BARRIERS TO SUCCESSFUL IMPLEMENTATION OF ENVIRONMENTAL EDUCATION IN ZAMBIAN HIGH SCHOOLS: A CASE STUDY OF SELECTED HIGH SCHOOLS OF CENTRAL PROVINCE

By

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A dissertation submitted to the University of Zambia in partial fulfillment of the requirements for the award of the Degree of Master of Education in Environmental Education

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DECLARATION

I, **PAULINE NAMAKAU MONDE**, declare that the dissertation hereby submitted is my own work and it has not previously been submitted for any Degree, Diploma or other qualification at the University of Zambia or any other University.

Signed: ……

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APPROVAL

This dissertation by PAULINE NAMAKAU MONDE is approved as partial fulfillment of the requirements for the award of the Master of Education (Environmental Education) degree of the University of Zambia.

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DEDICATION

I dedicate this work in appreciation to my husband Mwiinga Cheelo and my daughters Muloongo and Milimo Cheelo not forgetting my aunties and uncle, Maureen Mwiya, Mr. and Mrs Chishinga for their firm foundation in me. You have all made me what I am today.

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LIST OF ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
BNES	Botswana National Education System
CDC	Curriculum Development Centre
DET	Department of Education and Training
CPD	Continuous Professional Development
ECZ	Environmental Council of Zambia
EE	Environmental Education
EEP	Environmental Education Policy
ESD	Education for Sustainable Development
GRZ	Government Republic of Zambia
HIV	Human Immunodeficiency Virus
MDG	Millennium Development Goals
MoE	Ministry of Education
MTENR	Ministry of Tourism Environment and Natural Resources
NGOs	Non Governmental Organisations
NPE	National Policy on Education
PEO	Provincial Education Office
PM	Preventive Maintenance
PU	Production Unit
SADC	Southern Africa Development Countries
SD	Sustainable Development
SEEP	School Environmental Education Policy
SEEPs	School Environmental Education Policies
UNESCO	United Nations Education Scientific and Cultural Organisation
ZHS	Zambian High Schools

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ABSTRACT

It is globally known that the environment is under threat of degradation. It is even very clear in a number of places across the globe how human activities have led to the degradation of the environment. There is need to lay emphasis on local, national and international cooperation in the solution to environmental problems (UNESCO: 1979)

Zambia, like many other countries, has not been spared from environmental problems. According to the Ministry of Education, Environmental Education in Zambia is a cross cutting issue that is incorporated in all the subjects taught in schools (GRZ, 2001). It is, therefore, important to incorporate Environmental Education in all forms of education be it formal, informal or non-formal.

This study investigated barriers to successful implementation of Environmental Education in 6 selected Zambian High Schools in Central Province. The study sample was composed of 93 respondents of which 8 were MoE officers, 5 high school administrators, 50 teachers and 30 pupils. The aim of the study was to determine barriers to the implementation of Environmental Education in Zambian High Schools. The study further sought to find out challenges faced by Zambian High Schools in implementing Environmental Education.

One of the objectives of this study was to establish the effectiveness of the current National Policy on Education 'Educating our Future' of (1996) in helping the implementation of Environmental Education in Zambian High Schools.

The study adopted a qualitative and quantitative research design. The research instruments that were used to collect data were questionnaires, focus group discussions and guided interview schedules.

The study established that all stakeholders in the implementation of Environmental Education in high schools faced a lot of challenges. The study revealed that MoE officials had a poor mechanism of communicating with high school officials regarding the position of EE and, hence, some information known by MoE was not known by school administrators. The study further established that most teachers lacked knowledge on Environmental Education making it difficult to acknowledge it and even teach it successfully.

The study recommends that there is a lot of room in improving the delivery of Environmental Education in Zambian High Schools. There is need to educate school administrators and their teachers on the existence and status of Environmental Education in school subjects.

CHAPTER ONE

INTRODUCTION

1.1 Preamble

This chapter presents the background of the research, statement of the problem, the purpose of the study as well as the specific objectives of the study. The chapter also includes the significance of the study and finally outlines assumptions and limitations encountered during the research.

1.2 Background to the Study

Issues concerning the environment have become major concerns in all spheres of life. Environmental issues are widely discussed in politics, economics and even spoken about in the streets. Exploitation of the environment by humans has become visible everywhere. Zambia has not been spared from the effects of environmental degradation. The need to protect the environment has grown to be a huge issue of concern. UNESCO (1997) argues that everyone is aware of the impact of environmental problems in that, we smell them in the air, taste them in water, see them in more congested living spaces and blemished landscapes, read about them in the newspapers and hear about them on radio and television. The main way of redeeming the nation from this decadence is by way of education.

