60	60	60	60
Poor	22	82	22	82
Very Good	16	98	16	98
Good	02	100	02	100

Source: Field Data (2012)

In the questionnaires, pupils were asked to rate their understanding of environmental sustainable development. Those that said that their understanding of environmental sustainable development was very poor were 60 with 22 saying their understanding was poor. However, 16 said they had very good understanding of environmental sustainable development with only two saying that they had good understanding as seen from Table 3.

4.5 Appreciation of nature by the respondents.

A psychological question was asked to the discussants in focus group discussion on whether they would kill a snake if they saw it and the following was what one discussant said:

A snake is a very dangerous animal and if I saw one I would not hesitate to kill it at first sight. My grandfather was bitten by a dangerous snake called green mamba. He died before reaching home from the bush where he had gone to fetch firewood. I grew up hating snakes and I look forward to their extinction so that the bush becomes safer for the rural population.

However, others contended that they would not kill a snake unless it became a danger to people around. One discussant also stated that if people killed all dangerous animals including snakes, the ecosystem would be affected. The discussant also stated that if people continued killing

dangerous reptiles and other animals such as elephants, tourism would be affected. Another respondent stated that all the animals were a creation of God and there was need to protect them. She contended that all the perceived dangerous animals should be protected and only be cropped if they became serious dangers to human beings. She also stated that in their sessions in Wildlife Club they normally discussed the need to conserve wildlife which included animals.

4.6 Respondents environmental participation and influence on others

Pupils were asked to rate their influence on their colleagues and participation in environmental issues both at school and their communities. The levels of ratings of respondents' environmental influence and participation were tabulated as very poor, poor, very good and good as indicated in table 4.

Table 4: Pupils' environmental influence on colleagues, their participation in schools and communities

Responses	Very Poor	Poor	Very Good	Good	Total
Influence on others	13%	34%	43%	10%	100%
School Participation	09%	25%	45%	21%	100%
Community Participation	35%	27%	22%	16%	100%

Source: Field data (2012)

As Table 4 above indicates on environmental influence on others, 13% said their influence was very poor, 34% said their environmental influence on others was poor, 43% indicated that they had very good influence and 10% said their influence on others was good.

Pupils were also asked on their school based environmental programmes to which 9% said their participation was very poor with 25% stating that they had poor participation. However, 25% said that they had very good school environmental participation with the remaining 21% stating that their participation was good.

As indicated in Table 4, 35% said their community participation in environmental issues was very poor with 27% saying theirs was poor. However, 22% said that they had very good

community environmental participation with sixteen 16% stating that they had good community environmental participation.

4.7 Pupils' understanding of environmental feedbacks

Discussants expressed a lot of knowledge on the environmental feedbacks planet earth was experiencing. This was revealed during focus group discussion where the discussants outrightly explained environmental feedbacks such as global warming as a result of climate change, unprecedented weather fluctuations which included flooding and spells of drought. One discussant said that the world was experiencing unpredictable weather and climate fluctuations and environmentally related ailments because of the damage to nature by people in their quest to meet developmental demands. The discussants also said human activities such as agriculture have been affected because of poor rains. Animals and vegetation have also been affected because of either prolonged spells of droughts or heavy destructive downpour.

Asked what should be done to reduce incidences of negative environmental feedbacks, the discussants stated that there was need for concerted efforts by all governments in the world to beef-up programmes to sensitise people on the effects of poor natural capital management. In focus group discussion, one discussant said:

Programmes to do with environmental awareness in schools and communities should be promoted and backed by government. This will arm people with the much needed environmental knowledge as it is said that knowledge is power. Careless deforestation, poaching, pollution, waste dumping and other vices would reduce, drastically, if only governments show will to reduce environmental degradation.

The statement above was supported by the rest of discussants in the focus group who also alluded to the fact that there was need for concerted efforts from all stakeholders to counter the stated human activities.

4.8 Teachers' understanding of environmental awareness towards sustainable development

Teachers were asked on how they understood environmental awareness towards sustainable development. It was revealed in this study that 66% of them could not relate clearly the correlation between environmental awareness towards sustainable development with

34% teachers explaining quite well. They stated that environmental awareness towards sustainable development dealt with empowering people with knowledge of the causes and effects of poor environmental management. After having the knowledge, people were expected to change their attitudes towards the environment. The 34% also said sustainable development in its entirety dealt with using natural resources or indeed any other resources, sparingly so that they do not get completely depleted or extinct for use in future. This was revealed during the interviews that the researcher held with teachers.

Interestingly, some teachers as stated were so blank even to define the term sustainable development. They blatantly, indicated that they had no idea about environmental awareness towards sustainable development. Two respondent teachers actually, asked what sustainable development was all about and after being told they were able to then make the relationship between environmental awareness and the concept of sustainable development.

Headteachers were also asked what they understood about environmental awareness towards the concept of sustainable development. They stated that environmental awareness was fundamental in the promotion of sustainable development. The Headteachers actually showed clearer understanding of the relationship between environmental awareness and the concept of sustainable development than their teachers. They stated that even the physical environment had to be well looked after so that the future generations would also be able to access the same infrastructure and resources to improve their lives. One of the Headteachers interviewed said:

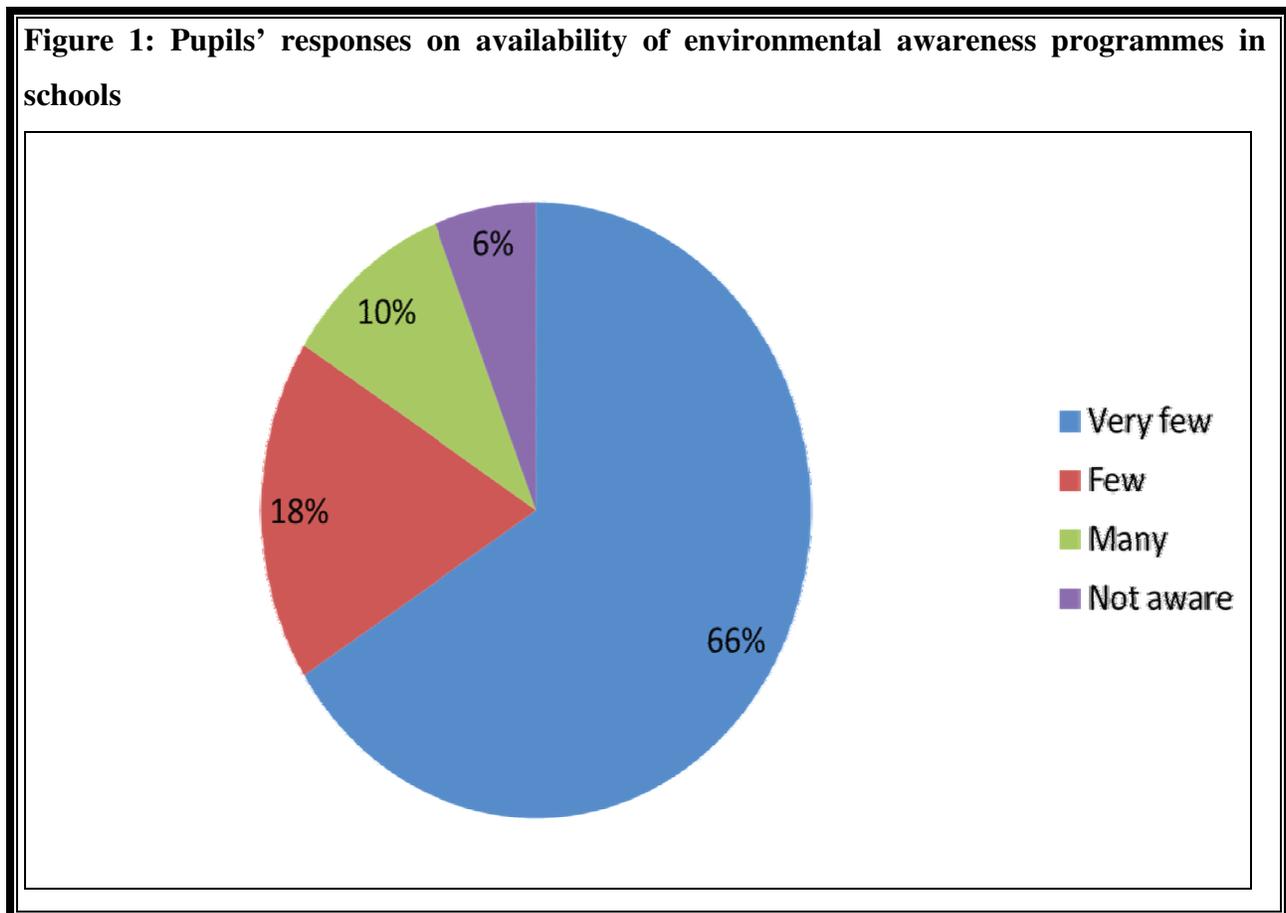
There is great need to increase environmental awareness not only in schools but the communities as well. This would make people aware of what they should do, thereby making environmentally friendly decisions to preserve both physical and natural environment. Once this is done then we can think of promoting sustainable development so that the generations to come will also enjoy the same facilities.

4.9 Availability of environmental awareness programmes in school

On the availability of environmental awareness programmes in schools, pupils, teachers and Headteachers were interviewed.

4.9.1 Responses from the pupils

Pupils in the questionnaires were asked to state whether they had environmental programmes in their schools. Out 100 pupils interviewed, 66% said that the programmes were very few with 18% stating that there were few programmes. However, 10% said that the programmes were many and only six percent stated that they were not aware of any programme. The responses are shown in Figure 1.



Source: Field data (2012)

Asked to mention environmental activities in their schools, pupils stated that activities in schools that were there to promote environmental awareness included those of tree planting, keeping the schools' surroundings clean and green, sketches and artistic works depicting environmental conservations. Respondents however, stated that even although these programmes existed, they were not very viable and this was revealed during the focus group discussion.

Further, the study revealed that environmental issues were also taught in class. Subjects which had topics where environmental issues were taught to increase awareness included Geography, Biology and Agricultural Science. Interestingly, even subjects like Religious Education were said to have some topics that imparted environmental awareness knowledge in the learners.

Pupils recommended that schools should embark on outright individual school based environmental programmes not just depending on respective subject based topics to improve awareness among pupils. It was revealed that those who did not have active Wildlife Club in their schools did not have an opportunity to practise what they learnt in class. Pupils during focus group discussion stated that those who belonged to environmental club, once in a while, had out of school environmental activities. In focus group discussions, one pupil said the following:

There is need to design programmes that would motivate us to take up environmental activities in our schools. This will not only keep our schools clean but also impart environmental values in us as pupils so that we also take what we learn here in schools into our communities.

Pupils said that for them to have adequate environmental knowledge and increase environmental practices in schools, environmental education should be introduced as an independent subject. They indicated that they would develop more knowledge, values, skills and attitudes if environmental education was introduced at secondary school level. Pupils also stated that some of them were able to access environmental awareness programmes through radio, television and some magazines. They however, stated that this information was not enough.

Pupils during focus group discussions stated that it was imperative however, that environmental issues in the interim should be critically considered by curriculum designers. It was revealed by pupils that even when there were some topics in some subjects that included environmental issues, the important aspect of practice was almost absent because of lack of an independent subject where environmental issues were taught and practiced.

Some however, contended that there was no need to have an independent subject specifically to learn about environmental issues. They stated that the existing subjects with environmental components or topics were fine and operating well. All that was needed however was to make what was learnt more practical.

On whether environmental education should be an independent subject, out of 100 pupils who were administered with questionnaires, 84% said that environmental education to increase awareness in schools should be an independent subject. However, the remaining 16% said the current system where environmental related issues were integrated into different subjects was alright.

4.9.2 Responses from teachers regarding the availability of environmental awareness programmes in schools

Teachers were asked about the availability of environmental awareness programmes in their schools. Out of the 32 teachers who were interviewed, 28 representing 87% said there were a number of programmes in schools not only to make the pupils aware of environmental conservation towards sustainable development but also to make them put what they learn into practice. However, the remaining four representing 13% said they were not aware of school programmes especially the outdoor ones to make pupils active in their quest to conserve nature and their physical environment.

Teachers were also asked if they participated in outdoor environmental awareness activities with their pupils. Out of the 32 teachers interviewed, 26 said that they were actively involved in the outdoor environmental programmes which included, keeping the schools surroundings clean and green. The remaining six said that they were not involved in the outdoor environmental activities at all. They stated that they were neither grade teachers nor were they in the preventive maintenance committee whose responsibility was to keep school surroundings clean either by using general workers or pupils on punishment.

Teachers were also asked to indicate the departments they belonged. Out of the 32 teachers that were interviewed, 20 were from the Social Sciences (63%), six from Natural Sciences (19%), four from the Languages (4%) and two of them from Mathematics (2%). The results are shown in Table 5.

Table 5: Departments of respondent teachers

Department	Frequency	Percentage
Social Sciences	20	63
Natural Sciences	06	19
Languages	04	12
Mathematics	02	06
Total	32	100

Source: Field Data (2012)

4.9.3 Responses from Headteachers regarding the availability of environmental awareness programmes in schools

Headteachers stated that there were many environmentally related activities in their schools. These included those that were instituted by clubs such as the Chipembele Club whose main message to the learners was that of wildlife conservation. The study however revealed that, in two schools, the same Chipembele club was called Wildlife club and in one school the club was called Environmental Club. Through the clubs, pupils held workshops, discussions, songs, drama and combined meetings with other schools. And the Headteachers also stated that once in a while, club members were sponsored for excursions. Headteachers conversely, indicated that pupils became very excited when embarking on environmental trips outside school but were not active in taking part in the local school environment cleaning.

It was also stated by the Headteachers that there were some imposed environmental activities by schools for offenders such as late comers, noise makers and others to keep the school environment clean and green. This however, was said to be problematic because some pupils still resisted such type of punishment stating that cleaning and tending school lawns, picking litter and watering flowers was meant for the school workers not the pupils.

Headteachers were also asked if the pupils were actively involved in such school programmes as preventive maintenance and they said that pupils were not actively involved because of lack of time as well as some retrogressive policy statements by the policy makers. It was also revealed by three Headteachers that pupils' attitude towards school preventive maintenance programmes both during the terms and holidays was very bad. One Headteacher said even when pupils were told to report once during holidays, they could not do so.

In conclusion on the availability of the environmental awareness programmes in schools, this study revealed that these programmes were very few and not viable at all especially the outdoor and out of school excursions. The study however, also discovered that pupils acquired environmental knowledge through class lessons in certain subjects such as those in the social sciences and the natural sciences.

4.10 Government efforts in promoting environmental awareness in schools

This section deals with government efforts in promoting environmental awareness to make learners get environmental knowledge. Pupils, an officer from Wildlife and Environmental Conservation Society of Zambia, teachers and Headteachers were interviewed.

4.10.1 Responses from pupils on government efforts in promoting environmental awareness

During focus group discussions, one discussant said that government efforts in schools in promoting environmental awareness towards sustainable development were not there at all and was supported by another one whose sentiments were:

We do not see government officers come in our school, let alone the area members of parliament to encourage us pupils and support us in schools. From the time I started grade ten, I have been active in Wildlife Club but not even a single day have I seen a civic leader coming to motivate us in our meetings or workshops. The only people that encourage us are those from WECSZ. It is the responsibility of the leaders who are elderly to instill environmental passion in us, the future leaders, but since they are not there, the environment even in our schools continues to be bad because nobody seems to care.

Asked if there were environmental materials to read in libraries, pupils said that materials were very few. Some pupils said they only received some magazines from WECSZ during workshops and combined meetings. They stated that they were only dependent on the class notes and few

textbooks for reading even though these only had limited information on environmental awareness towards sustainable development.

4.10.2 Responses from Wildlife and Environmental Conservation Society of Zambia

It was revealed that government through the Wildlife and Environmental Conservation Society of Zambia (WECSZ) was encouraging the pupils to join Wildlife Clubs in schools. An officer from the society said that the society was largely concerned with sensitising the youth especially the ones in schools on the need for them to understand the need to protect and conserve wildlife. The WECSZ officer in an interview said the following:

We sensitize pupils through the Chongololo and Chipembele School based Clubs on environmental issues that range from natural resources conservation to practical activities such as tree planting, drama, music and debates. Last year during Earth Day, we took pupils from Clubs for a tree planting spree at the Olympic Youth Development Centre. We however, encourage planting of indigenous trees and we sometimes donate such trees as water berries, sausage and other indigenous ones to the active clubs to plant in their respective schools.

Asked whether the society received sponsorship from government to run its programmes, the officer said that the society no longer receives funding from government. He stated that the society sometimes partnered with business community through their social responsibility to fund some programmes. According to the officer, WECSZ did not have enough funds to carry out environmental awareness programmes in schools because of lack of dependable funders hence the society's advocacy for the private business sector to help.

Indeed, the study in schools revealed that the society had been making steady progress every year with pupils at secondary school level who belonged to Chipembele Club taking part in practical skills such as tree planting in the communities as well as educating people on environmental conservation to promote sustainable development.

The study also discovered that in certain special days such as the Earth day, some other organisations in partnership with WECSZ went to some schools to educate pupils on the need to promote sustainable use of natural resources so as to promote sustainable development. During these days, selected pupils, especially those that belonged to Chipembele Club, would be invited to perform some activities. The organisations that were mentioned by the officer included the

World Wide Fund (WWF), Zambia Wildlife Authority (ZAWA), Zambia Electricity Supply Corporation (ZESCO) and the Municipal Council.