In support of the role of Environmental Education in protecting the environment, the Environmental Education Bulletin (2009) states that people's attitude towards the environment needs to change because the destruction of our environment will soon reach a point of no return. The document further advises that the best way to do this is through

education because education is key to achieving the changes that we need in order to live in a manner that the planet can support.

Education could be formal, non-formal or informal. This study focused on Environmental Education (EE) in a formal education set up of a high school. Lotz- Sisitka (2004) citing the Jomtiem Conference (1990) explains that one of the recommendations from the World conference on 'Education for all' included environmental literacy, ensuring that Environmental Education and training in all sectors of society takes place. The Millennium Development Goals (MDGs) also attempt to address this phenomenon and to that effect have supported the education for all by underpinning among the goals, "to achieve universal primary education". This implies a complete primary school course for all boys and girls universally, hence, the emphasis on introducing Environmental Education in the formal education sector. The GRZ (1996) emphasises that the Zambian Government recognises the basic right of every Zambian to quality education. This means that the government of Zambia endeavors to provide formal and relevant education to all Zambian citizens.

It is from this background that an interest was developed to find out barriers to the implementation of Environmental Education in this organised learning system called a school.

1.3 Statement of the Problem

According to the Zambian MoE, EE was a cross cutting issue which implied that it was incorporated in all the existing subjects in schools (GRZ, 2001). But was this actually the case?

Mweembe (2008) found that Environmental Education was not recognised by a number of teachers in Zambian High Schools (ZHS) as a component that could be integrated in their subjects or a subject that could be taught. The author explains that, a number of teachers could not define Environmental Education. This created a mismatch between what the MoE had written as policy and what was actually taking place in schools.

Despite the existence of this mismatch, it was observed that little had been done to find out barriers to the successful implementation of Environmental Education in Zambian High Schools. This study, therefore, was carried out to establish barriers to the non-recognition of Environmental Education in Zambian High Schools.

1.4 Objectives of the Study:

The main objective of this study was to determine barriers to the implementation of Environmental Education in Zambian High Schools.

Other objectives were to:

i. assess the effectiveness of the 1996 National Policy on Education (NPE) in facilitating implementation of Environmental Education in the Zambian High Schools.
ii. investigate problems that Zambian technocrats faced in implementing Environmental Education in the Zambian High School curriculum.
iii. find out challenges that Zambian High School teachers faced in teaching Environmental Education integrated in their subjects.

1.5 Research Questions

The general research question tackled in this study was, 'What were the barriers to the successful implementation of Environmental Education in Zambian High Schools?' This question was addressed through the following specific research questions:

i. How effective has the 1996 National Policy on Education been in facilitating the implementation of Environmental Education in Zambian High Schools?
ii. What problems do technocrats face in implementing Environmental Education in the Zambian High School Curriculum?
iii. What challenges do Zambian High School teachers face in teaching Environmental Education integrated in their subjects?

1.6 Significance of the Study

The researcher saw it necessary to carry out this study because environmental issues have been, and are still highly discussed everywhere. It is also true that care for the environment begins by educating people. Therefore, it is hoped that the findings of this study may provide initial guidance to relevant stakeholders on effective implementation of Environmental Education in ZHS. Beneficiaries of the study would include the following:

- Pupils: The results of this study may give pupils the correct activities that would help them manage their environment sustainably;
- Teachers: Results of this investigation may help teachers of all fields to appreciate the importance of Environmental Education;
- Curriculum Development Centre (CDC): The results of this study may provide a guide in incorporating Environmental Education in the curriculum, and

- Lastly, the identification of the barriers to successful implementation of EE in ZHS may assist the MoE to find alternative ways in which Environmental Education may be recognised and implemented in ZHS.

1.7 Assumptions and Limitations of the Study

Before the study was carried out there were assumptions that the researcher had and these are listed below. The limitations which were encountered in the study are also explained below.

1.7.1 Assumptions

The assumptions in this study were that:

i. the respondents would participate willingly to give correct and accurate answers to the questions so that the stated objectives are achieved;
ii. the respondents had knowledge on how to respond to the questionnaires and
iii. the respondents would be free to discuss any matter pertaining to the questions that would arise.