4.10.3 Responses from teachers on government efforts in promoting environmental awareness in schools

Teachers were also asked about government efforts in teaching of environmental issues to promote sustainable development in their respective schools. They stated that government interventions in promoting environmental awareness in schools were there in respective subjects and activities. One teacher interviewed said:

Government officials cannot directly be involved in environmental awareness in our schools. It is our responsibility as teachers to educate our learners on environmental values so that they become responsible citizens and promote environmental conservation as well as keep their surroundings clean. Government has designed a curriculum that has accommodated a lot of topics that deal with environmental issues. Therefore, government has done its work and the aspect of implementation squarely is in the hands of us, the teachers.

Teachers however, reiterated that environmental activities were not viable as to holistically have a well tabulated system that would encourage programmes on environmental awareness towards achieving sustainable development. Teachers stated that the sensitisation programmes were there in schools but what was lacking was the practical aspect which was supposed to be initiated by individual schools. The study also revealed that the aspect of sustainable development was not well spelt-out as stated by one teacher who said that pupils in most instances were imparted with environmental knowledge but they did not understand why teachers were emphasising mastery of environmental values and skills in the learners.

4.10.4 Headteachers' responses on government efforts in promotion of environmental awareness in schools

Headteachers also stated that government programmes to empower learners with environmental knowledge were there in schools. They stated that the government was responsible for designing what pupils were learning in schools. One Headteacher said, integration of environmental topics in both science subjects and some social science ones was government efforts. Another Headteacher said even if environmental education was not an independent subject, many aspects of environmental issues were covered under Geography and Biology. The study also revealed

that Biology was a compulsory subject in all the schools visited and Geography was an optional subject.

In conclusion on the government efforts in environmental awareness in schools, this study revealed that most of the programmes and activities that were in schools were initiated by NGOs that worked in collaboration with government. However, direct government interventions were almost absent. It is therefore, important to state that government through policy makers and legislative representatives should be in the forefront in spearheading environmental awareness programmes in schools as observed by pupils.

4.11 Challenges faced by schools in environmental awareness

This section deals with challenges and problems schools were facing in environmental awareness. The respondents were pupils, teachers and Headteachers and their responses were presented in that order.

4.11.1 Pupils' responses on challenges faced by schools in environmental awareness

Pupils were asked to state the challenges they were facing in acquiring environmental knowledge in their schools and the problems that were listed were inadequate reading materials, poor organisation by teachers for environmental field trips, lack of viable club activities and lack of motivation from teachers, school administration and government. Pupils also said that each time they wanted to go out for fieldwork, they were told by school management that there was no transport. One discussant at one school, in focus group discussion said:

Next year we are going to be in the communities since we will have completed grade twelve but having not gone anywhere only learning topics in class. Even when we learn about deforestation and tourism, some of us have never seen a deforested area let alone any wild animal such elephant, lion, buffalo or giraffe. Indeed, we will go into communities without having experienced these very important components of the environment. Each time our patron prepared a trip, the administration always told him that there was no transport. This has been very discouraging and government has to do something.

They also complained that some of them were forced to take part in school environment cleaning through punishment and they claimed that teachers were saying punishing them to clean school environment was also one way of teaching them cleanliness. This study also revealed that pupils did not want to take part in manual activities as one discussant in focus group observed.

One pupil contended that they were not supposed to take part in local environment cleaning through punishment and the following were her sentiments:

We come to school to learn and not to start cleaning and watering lawns in the school. Schools should instead employ workers who should be doing all this manual work. Working would make pupils tired thereby not concentrating in their studies. Even when punishing us, teachers should not tell us to clean or water flowers.

4.11.2 Responses from teachers on challenges faced in environmental awareness in schools

Teachers were asked if they faced some challenges in imparting environmental awareness knowledge in the schools. They said that the challenges were numerous. They also raised the problem of lack of transport for the outside schools trips. One teacher said that as long as environmental issues remained classroom oriented, tangible results of imparting practical knowledge would remain a pipe dream not until government became more involved and train more teachers on issues to do with the environment and dealing with the problem of transport in schools.

Teachers also said that the other problem were pupils themselves who were very reluctant in compulsory cleaning of school surroundings. Teachers said that even those on punishment were very reluctant to do manual work because of government policy on punishment. The study revealed that pupils who were supposed to be integral part in keeping school surroundings clean were instead responsible for making the surroundings dirty. This was confirmed through observation. Two of the four selected schools were heavily littered with paper, especially after knocking off time.

Asked who was responsible for the cleanliness of the school surroundings, the teachers interviewed said that it was the responsibility of the workers. They said that the workers were overwhelmed with work hence the need for pupils, to also be actively involved in the cleaning of their environment in school.

One teacher made the following comment:

It is imperative that pupils practise what they learn in class within the school environment such as the issues of keeping their environment clean by picking litter and many other practical activities. Pupils should think locally and act globally. After all it is said that charity begins at home and so the pupils we have in schools should not only learn environmental issues but practise them or indeed put them into practice. To the contrary, our pupils just get excited when they are told there would be a trip outside school but do not want to take part in school based activities let alone sweeping their own classrooms.

However, teachers also said that the major challenge was that of lack of support from school administration especially when releasing funds for outdoor or out of town excursions. They stated that this dampened the moral of conducting out of school activities hence the absent of viable environmental activities in schools to sensitise pupils on the need for them to not only be aware of environmental conservation but also be proactive towards environmentalism. One teacher said that he wanted to turn the school into an eco-school through the wildlife club but did not receive support from the school authority because his project involved release of some funds. The project therefore, was abandoned and there was no follow up from the school administration.

4.11.3 Responses from Headteachers on challenges they faced in environmental awareness

Headteachers were asked if they faced challenges in their quest to promote environmental awareness in their schools. All the Headteachers interviewed said there were a lot of challenges they faced. They also mentioned such problems as lack of transport to take pupils to other places for environmental tours. They said that to motivate pupils to take part in some of environmental activities such as drama, poetry, singing and others, transport was a hindrance and a major challenge in the schools as stated by one Headteacher:

We only have one bus running and this is the one that every day is used for school programmes and releasing it would indeed halt school administrative operations. Suffice to also state that the bus cannot be released unless permission is given by District Education board Secretary (DEBS). You may also know that even for the pupils to be allowed to go out of the district, as Headteacher, I have to get permission first from the parents and DEBS who should also seek permission from the Provincial Education Officer. So you see it is not easy to promote field trips especially out of the district.

Other challenges raised by Headteachers were those of lack of funds to purchase equipment such as lawn mowers, the challenge of reliable source of water to water flowers and lawns in the school premises. Headteachers also said that they did not have enough land or space to have

botanic gardens. Indeed, the study through observation revealed that some schools did not have enough space for botanic gardens because most of spaces were taken up by new buildings within the schools. One Headteacher stated that the issues of funds in schools were sensitive because pupils were not paying and grants from government were tied grants. To compound the situation, Headteachers said they were only allowed a small threshold of funds to release and anything above the threshold, there should be approval from Provincial Education Office which sometimes took a lot of time.

On the absence of botanic gardens in three schools that were observed to have a lot of space, two Headteachers from these schools stated that plans to have such type of gardens were there but the challenge was on sustainability of such projects. At one school which had one tree garden, the trees that were planted as nursery which largely were exotic had dried up with others growing into big bushes. When asked why the garden operations were not sustainable, the Headteacher said that both pupils and their teachers were to blame. This study revealed that once a teacher who had passion for Wildlife club left the school, environmental activities also stalled. A situation the Headteacher said was very unfortunate.

The other challenge that was raised by two Headteachers was that of participation by pupils in looking after their local environment. They said that learners were not keen to take part in preventive maintenance. The Headteachers indicated that even after sensitising pupils on the need to keep their environment clean, they were very unwilling to clean their environment unless they were supervised. One Headteacher said:

These pupils are very lazy and are reluctant to help out in cleaning their surroundings. They even fail to sweep their classrooms. Gleaning litter which they themselves drop is problematic. Not until they are told by their teachers to collect litter, pupils just pass and leave even their classrooms very dirty. During assembly, I always remind them to look after their classrooms but really it is like the more I talk the more they do not care. It is a very big challenge indeed and sometimes I just feel like whipping them but again it is against the law.

4.12 Summary

Chapter four dealt with the presentation of research findings. Data was presented in prose (in paragraph form), tables, and figures using verbatim. Research findings in this study revealed that the average respondents' levels of understanding of environmental issues especially in relation to sustainable development were low. Environmental awareness programmes in schools were available although they were few and not very viable. The study also found that schools faced numerous problems in their quest to continue strengthening existing environmental programmes and it was also revealed that direct government interventions were not also viable. The next chapter deals with discussion of the presented research findings.

CHAPTER FIVE

DISCUSSION OF RESEARCH FINDINGS

5.1 Introduction

The previous chapter dealt with presentation of research findings. This chapter deals with discussion of research findings presented. Discussion of the findings in this study was based on the set objectives. The specific objectives were to evaluate levels of pupils' understanding of environmental sustainable development, determine the availability and viability of environmental awareness programmes and finally to establish challenges faced by schools in carrying out environmental awareness programmes. Discussion as indicated, therefore, was done based on the stated objectives.

5.2. Understanding of environmental sustainable development amongst respondents

The study revealed that pupils did not have a comprehensive understanding of environmental sustainable development as indicated in Table 3 where more than 80% of the pupils stated that their understating of sustainable development was either very poor or poor. These findings were in contrast with those of Sanchez (2010) whose study was done in India. Sanches' (2010) study revealed that many pupils in schools of India had an understanding of sustainable development because environmental awareness programmes were mandatory from elementary level. However, during focus group discussions, some pupils expressed good understanding and this could be attributed to their being members of environmental clubs where they were taught environmental issues to promote sustainable development.

On the understanding of the environment in general, it was revealed that above 60% of the learners had either very good or good environmental understanding. A study carried out in South Africa by Komane (2005) revealed that pupils in urban set-up had more information on environmental conservation compared to their counterparts in the countryside. Even if this research did not make comparison between the rural and urban pupils, in as far as environmental knowledge was concerned, pupils expressed a good understanding of environmental issues

largely because of the accessibility to such sources as electronic and print media and the knowledge they got from schools both from class and clubs.

Pupils whose environmental understanding was either poor or very poor were few as indicated in Table 2. Out of the 100 interviewed, 75 said their understanding was very good, twelve said it was good with eight who stated they had poor environmental understanding and five with very poor understanding. It was discovered that the ones that stated they had poor or very poor environmental understanding came from high densely populated areas as Marvin (2011) observed that children from densely populated areas where poverty was endemic lacked accessibility to such media as computers and television, thereby affecting their understanding of some information and news. It is important to observe that pupils whose environmental knowledge is poor lack accessibility to sources of information such as print as well as electronic media. It is from these sources that pupils apart from school based sources could also acquire environmental knowledge.

Interestingly, a psychological question to test pupils if they had changed their perception towards nature was asked during focus group discussion. It was on whether they would kill a snake if they saw one. Some pupils in their discussion openly stated that dangerous animals should not be spared but be killed at first sight as indicated on the verbatim by one discussant which was supported by many others. Chethana (2003) stated that in some communities, some animals such as snakes were culturally considered bad omens as well as dangerous and therefore, they were killed once seen. However, Sakari (2009) stated that pupils in the East Indies were taught to cherish and appreciate nature. He stated that children were taught to keep snakes as tourist attraction thereby earning incomes which was contrary to many discussants who said snakes should be killed. It is therefore, important that continuous sensitisation to protect wildlife is promoted to support positive environmental attitudes in pupils who would be future leaders.

On environmental participation and influence on others both at school and home. This study revealed that pupils' influence on others in as far as environmental issues were concerned was averagely either very good or good as indicated in Table 4 where 47 said that their environmental influence on others was either very poor or poor, with 43 respondents who stated that they had very good influence on others and the remaining ten who said their environmental influence on others was good. These findings were not in conformity with Otiende, et al (1997) findings in

East Africa where after the creation of model green schools, environmental awareness spread quickly because pupils were used as drivers for spreading the information to others. Suffice here to state that pupils' influence and participation in their communities was discovered to be discouraging with more than 50% who stated that their community participation in environmental awareness towards the promotion of sustainable development was either very poor or poor. Those that said their community participation was very good were twenty two with sixteen stating that they had good community participation.

The above findings on environmental community influence were also in agreement with a study conducted in India by Pillai (2012) which revealed that even if pupils were taught and given a lot of knowledge in their respective schools, their community participation was very poor. Moleko (2010) attributed poor school- community synergies or interactions as the cause in pupils' poor participation in environmental activities in their communities. There is therefore, great need to beef up school and community partnership in environmental issues so that what is being learnt in school could be replicated in the communities especially for the grade twelve who graduate and join society.

5.2.1 Pupils' knowledge of environmental feedbacks

Discussants in focus group mentioned the following as environmental feedbacks; global warming which resulted in climate change, with unpredictable weather patterns also resulting into floods and unbearable long spells of drought. Discussants also stated that because of fluctuations in weather patterns, accessibility to clean water, vegetation for grazing animals and agricultural productions dwindled to dangerous levels. Respondents also stated that since human beings were responsible for all these environmental feedbacks, world concerted efforts were needed to mitigate them. Indeed, the feedbacks mentioned by pupils were being experienced by planet earth and this was because of the damage and disturbance to the life supporting systems as a result of the unsound human activities on planet earth as observed by Tilbury (2005). This explains why such programmes meant to make people aware of effects of poor environmental management were encouraged in such places as the schools where the young ones are found. This is also in agreement with WCED (1992) in the document Agenda 21 where need to increase environmental awareness through convention education systems and in this context schools came out strongly and was recommended.

The above mentioned feedbacks and statements were a confirmation of what Brennan (2009) contended that as long as man did not act and formulate environmental mitigation measures, world resources would continue to shrink to diminishing levels which would make it impossible for the future generations to access them, thereby defeating the whole concept of sustainable development. World governments should roll-out practical environmental programmes to counter the effects that have also started affecting even the built environment through negative environmental feedbacks.

2.2.2 Teachers' understanding of environmental issues

Pupils in schools are taught by teachers hence it also became imperative to find out if teachers had holistic understanding of environmental issues. A study that was done by Babaola (2009) in Nigeria revealed that some of the teachers had very poor understanding of environmental issues hence their weak approaches in imparting environmental knowledge to the pupils. This study indeed, also confirmed that some of the teachers although they were very few did not have adequate knowledge on environmental issues probably because such teachers were teaching subjects which had no topics on environmental issues or teachers themselves had a poor background on environmental issues as also observed by Shobeiri (2005). In his study on environmental awareness and attitude of teachers in Iran, he discovered that teachers whose environmental background was very low did not have passion to take up roles to teach their pupils environmental issues in their respective schools. This was because these teachers had very poor environmental background.

Interestingly, however, with all the access to both print and electronic sources of learning and teaching, this study revealed that twenty one representing 62% of the interviewed teachers did not have enough understanding of the connection between environmental awareness and sustainable development with 38% stating that their understanding of environmental awareness towards sustainable development was good. These results were not in conformity with those found by Tripathi (2000) in his comparative study of environmental awareness of students in Uttar Pradesh. Tripathi's findings were that teachers had very good comprehension of the relationship between environmental awareness and sustainable development. This difference is attributed to lack of compulsory environmental courses at tertiary level in Zambia unlike in India where college students take a compulsory environmental course. These results on teachers also

explain why pupils had averagely low levels of understanding of the relationship that existed between environmental awareness and the concept of sustainable development. It therefore, becomes fundamental to introduce a course, as is the case in India, on environment issues in all programmes at tertiary level so that teachers regardless of what they teach have knowledge of environmental issues.

5.2.3 Headteachers' knowledge of environmental issues

Headteachers when asked about the need for environmental awareness towards sustainable development clearly stated that pupils should be armed with this great knowledge so that they were aware of the repercussions of poor environmental management. Unlike teachers, Headteachers clearly alluded to the fact that the environmental campaign in schools was cardinal.

The results on Headteachers confirm Loon (2004) findings in Malaysia where he discovered that school managers had comprehensive understanding of environmental issues compared to their subordinates as a result of continuous leadership refresher courses which had components of environmental sustainable development. The Headteachers interviewed also confirmed that they learnt more about environmental issues through administrative courses and environmental talks during either district or provincial Headteachers' Congresses.

5.3 Environmental programmes in schools

For the pupils to have a clear understanding of any taught materials there should be some programmes and activities that should be able to make them grasp what is taught. These programmes could either be outside class or classroom programmes and activities. The study revealed that in schools visited, these programmes were there although they were not well spelt out and viable.

5.3.1 Classroom based environmental programmes

Pupils stated that they learnt environmental issues meant to raise awareness in classes during lessons. This was in certain subjects which had environmental topics. The subjects that were stated to have these topics included such subjects as Geography, Biology and Agricultural Science. However, Gupta (2001), Barton (2009) and Sonowal (2009) all stated that in India, Japan and Malaysia, pupils learnt environmental issues in all subjects including Mathematics.

The results from this study indicate otherwise and subjects like Mathematics did not in any way teach learners environmental based topics.

In addition, Komane (2010) in his study of environmental education in South Africa also concluded that pupils who took such subjects as Geography, Biology and Agricultural Science had better understanding of environmental issues because the three subjects have high inclination and interactions with a lot of topics that dealt with nature. Nevertheless, it becomes more comprehensive that environmental awareness topics were taught in all the subjects to increase environmental awareness especially the compulsory ones such as Mathematics as indicated. Indeed, environmental related questions could be used even in English and Mathematics to raise awareness and what is happening in other countries can be replicated even here in Zambia.