1.7.2 Limitations

The following were the limitations of the study:

i. The research was only conducted in six (6) selected high schools of Central Province due to limited financial resources and time. Therefore, the results of this study might not be generalized to the whole country;
ii. The other limitation was failure to use the observation method. Most of the teachers in the schools visited were found to be busy preparing for the final Grade

Twelve (12) Examinations. Time for observations was therefore denied as most of the teachers claimed to have been revising and

iii. Lastly, efforts to get the required number of respondents from the only private high school in Kapiri District proved futile as most teachers were reported to have had gone for 2010 census preparations.

1.8 Operational Definitions of Terms

Curriculum

For the purpose of this study, the word curriculum referred to all the laid down activities that both teachers and pupils in a school must follow (either inside the classroom or outside the classroom) to lead to the cognitive and physical development of the pupils.

Barrier

A barrier in this study referred to any activities, events, situations, people or anything that prevents or does not allow the successful implementation of Environmental Education in the school curriculum.

Implementation

Implementation, according to this study referred to the teaching of Environmental Education in ZHS either as an independent subject or as integrated in already existing subjects.

1.9 Summary

In summary, this chapter presented the background of the research, statement of the problem, the purpose of the study as well as the specific objectives of the study. The significance of the study, assumptions and limitations encountered during the research as well as operational definitions of terms have also been presented.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter discusses the various literature that is similar to the study that was carried out. It ranges from origins of Environmental Education globally to related studies conducted in Zambia

2.2 Origins of Environmental Education in other parts of the World

'Environmental Education' is a critical phrase in this research, hence, the need to highlight its meaning. The phrase is made up of two words 'Environment' and 'Education'.

2.2.1 Environment:

MTENR (2007: iv) defines the word environment as:

> *The Ecosystem of which mankind is part including cultural and man made features. It can sometimes be defined as the complex set of physical, geographic, biological, social, cultural and*

political conditions that surround an individual or an organism and that will ultimately determine its form and nature of its survival

UNESCO (1991: 13) has a brief definition which states that: "Environment means the whole global ecosystem. It includes both the natural environment and the man made environment."

From the two definitions of the word environment, one thing that is common is that environment refers to everything that surrounds a person and the care of the environment therefore becomes vital. The term environment refers to the summation of all activities that human kind may find themselves participating in. The interactions could be with other biotic or abiotic organisms.

2.2.2 Education:

UNESCO (1991) explains that education is understood to include all means advancing personal learning processes and management of life during all phases and tasks through out an individual's life.

Education can be formal, informal and as well as non formal. Regardless of the type of education, what is cardinal is that, the learning process has to be life-long and should be able to change the lifestyle of a human being in favour of the environment, in the case of this study.

2.2.3 'Environmental Education'

Environmental Education has been defined in various ways. One of the declarations made by the Tbilisi Intergovernmental conference on Environmental Education cited in

(UNESCO, 1980:11) was that: "Environmental Education, properly understood should constitute a comprehensive lifelong education, one responsive to changes in a rapidly changing world".

On the contrary, UNESCO (1991) explains that since Environmental Education has not yet become established, it has many definitions. The document however, attempts to define Environmental Education as education that conveys environmental attitudes, knowledge, skills and preparedness based on pedagogical thinking so as to strengthen the environmental awareness of pupils and students.

The definition above is incomplete as it only relates Environmental Education to that which can only take place in the classroom. Its emphasis is on pupils and students. Every person whether in or out of school, is supposed to be environmentally educated. This study, however, focuses on Environmental Education in high schools.

The definition of Environmental Education is being refined with time and below are some detailed definitions of Environmental Education. According to the International Conservation Union (ICU) in MoE (2001: 43), 'Environmental Education' is defined as:

> *The processes of recognizing Values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among man, his culture and his bio-physical surroundings*

Le Grange (1999) has also included the term process in the definition of Environmental Education to allow for openness and inclusiveness.

UNESCO in ECZ (2001) define Environmental Education as a permanent process in which individuals gain awareness of their environment and acquire the knowledge, values, skills, experiences and also the determination to enable them to act individually and collectively in order to solve present and future problems.

In the three definitions, the word 'process' is a common factor, except that the latter definition adds the adverb 'permanent' before the word 'process'. In this study, Environmental Education will refer to that form of education within the school set up that will inculcate into the lives of learners, values and knowledge of environmental concerns in its broadest view of economic, social, political and natural spheres, running from primary to secondary and even tertiary education. This kind of education should be able to create a change in the life of the learner and this change will be seen by the attitude of the learner towards the environment.