Pupils stated that national curriculum designers should seriously consider environmental studies as a separate subject entity rather than having some components or topics integrated in some subjects. These results were in conformity with Rosenberg (2005), who observed that to promote environmental awareness in young people, environmental education should be included in the curriculum as a different subject entity and make it more and more practical in schools. Indeed this would motivate learners to have that passion for nature hence develop sense for sustainable use of natural resources to promote sustainable development.

Teachers also said they taught many aspects of environmental issues in their respective subjects as stated above. Only teachers of Mathematics and languages interviewed said that they did not teach topics that had something to do with environmental issues. Those that belonged to Natural Sciences and Social Sciences said they had many topics that dealt with environmental issues. Moyo (2010) in his study of environmental literacy in Zimbabwe had the same results where he found that teachers of Mathematics and Languages were not active in environmental issues because they never considered them important.

However, Moleko (2010) had different results in the South African Temba district where he found that all teachers, regardless of subjects they taught, integrated environmental concepts in their teaching. Indeed, this is attainable even in such subjects as English where passages on environmental issues could be used in comprehension exercises as well as encouraging pupils to write articles or compositions dealing with environmental issues. All that is needed is to

introduce green schooling and train teachers in green teaching from elementary through primary, secondary and tertiary levels.

5.3.2 Outdoor environmental activities in schools

Outdoor environmental activities motivate pupils to participate in environmental programmes. These activities are very important for they put what has been learnt from class into practice. However, this study revealed that these programmes were largely either very few or indeed few as indicated by 84% with ten percent saying outdoor activities were many in schools. The remaining six percent stated that they were not even aware of any environmental activity at all. These findings did not collaborate with those revealed in South Africa by Komane (2005) where he found that pupils in secondary schools were aware and involved themselves in a lot of school based environmental programmes and activities. It was through the efforts of trying to improve and uphold awareness in schools that also the schools in South Africa had been encouraged to join the South Africa National Eco Schools where outdoor activities were encouraged.

Furthermore, Pillai (2012) observed that in most schools in India, secondary school pupils were encouraged to take part in local schools keep the local environment programmes green and clean. As the saying goes 'charity begins at home'. This was also acknowledged by pupils interviewed who said there was need to have school based environmental programmes especially the outdoor ones. These activities meant to nurture learners into responsible citizens of their society by first starting environmental practical programmes from their 'home' which in this context is the school should be encouraged. Outdoor activities would indeed, not only motivate learners to take part in environmental activities but also raise environmental awareness levels in schools which this study revealed they were low.

On the aspect of keeping school environment green, pupils were encouraged to look after their portions where they were encouraged to tend lawns with grass and flowers. This was also revealed to be very important for the learners since it was one way of trying to make them appreciate their local environment by not only littering around but also keeping it green by tendering flowers as well as grass. If pupils are taught and adopt these practices, it could be assumed that they would grow up as responsible members of their respective communities. However, this study revealed that pupils were very reluctant to take part in school based

preventive maintenance stating that it was not their duty to clean and green the school environment but the school workers’.

Bartosh (2003) conducted an observatory study on the behaviour of pupils in Washington who were given environmental awareness programmes in their schools. Their perception and conduct changed and they would take part in school general cleaning without being supervised at all. Unlike what this study discovered where the learners were not interested in taking part in school based cleaning programmes. Concerted efforts are needed to inculcate a sense of responsibility and convince pupils in Zambia to understand that they were beneficiaries of their own environment and they also have the sole responsibility of making their surroundings attractive.

This study also discovered that pupils, especially those who belonged to the Wildlife Club, were involved in outside school activities such as tree planting in the peripherals of Lusaka and other schools as indicated by an officer from WECSZ. The officer said that they had rolled out programmes using Chipembele clubs in schools. Indeed, these NGOs were very important for they supplemented what schools try to do in environmental awareness and their work should be commended.

A study that was conducted by Babaola (2009) in Nigeria revealed that many NGOs assisted in environmental awareness activities in schools. However, efforts by the NGOs should be supported by school teachers and administration to promote sustainability of the programmes initiated by the organisations unlike what was revealed in this study where programmes initiated by the organisations died down because of lack of activities and interest from the members of the teaching community. It would therefore, be correct to deduce that environmental activities would tick only if teachers who were in contact with learners on daily basis take keen interest in environmental awareness in their respective schools.

Headteachers when asked about the participation of teachers in outdoor environmental activities stated that only those that took part in such clubs as environmental club were very active in trying to encourage learners to participate in outdoor environmental programmes. It was also stated by the Headteachers that teachers were not cooperative enough, especially in the supervision of pupils in such activities as preventive maintenance. If no mitigation measures were taken to revamp the dwindling levels of environmental activities and programmes in

schools, indeed, environmental challenges would increase. There is therefore, a great need to embark on comprehensive environmental awareness in schools to arm pupils with the much needed knowledge failure to which the natural environment reliability in providing natural resources would remain bleak.

5.4 Government efforts in providing environmental awareness in schools

This study revealed that government efforts in environmental awareness, in schools were very minimal and not well spelt out. Pupils interviewed, stated that there were no direct programmes from government. Out of 100 that were interviewed, 64% said that there were no programmes initiated by government with the remaining 36% having stated that government initiated environmental awareness programmes in their schools were there. These results agree with Barbier (2010) who stated that most of the developing countries did not pay much attention to environmental issues for they were only bent towards economic development.

It therefore, becomes very important for these countries, Zambia inclusive, to understand that in their quest to develop economically, there was also need to promote environmental sustainable development. This would be achieved if environmental awareness took centre in all countries in the world. In promoting sustainable development, it is very important to make environmental knowledge to the youths as accessible as possible hence the need for pupils to learn more about environmental issues.

This study also revealed that schools visited had not received any direct support to promote environmental activities in schools from government high officials such as ministers and this was revealed during focus group discussions. This therefore, indicated that government did not put much effort in environmental issues especially dealing with the young ones. These findings were different from those by Chi-Kinlee (2008) conducted in China where he discovered that through government backed environmental programmes such as schooling for sustainable development and school environmental education development strategies, top government officials were mandated to encourage young ones in schools through conducting visitations and environmental discussions. Indeed, the Zambian government can do better and also begin to promote school based environmental visitations to motivate the young ones.

It should, however, be acknowledged that the NGOs that carry some environmental activities in schools were allowed to do so and were backed by government. It can be deduced therefore, that even if government interventions were discovered to be almost absent, indirect government interventions such as formulation of the school curricula and permitting NGOs in schools were enough to state that government influence was there, direct though it may not have been. This was also confirmed by teachers interviewed who stated that government had some programmes in their respective schools for environmental awareness and many environmental related issues.

Teachers also stated that the environmental practical aspect where the learners had to be taken out of town for environmental activities were not viable because of lack of transport and funds in school. This according to them was where government should actively come in. They therefore, recommended that the government should be very active not only in promoting teaching of environmental issues in class, but also making pupils take part in executing certain environmental programmes. Indeed, pupils should be well guided in as far as environmental issues are concerned and this has to be done from school. As stated by teachers, government should however, be active involved in environmental awareness programming in schools. These programmes should also be funded, monitored and evaluated by government.

This study also revealed that teachers were just interested in teaching pupils so that they pass their examination. Topics that had environmental issues were not necessarily for arming the pupils with an environmental futuristic approach so as to understand that there was great need to protect the fragile environment. Sharma (1997), Chethana (2003) & Tilbury (2005) state that teachers were not imparting life environmental skills and knowledge in pupils but were teaching to make pupils simply pass and qualify or graduate to the next level.

There is therefore, need to first start with training teachers so that aspects of environmental awareness to promote sustainable development were well understood. Only then will they be able to teach pupils issues to do the environment for sustainable development purposefully and practically. If teachers were trained as stated by Agenda 21 which also emphasised training as a significant strategy in increasing environmental education for sustainable development, they would be able to disseminate knowledge to the learners and also be able to draw up some programmes that would be sustainable at school level.

5.5 Challenges faced in schools on environmental awareness

Headteachers were asked on challenges that they were facing in schools in their quest to carry out and impart environmental knowledge in pupils. The outstanding problem stated was that of lack of reliable transport. To motivate learners, it is important that sometimes they are taken outside school or even in the rural setup to learn about the environment, but that was confirmed to be difficult because of lack of transport in schools. According to Moyo (2010), most of the schools in the developing countries grapple with the problem of transport which hindered excursions for learners as revealed in this study.

The challenge of reliable transport was also stated by learners when they stated that excursions in schools were very few and most of these were sponsored by outside school organisations such as the WECSZ. As indicated, this was also confirmed by the school administrators in all the schools interviewed. The issue of transport is very important for mobility and movement of pupils to areas where they could learn more environmental issues through direct observation.

Teachers stated that transport was a problem in trying to take pupils out of school for field trips. Government schools normally had problems with transport because of lack of reliable school buses. Lack of transport actually dampened the morale of both the pupils and their teachers resulting into poor and almost absent existence of excursions initiated by schools themselves.

There are certain environmental topics that need to be taught with direct observations such as the adverse effects of poor forest capital management as a result of deforestation. In this context as contended by Zimmerman (1994) and Blake (1999), pupils could be taken to areas where deforestation was predominant to see for themselves, what the causes and effects could be and that if pupils were also exposed to direct observations using school excursions, their environmental comprehension would be better. This could make learners make informed environmental decisions themselves as future leaders.

This study did reveal that schools visited did not have enough spaces where learners could be conducting some projects such as having a school botanic garden for both exotic and indigenous vegetation. These findings were in concord with Sanchez (2010) who found that in some Chinese schools in urban areas, space for environmental projects such as botanic gardens and school zoos was a big challenge. Indeed, this study also revealed that space in urban selected schools was

very scarce and this was also confirmed by one Headteacher who said the school had one area which was a botanic garden but was cleared to pave way for construction of extra classrooms.

Headteachers also stated that pupils were very reluctant in keeping their environment clean let alone their classrooms where they spent most of their time. This could be attributed to the introduction of the child labour rights and child abuse which are misunderstood in most of the communities. However, these findings were a contradiction of those by Barton (2009) where pupils in Japan willingly and enthusiastically, devoted thirty minutes every day for cleaning and greening their school environment. This can be replicated even here in Zambia. All that is needed are well-established school based environmental awareness programmes that should also be backed by government legislation or legal framework. Teachers interviewed also confirmed that pupils were very uncooperative in such programmes as preventive maintenance and always contended that schools should employ more workers as indicated in the verbatim by one pupil discussant in focus group.

Reluctance by learners to green and clean their school environment then only confirm one thing which is lack of understanding of the roles and responsibilities that they, themselves, have to perform from school so that they become responsible citizens. However, this also goes back to the need for sensitisation amongst pupils so that they understand why they have to be involved in cleaning their environment and this has to be done by teachers, parents and the community as a whole. Indeed, motivating pupils to have passion for cleaning and greening their environment needs concerted efforts failure to which schools would be producing young ones whose environmental values, behaviours, skills and attitudes would be very low.

Summary

This chapter dealt with the discussion of the research findings. Indeed, environmental awareness programmes in schools although, were to a larger extent found to be there, were not very viable. Pupils although indicated they had knowledge of environmental issues, the practical aspect was discovered to be almost absent. This was because most government schools lacked financial resources that would make them be able to undertake excursions for pupils.

Pupils' involvement in outdoor practical activities was poor because of the same issue of lack of funds although that could also be attributed to or blamed on teaching staff. Even if teachers

faced many challenges in environmental awareness promotion in schools, there was need for them to be innovative in their quest to promote environmental passion in their pupils. Interests of pupils were on trips, outside the school but were reluctant to green and clean their own environment which should be the starting point for their environmental mastery as the saying goes 'charity begins at home'. The next chapter deals with conclusion, recommendations and suggested future studies.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

The previous chapter dealt with the discussion of research findings. This chapter gives a summary of the whole study. Conclusion was done using objectives that were set. Recommendations are indicated in this chapter and each recommendation is justified based on research findings. Suggestions for future studies are also included in this chapter.

6.1 Conclusion

The objectives of this study were to evaluate the pupils' understanding of environmental sustainable development in secondary schools, determine the availability and viability of environmental awareness programmes and identify challenges faced by secondary schools in carrying out environmental awareness.

The study revealed that grade twelve pupils' understanding of environmental issues towards sustainable development was found to be averagely low and that was so because issues of sustainable development were not very well spelt out and encouraged in schools. However, the general understanding of environmental issues was above average because apart from learning about environmental issues from electronic and print media, pupils also learnt these issues in class in such subjects as Geography, Biology and Agricultural Science. However, what was almost absent was intensive integration of the aspect of sustainable development so that pupils understand why they were learning environmental issues.

On the aspect of availability of the programmes to promote environmental awareness in schools, indeed it was revealed that schools did have many programmes and the few programmes that were there were not viable. However, some organisations such as Wildlife and Environmental Conservation Society of Zambia through the school based Chipembele Clubs and Wildlife clubs were on the ground in schools sensitising pupils on wildlife conservation as well as implementing some practical activities.

It was also discovered that schools faced a lot of problems in imparting environmental knowledge in pupils. These challenges or problems included lack of transport to take learners for excursions, poor funding thereby having not enough financial resources to embark on

environmental programmes and lack of interest from pupils in taking part in school practical or manual work such as cleaning. Indeed, the issue of funds was the major stumbling block in schools hence the absence of out of school initiated programmes. Because of lack of excursions that boost the morale of not only the learners but teachers too, pupils were not exposed to learning environmental issues from outside town and were not exposed to field work apart from those pupils that belonged to Wildlife clubs.

It can therefore, be stated that learners need to be equipped with environmental knowledge so that they are in a position to take their own moral decisions on environmental issues. They must be able to think positively about the environment as the future depends on the environment and its ability to continue providing natural resources especially that this study concentrated on the grade twelve that were to be integrated into society. The type of education offered to the learners has to be that which would enable them make responsible decisions about the environment

Finally, to achieve the objectives of environmental awareness in the concept of sustainable development, environmental education programmes must pervade all the learning areas at all grades and provide the learners with information that is as concrete and direct as possible. It is also imperative that educators be well trained in offering environmental education programmes to raise environmental awareness in institutions of learning. All in all, pupils should be given environmental knowledge through introduction of environmental education in schools so that they develop positive environmental values, perceptions, attitudes and skills only then would sustainable development be accomplished.

6.2 Recommendations

There are many recommendations that can be made to raise environmental awareness in schools. The following are the recommendations, some of which came from the respondents themselves:

- There is need to design and develop relevant environmental programmes for schools through the media, entertainment and workshops. Schools need to liaise with other interest groups such as non-profit making organisations dealing with environmental issues to collectively contribute to a healthy environment. This however, should also be backed by government efforts and guidelines.

- Training of educators to teach environmentally orientated approaches in colleges should be promoted. This could be done by a shift at tertiary level to include environmental courses in all disciplines or programmes especially for those taking education programmes. This is important so that teachers regardless of what they are going to teach in schools have environmental knowledge.
- Integrate the principles of environmental education and sustainable development programmes at Pre-service and in-service teacher education. This would equip trainee teachers with environmental knowledge. It would also improve the level of environmental literacy of the educators themselves which will make them use teaching techniques that would allow cross sectorial approaches and problem orientated methods, where the learners can better understand environmental and sustainable development issues.
- Celebrate environmental days such as World Environmental Day, Earth Day and World Wetlands Day to continuously sensitise learners about environmental issues, how they affect them and how they can innovatively solve them. Government should promote environmental Private Public Partnership with companies under the companies' social responsibility to sponsor some of these days in both schools and communities. After all it is some of these companies that are largely responsible for rapid natural resources loss.
- Government should encourage schools to be involved in 'green' campaigns such as recycling, anti-pollution campaigns, litter collection and conservation so that pupils become practical in their process of learning environmental issues. This could be done by mandatory introduction of environmental education as a subject because of the need and urgency of environmental issues.
- Government should also encourage schools in the same district to form partnerships to work together in promoting environmental awareness. This could be done through environmental projects that could benefit communities such as planting trees, waste management, and promotion of residential zoos to teach young ones from their communities to appreciate nature. All these can be achieved if government funding towards environmental programmes improved not only in schools but in the communities as well.

6.3 Suggestions for future studies

The following are the suggestions for future studies:

- To carry out a comparative study on availability and viability of environmental awareness programmes between selected urban and rural secondary schools.
- To evaluate levels of environmental awareness among selected college students in Zambia.
- To find out the causes and effects of poor environmental awareness in selected secondary schools.

6.4 Summary

This chapter dealt with the conclusion of the study, recommendations and suggestions for future studies. The conclusion was guided by the study objectives and recommendations also done based on the findings.

REFERENCES

- Adams, W.M. (2006). **The Future of Sustainability: Re-thinking Environment and Development in the Twenty-first Century**. London: Earthscan Publishers.
- Aongola, L. (1997). **The NEAP As the overall framework for interventions in Environment in Zambia: The case of Biodiversity Conservation**.
- Armstrong, G. and Lumley, M. (2004). **Greening in Formal Education: Concerns, Efforts and Future**. London: Mc Crawl.
- Babaola, Y. (2009). **Environmental Education in Nigerian Schools**. Enugu: University press.
- Barbier, E. (2010). **The Concept of Sustainable Economic Development.Environmental Conservation**. Oxford: University press.
- Barton, G.P. (2009). **Perception and Attitudes in Resources Management**. Cambridge: University Press.
- Bartosh, O. (2003). **Environmental Education: Improving Student achievement**. Washington D.C: Evergreen State College.
- Berdie, C. & Anderson, G.A. (1994). **Research Methods**. Sydney. Deakin University Press.
- Bogan, M.D. & Kromrey, J.D. (1996). **Measuring the Environmental Literacy of High School Students**. Florida Journal of Educational Research 36:1
- Blake, N. (1999). **An investigation into the environmental awareness and its enhancement in the secondary school teachers**, Prog.Edu., LXIX (12), 256-259, 268
- Brandson, M. D. (2009). **Planning for a Sustainable Environment**. London: Earthscan.
- Brennan, A. (2009). **Thinking About Nature**. London: Routledge.
- Bruntland Report. (1987). **Report of the WCED.United Nations General Assembly, 96th plenary meeting**, 11 December 1987.