Internationally, there has been growing emphasis on Environmental Education as a response to the current environmental crisis (Le Roux, 2001). In South Africa, as an illustration, a number of environmental movements have developed due to increasing awareness of environmental problems (Le Roux, 2001).

This increasing consciousness of human exploitation of environments has brought about many responses. It is very clear that in the last three decades a number of conferences, (inter)governmental conventions, a myriad of published books, and numerous reports have been delivered concerning environmental issues. The media has joined by taking the lead in producing environmental programmes (although not intensified). Environmental Education is among such activities that have come on board to try and broaden the

spectrum of fighting environmental crisis. Environmental Education programmes are now offered in schools, universities and the non-formal education sector to try and intensify the arrest of environmental problems that are on the rise.

2.2.4 Brief History of Environmental Education

The history of EE can actually be traced back to ancient times when it was based on the belief that certain sets of values, knowledge, perspectives and attitudes are better able to contribute to environmental friendly action and the solving of environmental problems than others (Sandel et al., 2005).

Rao and Reddy (1997) also acknowledge that history of Environmental Education can be traced back to ancient thinking. The two authors observed that the origin of Environmental Education can be traced to the 19th century through Patrick Geddes, a Scottish professor in botany who linked environment and education. Other educationalists like Adams came on board and propagated the idea that learning of young children took place through contact with the environment. Environmental concern was then expressed by a number of people.

Rao and Reddy (1997) further explain that in 1965, at the University of Keele, Environmental Education was agreed to be an essential part of education for all because of its immense educational potential and importance of understanding that it offers to the learners. Later, the international efforts in the fields of Environmental Education had further catalystic effect in developing Environmental Education in individual countries.

However, other authors such as Palmer (1998) trace the roots of Environmental Education back to the 18th century even though it was not widely used. This was a time

when some philosophers such as Jean-Jacques Rousseau and others stressed the importance of an education that focuses on the environment. It is held that several decades later, Louis Agassiz, a Swiss-born naturalist, echoed Rousseau's philosophy in his encouragement to students to "study nature and not books". It can be argued here that, the two scholars helped to lay the foundation for a concrete Environmental Education programme, which was known as 'nature study'. This nature movement helped students to appreciate the natural world. From then on, a number of environmental movements emerged. In the 1960s and 1970s, for example, the modern environmental movement arose from the Nature Studies and it was around this time when many events such as Civil Rights, Vietnam and the Cold war placed Americans at odds with one another and their government. These and other environmental problems such as pollution and waste raised a public concern which led to the formation of a unifying phenomenon known as environmentalism.

Other authors also assert that internationally, Environmental Education gained recognition when the United Nations conference on Human Environment which was held in Stockholm, in 1972, declared that Environmental Education must be used as a tool in arresting global environmental problems. Later in 1977, another conference held in Tbilisi on Environmental Education emphasized the role of Environmental Education in preserving and improving the global environment and gave rise to one of the most widely accepted definitions of Environmental Education (MacGregor, 2003).

In South Africa an Environmental Education movement was pioneered by non-governmental conservation agencies and state conservation agencies (Irwin, 1990). Irwin is considered by some people as one of the founders of EE in South Africa. He explains

that the interest in Environmental Education (EE) in South Africa started as early as the 1960s, but by 1989 there had been no nationwide and a state driven attempt to include EE into the formal curricula. Mosidi (1997) explains that the first attempt to include EE in the formal curriculum was in the 1989 White Paper on Environmental Education. He further explains that the White Paper's inclusion of the guidelines adopted at the international conferences held in Belgrade (1975) and Tbilisi (1977), was an encouraging shift from narrow interpretations of Environmental Education held up to this point. However, Clacherty (1994:56) points out that, implementation of the white paper in formal education was not very successful because the white paper was not enacted in parliament.

From the various analyses on the origin of EE in this section, one clear thing is that most countries are striving to use education as a panacea for solving these economic, political, social and natural crises. However, education may have its weaknesses as seen from the many ideologies of education which among others indicate that the education system is not neutral. Following this history, Environmental Education has also become of great emphasis in Zambia to an extent that a course of study to train people in Environmental Education has been introduced at the University of Zambia (SADC, 2005).