Bwalya, S. M. (2002). **Community based wildlife management in Zambia:** a critical analysis of experiences from the Blue Lagoon Game Management Area. Paper presented at the Ninth biennial conference of the International Association for the Study of Common Property (IASCP). Victoria Falls, Zimbabwe, 17-21 June.

Cheremisinoff, N. & Bendavid-val, A. (2001). **Green Profits. The managers environmental handbook.** Burlington: Butterworth-Heinemann.

Chethana, S. (2003). **Effect of background variables on the environmental attitude of 9th standard students.** M.A Dissertation. Mysore: Karnataka State open University.

Chi-kinlee, L. (2008). **Asian Perceptions of Nature: A Critical Review.** Nordic Institute of Asian Studies. Surrey: Cruson Press.

Chipungu, P.M. (1997). **State of the Environment and Environmental Education:** The Environment Education Workshop for members of Parliament.

Cowell, K. (1999). **Research Designs: Qualitative and Quantitative Research.** Colorado: Mc Crawl.

Creswell, B.K. (1994). **Research methodology, approaches and Techniques.** Lanchsire: Houstein Publishers.

Dale, A & Hill, S. (2001). **At the edge: Sustainable Development in 21st Century.** Vancouver: UBC Press.

De Calrvalho, C.A.R., Filho, W. & Hale, W.H.G. (1998). **An analysis of problems developing education in Brazilian Federal protected areas.** Rio Dejenairo: Mc Crawl.

Dryzek, J. S. (2010). **The Politics of the Earth: Environmental Discourses.** Oxford: Oxford University Press.

Elliot, R. & Gare, A. (2008). **Environmental Philosophy: A Collection of Readings.** Milton Keynes: Open University Press.

FAO. (2007). **An adaptive learning process for developing and applying sustainability indicators with local communities.** Rome: FAO.

- Fien, J. (1993). **Education for the Environment: Critical Curriculum Theorizing and Environmental Education.** Deakin. McMillan.
- Fraenkel, J.R. & Wallen, N.E. (1996). **How to design and evaluate research in education.** New York: McGraw-Hill.
- Geok, T.C., Kim, C.E. and Chuan, G.K. (1998). **A survey of environmental knowledge, attitudes and behavior of students in Singapore.** International research in Geographical and Environmental Education 7: 33-50.
- Giddings, B., Hopeood, B. & O'Brien, G. (2002). *Environmental economy and society: Fitting them into sustainable development.* Oxford: University Press.
- Gruen, L. & Jamieson, D. (1994). **Reflecting on Nature.** New York: Oxford University Press.
- GRZ. (2006). **Policies and Strategies for Agrarian Reform and Rural Development to Secure and Improve Access to Natural Resources.** Lusaka, Zambia.
- GRZ. (1997). **Joint Forest Management Guidelines.** Lusaka, Zambia.
- Gupta, P.B. (2001). **India and environmental awareness.** Gutilat: Bulger Com.
- Hart, L. (1998). **Education Research Techniques .** London: Oxford University Press.
- Harvey, Y.E. (1995). **An education 21 programmes: Orienting education towards sustainable development and capacity building.** The environmentalist, 15, 202-210.
- Hassan, V.H. (2009). **Coming to terms with the environment: The fragile chapter:** Geneva: University Press.
- Hongyan, S. (2003). **Challenges to Sustainable Development.** New York: Pearce House Limited.
- Hwang-Kim, V. & Jeng, C. (2002). **Environmental awareness and attitude of secondary and higher secondary school teachers and students.** , Ph.D. Thesis, University of Rajasthan, Fifth Survey of Education Research., 2, Section 33, 1759.
- Kassas, M. (1997). **Environment and social transformation.** The environmentalist, 17, 63-67.

- Kelly, V. (1984). **Geography and Environmental Education in Schools**. *Geography*, 69(2), 138-140.
- Kisawe M.K. (2009). **The environmental awareness in East Kenya**. Kisii: University Press.
- Komane, F. (2005). **The Assessment of Environmental Awareness of the Secondary School learners in Mobopane District**. Mobapone: Potchefstroom.
- Kothari, C.R. (2004). **Research Methodology: Methods and techniques**. New Dehli: New age international Publishers.
- Kuntashula, E. (2005). **Farmer participatory evaluation of agroforestry trees in eastern Zambia**. *Agricultural Systems* 84 (1): 39-53.
- Loon, Y.W. (2004). **Measuring Environmental Literacy among Faculty science students**. Patra: University of Patra.
- Mardson, L. F. (2009). **Environmental Education, Ethics and Action**. Oxford: Howick.
- Martinez, A. J. (2002). **The Environmentalism of the Poor: A Study of Ecological Conflicts and Valuation**. Cheltenham: Edward Elgar.
- Margulis ,V. (1979). **The Environmental education: Promise and performance**. New York: Mensell Publishing Limited.
- Marthar, M.B. (2006). **Environmental Education as tool to raise Awareness**. London: Earthscan.
- Marvin, K. (2011). **A survey of environmental knowledge, attitudes and behavior of students in Singapore**. *International research in Geographical and Environmental Education* 7: 33-50.
- Moleko, T.F. (2010). **The Integrations of Environmental Awareness issues in Teaching: A case study of the Grade 10s Educators in Temba School District**. Temba District: University of South Africa.
- Moyo, N. (2010). **Addressing Environmental issues through the school curriculum: The Zimbabwean Experience**: university of Zimbabwe.

- Mweemba,L and Moonga,L. (2011). **Climate change in the Zambian mind:Communicatingrisk perception of climate change variability in Zambia.** Lusaka: UNZA.
- Nath, B. and Talay, I. (1996). **Man, Science, technology and sustainable development.** Sustainable development (pp17 – 56) Brussel: VUB.
- Nath, B. and Kazashka – Hritozova, K. (2005). **Quovadis global environmental sustainability.**A proposal for the environmental Education of engineering students. International journal of Environment and pollution. 23 (1) 1 – 15.
- O’Neil, J., Turner, R.K. & Bateman, I. J. (2001). **Environmental ethics and philosophy:Managing the environment for sustainable development.** Cheltenham: Edward Elgar.
- Otiende, J.E., Ezaza, W.P., &Boisvert, R. (1997). **Introduction to Environmental Education.**Nairobi:University Press.
- Palmer, J.A. (1998). **Environmental education in the 21'' century:** Theory, practice, progress and promise. London: Routledge.
- Pillai,P.K. (2012). “**A Study of Environmental Awareness of Higher Secondary School Students in Cuddalore District**”. Research Expo International Multidisciplinary Research Journal 2.2: 44-48.
- Prajapat, M. B. (1996). **A study of the effect of programmers developing awareness towards environment among the pupils of standard in Gandhinagar.** Gujarat, Ph.D. Thesis,
- Richards, R. (1999). **The subtle attraction: Beauty as a force in awareness, creativity, and survival.**Philadelphia: Brunner/Mazel.
- Rockcastle, V.N. (1989). **Environmental literacy: Philosophy, Content and Strategies:** What our students should know and able to do. Nature Study, 43(1&2): 8-9, 22
- Rosenburg, E. (2005). **SADC Regional Environmental Education Programme Evaluation.**Howick: Rotroch LTD.
- Sakari, M. (2009). **Measuring environmental literacy among high school.** Florida Journal of Educational Research 36:1

- Sanchez,S.J. (2010). **The School Curriculum and Environmental Education**. A school Environment Audit Experience. Jesse: University Press.
- Sauve, L. (2002). **Environmental Education: possibilities and Constraints**. Connecticut: McGrawl.
- Sewall, L. (1995).**The skill of ecological perception.Restoring the earth, healing the mind** .San Francisco: Sierra Club Books.
- Sharma, A. (1997). **Developing a global environmental perspective in the school curriculum in India**.Int. J. Environ. Edu. Info., 16, (3), 237-250.
- Shobeiri, S.M. (2005). **A comparative study of environmental awareness and attitudes of teachers and students of secondary schools in India and Iran**. Mysore: University of Mysore.
- Sonowal, M.B. (2009). **Environmental education introduced to raise awareness in formal school education system in India**. Gujarat: Berrin Press.
- Stimpson, A. V. &Yau, K. (2003). **Environmental problems in an urbanising world**. New York: Earthscan.
- Takala, M. (1991). **Environmental awareness and human activities**. International journal of psychology, 26(5), 585-597.
- Thapa, B. (1999). **Environmental awareness in the Caribbeans**. Beijing: University Press.
- Tilbury, D.(2003).**The world Summit, Sustainable Development and Environmental Education**. Australian journal of Environmental Education. Melborne: University Press.
- Tilbury,D.(2005). **Environmental education for sustainability: Defining the new focus of environmental education in the 1990's**.Environmental Education Research,(2): 1 95-222.
- Tripathi, G. (2000).**Environmental knowledge, awareness and concern among 11th grade students**: New York State. Journal of Environmental Education 24: 27-34.
- Turner, (1988).**Sustainable environmental development.Principles and practices**. London: Belhaven Press.