2.3 Environmental Education and its Relevance

Environmental Education is an important tool in responding to global environmental crisis. Global environmental issues and concerns are increasing rapidly. UNESCO (1980) explains that Environmental Education should not respond to a momentary concern but should be an essential component of the effort taken by individual countries to give

greater social effectiveness to education and to make it a factor in national development. The report further urges countries that this effort can only be attained fully if the means required to developing Environmental Education are explicitly provided for in educational policies and general planning. This meant that Environmental Education would no longer be limited to certain groups, institutions or programmes, but would become an essential and permanent component of the educational process.

UNESCO (1980) acknowledges the role of the media in creating public awareness of environmental problems but on the contrary states that this type of information has its limitations. According to UNESCO (1980), the media mainly places emphasis on the superficial or anecdotal aspects of the questions and mainly informs those who are already well informed.

The researcher subscribes to the position by UNESCO (1980) that Environmental Education being an essential issue and an answer to our environmental problems, does not just need mere awareness by the people but a full participation of every individual. Mere awareness of the people may not give them chance to ask questions and further clarification on environmental matters that they may not understand. Hence, Zambia needs an organized system through which the values of Environmental Education are imparted in people and allow them to seek clarification to enable them adopt a new approach and acquire new knowledge (UNESCO, 1980).

2.4 The aim of Environmental Education in Schools

Environmental Education as a cross cutting issue has its significance which should support its implementation in the curriculum. The word curriculum is used in a number of ways.

A curriculum is a formal and informal content of learning and a process by which learners gain knowledge and understanding, develop skills and alter attitudes, appreciation and values under the auspices of an educational institution (Green, 1998).

MoE (1996) views the curriculum as to contain the structures and processes of teaching and learning which the school provides in accordance with its educational objectives and values.

The same word is defined by the Encarta Dictionary (2004) as subjects taught at educational institutions or topics that are covered under a subject. It has also been described as; what is taught, how it is taught, teachers' materials, students' materials, learning materials, educational experiences and all people's experiences combined into a rational whole (Doll, 1989).

According to the first intergovernmental conference on EE, the following were the ultimate goals of EE as outlined in UNESCO (1980):

- To enable human beings to understand the complex nature of the environment being as it results from interactions among the biological, physical, social, economic and cultural aspects;

- To contribute to an appreciation of the importance of the environment in economic, social and cultural development and
- To provide a clear awareness of the economic, political and ecological interdependence of the modern world;

GRZ (2001) also highlights objectives of Environmental Education and emphasises that these focus on five aspects namely; awareness, knowledge, attitudes, skills and participation. Below is a brief description of each of these five aspects according to UNESCO in GRZ (2001: 43, 44):

- awareness:

  To help social groups and individuals acquire an awareness and sensitivity to the total environmental and associated problems;
- attitudes:

  To help social groups and individuals acquire a set of values and feelings of concern for the environment and the motivation for actively participating in environmental improvement and protection;
- knowledge:

  To help social groups and individuals gain wide experience and acquire a basic understanding of the environment and associated problems;

- skills:

  To help social groups and individuals acquire the skills for identifying and solving environmental problems and

- participation:

  To provide social groups and individuals with an opportunity to be actively involved at all levels in working towards resolution of environmental problems;

If all these objectives could fully be achieved in schools, Environmental Education would be a success. Pupils would be enlightened and made aware of environmental problems and that awareness would lead to change in their attitude and behaviour towards the environment. Knowledge and skills about the environment would be imparted in learners, in this case, the pupils. An indication of this knowledge in the pupils would then be seen by their participation in solving environmental problems and preventing environmental exploitation where possible.

2.5 Incorporating Environmental Education in the Curriculum

UNESCO (1980) observed that there was no universal model for incorporating EE in the curriculum. Each country, based on its specific conditions, ultimate aims, educational and socio-economic structure, can lay down the approaches, procedures and progressive stages of integration.

One can, therefore, state that the lack of a universal model could have been a serious challenge in a number of countries in trying to implement Environmental Education in the school processes. A universal model can be drawn and be used as a guide in countries with different socio-economic factors. A universal model on implementing EE is needed. What is required is for each country to establish the goals of Environmental Education so as to create suitable strategies to meet the needs for a particular country. It states that

strategies for the integration of Environmental Education into formal education should take into account the various components of the educational process, that is to say the objectives, content and methods, teaching materials, training of personnel, research and evaluative activities (UNESCO, 1980).

The quotation above emphasizes, among other things, the need for teaching materials and the training of personnel. Teaching materials are very cardinal in the implementation of any educational activity. Countries have to secure teaching resources for Environmental Education if its implementation is to be a success.

Another key issue in implementing EE in the curriculum is the need for coordination among different stakeholders responsible for its implementation. This position arrived at is in view of the statement found in UNESCO (1980: 38) which says:

> *...if the various measures relating to Environmental Education are to be better interconnected and more effective, machinery for coordination between the institutions involved in the framing and implementation of environmental policies, in which education can and does play an important part, must be established or strengthened*

DET (2001) in its emphasis to include EE in the curriculum explains that when EE is incorporated into the school curriculum, students will learn **about** the environment, develop skills to investigate and solve issues **in** the environment, they will also acquire attitudes of care and concern **for** the environment that will help them adopt behaviours and practices which **protect** the environment and understand the principles of ecologically sustainable development.

It is therefore important that most countries strive to incorporate EE in their school curricula.

2.6 Barriers faced by other countries in implementing Environmental Education in the Curriculum

EE, as indicated already under background of the study, is one way of responding to the global environmental crisis. As a result of this, a number of countries have conducted studies related to the success of EE in responding to the environmental crisis. Below is a discussion on some studies conducted in some countries on implementing EE in different educational sectors and also challenges faced in doing so.

According to Filho and O'Loan (1996) in a study conducted in Scotland, it was noted that the failure to recognize the crucial role of teacher education in the process of developing a sound environmental action was a barrier for the limited success of EE in that country. This implies that EE should be introduced during the time of teacher education if its implementation is to be successful in the schools. Wilke (1985) also argues that a teacher is key to successful EE in the classroom. If teachers do not have the knowledge, skills, or commitment to environmentalize their curriculum, it is unlikely that students with environmental literacy will be produced.

Harde (1982) also noted that lack of clarity or understanding by many people of what EE is and what it does is a challenge in implementing Environmental Education even in teacher pre-service programming.

Filho and O'Loan (1996) further explain that a number of teachers cannot differentiate between Environmental Education and environmental studies. How then can Environmental Education be successfully implemented if the educators themselves are not aware of it?

Taylor (1988) further acknowledges that it is not possible to expect teachers without the expertise to teach EE to successfully transmit environmental ideas to students in a manner that will stimulate the students to think holistically, regionally and globally about the environment rather than treating each topic as an isolated, discrete entity.

Ballantyne (1995) identifies four major barriers to implementing Environmental Education and these are:

i) competition for time in an already full curriculum;
ii) problems with management of cross-disciplinary approaches or infusion;
iii) a shortage of qualified and experienced environmental teacher educators and
iv) few opportunities for students to undertake Environmental Education teaching and observe good environmental education practice during their professional teacher experience in the schools.

On the other hand, Scott (1996) argues that the four factors listed by Ballantyne are not the only ones, neither are they the major limiting factors. He suggests five limits as follows:

i) the organization of initial teacher education within the particular country,
ii) the practice in terms of working with students and schools,
iii) the interpretation of Environmental Education found within courses,
iv) the readiness and ability to incorporate Environmental Education into courses and
v) the opportunity to deliver Environmental Education goals through pre-service courses.

Ketlhoilwe (2007) conducted a similar study in Botswana. He looked at challenges of implementing the Environmental Education Policy (EEP) in Botswana Schools. The paper examined the teachers' responses to the introduction of Environmental Education into the Botswana National Education System (BNES) through the revised National Policy on Education (NPE). The analysis presented in the report showed the overview of the genesis and the interpretation of EE in Botswana schools and further explained the attitude of teachers towards the introduction of new policies, in this case, introduction of EE in the schools. The following were the findings of Ketlhoilwes' (2007); research.

According to Ketlhoilwe (2007), trying to implement Environmental Education into the BNES, faced barriers such as; equating Environmental Education with environmental management activities in schools, expressing frustration over lack of resources in schools to undertake field trips and equating Environmental Education with environmental science.

The researcher went on to explain that a number of teachers indicated that they had never been involved in any Environmental Education in-service training, (This is similar to what Filho and O'Loan (1996) established in their study in Scotland). Some teachers in the research indicated that they had come across Environmental Education in universities and colleges. Other teachers in the research, however, confirmed that their teaching of Environmental Education was improving because of training workshops on Environmental Education although others complained of getting too much material with no enough opportunity to develop thorough knowledge of a few things.