Turnham, D. (2002). **African Perspectives, Practices and policies Supporting Sustainable Development.** Harare: Weaver Press.

Welford R. (1995). **Environmental strategy and sustainable development.** London: Routledge.

United Nations, (2002). **Global Advocacy for Environmental Education.** Washington DC: UN.

UNEP. (2012). **Newsprint on Status of the environment in Africa.** Nairobi: University Press.

UNESCO. (2013). **Environmental Education in communities.** Environmental Bulletin. Berlin: UNESCO.

UNESCO. (1999). **Adult environmental education: Awareness and environmental action.** Hamburg: UNESCO.

UNESCO-UNEP, (1987). **The decade of environmental action.** Warsaw: UNESCO.

WCED. (1987). **Our Common Future.** oxford: University Press.

World Health Organisation (WHO).(1984). **Health Criteria and Other Supporting Informationl of Environmental Education.** Vol.28. 32-37.

Young, M. (2002). **Introduction of Environmental Policy Education in High Education.** Oxford: University Press.

Zimmermann, L.K. (1996). **The development of environmental values.** Rome:Earthscan.

APPENDIX I

STRUCTURED (QUESTIONNAIRES) INTERVIEWS FOR PUPILS

Introduction

My name is **Mweetwa, Milimo. D**, a post graduate student at the University of Zambia (UNZA), conducting an assessment on environmental awareness towards sustainable development among selected grade twelve secondary school pupils in Lusaka District. This study is important because it deals with environmental issues that are currently global concerns. It is in this vein, that studies of this nature should be conducted for in-depth understanding of mitigation measures to try to resuscitate the viability and reliability of our fragile planet earth.

You are requested to tick or briefly explain based on the question provided. You are also requested to be as frank and truthful as possible in giving your responses.

Please do not write your name.

SECTION A :(Bio data of the respondents)

1. Indicate your sex. Male { } Female { }
2. What is your age range? 14-16 { } 17-19 { } 20 + { }
3. Indicate the residential area where you live in Lusaka.
Low density { } Medium density { } High density { }

SECTION B :(students' understanding of environmental issues)

Rate the following by ticking based on your rating.

Rating key

1. Very poor
2. Poor
3. Good

4. Very good

4. How do you rate your understanding of the environment? 1 { } 2 { } 3 { } 4 { }

5. How is your understanding of environmental sustainable development?

1 { } 2 { } 3 { } 4 { }.

6. Rate the following and mark a tick in the spaces provided

a. Environmental influence on others. 1 { } 2 { } 3 { } 4 { }

b. School environmental participation. 1 { } 2 { } 3 { } 4 { }.

c. Community environmental participation. 1 { } 2 { } 3 { } 4 { }.

7. Briefly explain your understanding between environmental awareness and how it is connected to issues of sustainable development.

.....
.....

8. Are there some environmental feedbacks that the earth has been receiving and if any mention them.

.....
.....

Section C. (Environmental awareness programmes in schools).

9. Rate the availability of environmental programmes or activities in your schools as.... Very few { } Few { } Many { } Not aware { }

10. Name some of the environmental programmes or activities at your school on the space provided. -----

11. Mention the subjects where you learn environmental issues in your school -----

-----.

12. Would you agree with sentiments that environmental education be made an independent subject at secondary school level?-----

13. If your answer to question 12 above is yes please give reasons in the space provided.

14. Do you receive environmental awareness support from government and if any please mention some -----

-----.

15. What do you recommend should be done to foster improve environmental awareness in schools in promoting sustainable development? -----

16. What challenges do you face in acquisition of environmental knowledge in your schools?

Thank you very much for participating in this important exercise.

APPENDIX 2

OBSERVATION GUIDE

Introduction

My name is **Mweetwa, Milimo. D**, a post graduate student at the University of Zambia (UNZA), conducting an assessment on environmental awareness towards sustainable development among selected grade twelve secondary school pupils in Lusaka District. This study is important because it deals with environmental issues that are currently global concerns. It is in this vein, that researches of this nature should be conducted for in-depth understanding of mitigation measures to try to resuscitate the viability and reliability of our fragile planet earth.

The guide

The following are the things to check for in schools:

1. Maintenance of the school environment
 - a. School lawns
 - b. Flower bed
 - c. Vegetation such as trees in the schools
2. Cleanliness of the school premises
 - a. Littering
 - b. Classroom cleanliness
 - c. Who does the cleaning of the school environment?

APPENDIX 3

FOCUS GROUP GUIDE/ SCHEDULE

Introduction

My name is **Mweetwa, Milimo. D**, a post graduate student at the University of Zambia (UNZA), conducting an assessment on environmental awareness towards sustainable development among grade twelve secondary school pupils in Lusaka District. This study is important because it deals with environmental issues that are currently global concerns. It is in this vein, that researches of this nature should be conducted for in-depth understanding of mitigation measures to try to resuscitate the viability and reliability of our fragile planet earth.

You have been selected to be one of the respondents to this very important study. You are also assured that the information you will provide will be treated confidential and also strictly be for academic purposes. You are also requested to be as frank and truthful as possible in giving your discussion.

The guide

1. Discuss what you understand about environmental awareness towards sustainable development or indeed the relationship between environmental awareness and concept of sustainable development.
2. Discuss what you would do if you saw a snake in the bush.
3. Explain environmental feedbacks and discuss what should be done to reduce them.
4. Discuss the availability of environmental awareness programmes in your schools.
5. Discuss other sources of environmental awareness information apart from school programmes.
6. What should be done to make them sustainable?
7. Discuss environmental awareness programmes initiated by government in your school?
8. What are challenges you face in your acquiring environmental knowledge in your school?
9. What do you recommend should be done in your schools in as far as environmental awareness is concerned?

Thank you very much for participating in this discussion. God bless.

APPENDIX 4

SEMI-STRUCTURED INTERVIEWS FOR TEACHERS

Introduction

My name is Mweetwa, Milimo. D, a post graduate student at the University of Zambia (UNZA), conducting an assessment on environmental awareness towards sustainable development among grade twelve secondary school pupils in Lusaka District. This study is important because it deals with environmental issues that are currently global concerns. It is in this vein, that researches of this nature should be conducted for in-depth understanding of mitigation measures to try to resuscitate the viability and reliability of our fragile planet earth.

You have been selected to be one of the respondents to this very important study. You are also assured that the information you will provide will be treated confidential and also strictly be for academic purposes. You are also requested to be as frank and truthful as possible in giving your discussion.

The guide

1. How do you rate your understanding of environmental awareness, very good or otherwise?
2. Briefly explain how environmental awareness and sustainable development are related.
3. Are there some environmental awareness programmes in your school? If they are there please mentions some and explain their viability.
4. Who initiates the environmental awareness programmes and activities in your school?
5. What subject do you teach and are there some environmental topics in your subject?
6. Have you been conducting outdoor environmental activities for your pupils and if you have been mention some and how often?
7. Briefly explain challenges that you face in your quest to teach environmental issues in your school.
8. What do you recommend should be done in schools in as far as environmental awareness towards sustainable development is concerned?

Thank you very much for the information that you have given. God bless you.

APPENDIX 5

SEMI-STRUCTURED INTERVIEWS WITH HEADTEACHERS

Introduction

My name is Mweetwa, Milimo. D, a post graduate student at the University of Zambia (UNZA), conducting an assessment on environmental awareness towards sustainable development among grade twelve secondary school pupils in Lusaka District. This study is important because it deals with environmental issues that are currently global concerns. It is in this vein, that researches of this nature should be conducted for in-depth understanding of mitigation measures to try to resuscitate the viability and reliability of our fragile planet earth.

You have been selected to be one of the respondents to this very important study. You are also assured that the information you will provide will be treated confidential and also strictly be for academic purposes. You are also requested to be as frank and truthful as possible in giving your discussion.

The guide

1. Please briefly explain what you understand by environmental awareness programmes towards sustainable development.
2. Briefly explain on the availability of environmental awareness programmes and activities in your school.
3. Are pupils actively involved in environmental activities in your school?
4. Do you have some subjects that outrightly have topics on environmental issues in your school and if they are there please mention them?
6. Briefly talk about the challenges that you face in carrying environmental awareness programmes and activities in your school.
7. In your view, what would you recommend to be done to promote environmental awareness towards sustainable development in secondary schools in Zambia?

Thank you very much for the information provided.