2.7 Ministry of Education and Environmental Education in Zambia

Like in many other countries, Zambia's environment has not been spared from degradation. The MoE acknowledges that EE has many important features which justify its placement in the curriculum (GRZ, 2001). GRZ (2001) further acknowledges that Environmental Education needs to be taught at basic level and that its focus (Environmental Education) should not only provide basic facts, bring about a positive change in the pupils' attitude and behavior in the way they regard their environment. Among the goals of the education system stated in The National Policy on Education is "to produce a learner who can participate in preserving the ecosystem in one's immediate and distant environment" (GRZ, 1996: 5). This statement clearly means that Environmental Education is supposed to be a whole- school commitment and concern.

The aspect of changing attitude and behaviour is very cardinal in the success of Environmental Education. This should, however, begin with the teachers and all Environmental Education educators to lead by example. The MoE also acknowledges that Environmental Education is a cross cutting issue and should therefore be taught across the curriculum, for example, in Social Development Studies, English and Environmental Science. Therefore, EE was to be integrated in all subjects (GRZ, 2001).

GRZ (2001) points out that school plays an important role in the teaching of Environmental Education across the curriculum. It is the role of the school to encourage the learners to put into practice what they learn.

2.8 Environmental Education in Zambian High Schools

Mweembe (2008) observed that although most teachers' and administrators' attitudes appeared positive towards the teaching of EE, they did not recognize the teaching of EE in their schools. The Teachers were aware of EE but did not acknowledge that they needed to teach it or how they should have taught it. Mweembe (2008) simply established that high school administrators and teachers did not acknowledge that EE was there in the existing subjects.

2.9 Summary

This chapter presented the various literatures on Environmental Education in Zambia and outside Zambia. However, there is no literature that points out barriers to implementation of Environmental Education in Zambian High Schools, hence this study.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter discusses the various methods that were used in the study. It includes the study area, the research design, the research instruments, the target population and sampling procedures. It also covers data collection and analysis.

3.2 Study Area

The research was conducted in the Central Province of Zambia. The province was chosen because the researcher lived in Kabwe therefore it was easy to get to the targeted schools. Central Province is one of Zambia's nine provinces. The provincial capital is Kabwe. Central province has 6 districts namely; Kabwe, Kapiri, Mkushi, Chibombo, Mumbwa and Serenje Districts. The targeted schools were sampled from Kabwe and Kapiri Districts.

3.3 Research Design

The study employed both quantitative and qualitative design approaches. Quantitative research design was employed because some of the qualitative data collected needed to be quantified.

It was qualitative in that it brought out subjective experiences and views of pupils, high school teachers, school managers and MoE officials on the barriers to successful implementation of EE in Zambian High Schools. The study used quantitative design in order to evaluate the role of the 1996 National Policy on Education in helping

implementation of EE in ZHS. Evaluation design should be viewed as an opportunity to learn and improve the current practices (Janse van Rensburg, 2000).

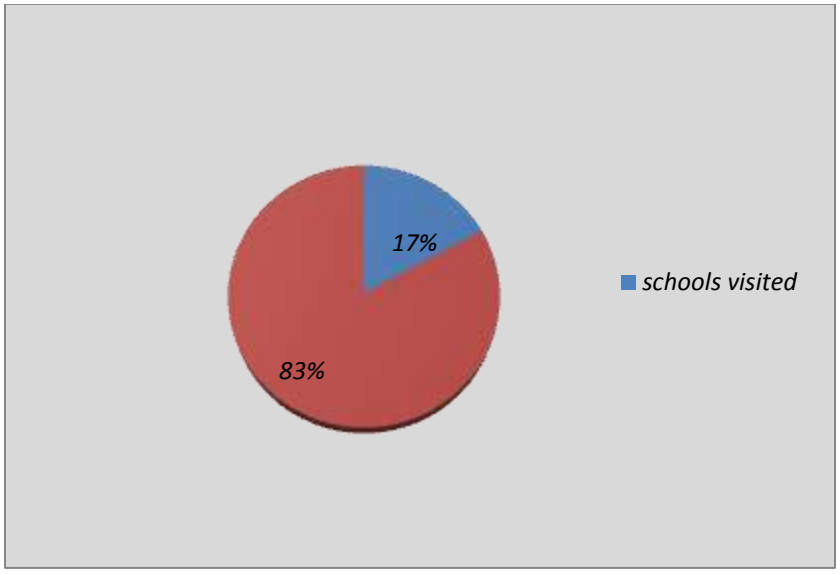
3.4 Target Population

The target population comprised MoE officials from CDC and Provincial Education Office (PEO) of Central Province, School Managers, teachers and pupils from high schools in Central Province.

3.5 Study Sample

The study comprised 93 respondents. Out of 36 high schools in Central Province (check figurer 1 below), 6 high schools were purposively sampled so that three rural high schools from Kapiri District and three urban high schools were picked from Kabwe District. This gave a 17% representation of high schools selected in central province. The representation of targeted high schools is shown in figure 1.

Fig 1: Targeted high schools in Central Province



Source: Field Data (2010)

School managers, being the overseers of all the programmes in their high schools, were interviewed to get their views on EE. In all, 5 school managers were interviewed. Teachers, who are the direct implementers of EE, could not be left out in this study. Hence, a total of 50 teachers were interviewed. MoE officials were also interviewed as they are the main stakeholders in designing and implementing the ZHS curriculum. The MoE views on the National Policy on Education gave direction on this study. The composition of the study sample is summarised in table 1 below.

Table 1: Composition of the Study Sample

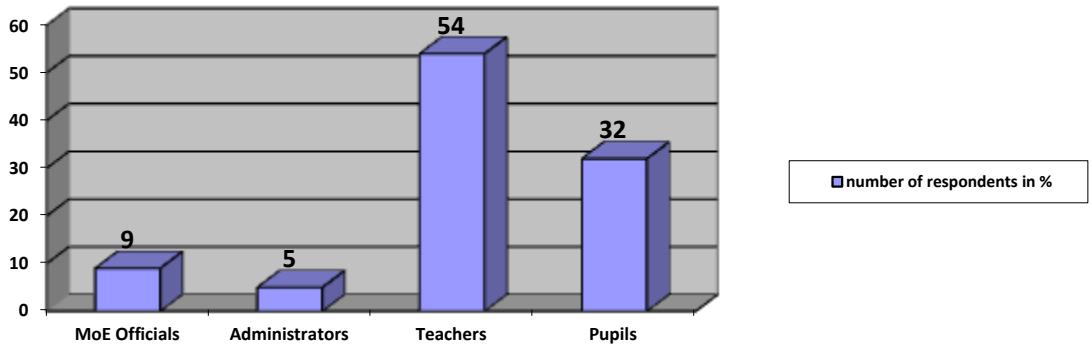
Position of Respondent	**Total No of Respondents**
School Manager/Deputy School Manager	5
High School Teachers	50
MoE Officials (PEO)	3
MOE Officials (CDC)	5
Pupils	30
TOTAL	**93**

Source: Field Data (2010)

The information in Table 1 shows that out of the 6 high schools that were sampled, only 5 school managers or deputy school managers were interviewed. High school teachers were 50 while the MoE officials were 8 and pupils were 30. Figure 2 shows the distribution of respondents by percentage.

Fig 2: Composition of Study Sample by Percentage

Percentage

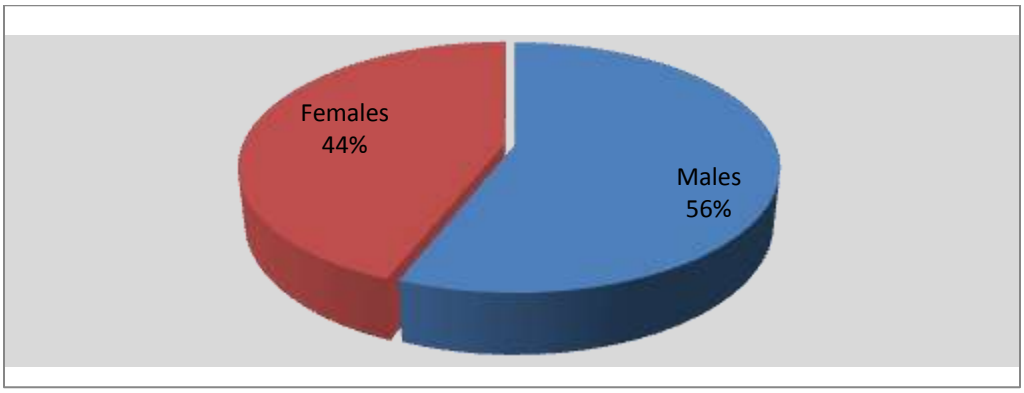


Category of Respondents

Source: Field Data (2010)

According to Figure 2, teachers represented the highest number of respondents (54%). This was followed by pupils with a representation of 32%. The MoE officials had representation of 9%. The lowest number was that of school administrators with a 5% representation. The next figure shows the composition of the study sample by gender.

Fig 3: Composition of the Study Sample by Gender

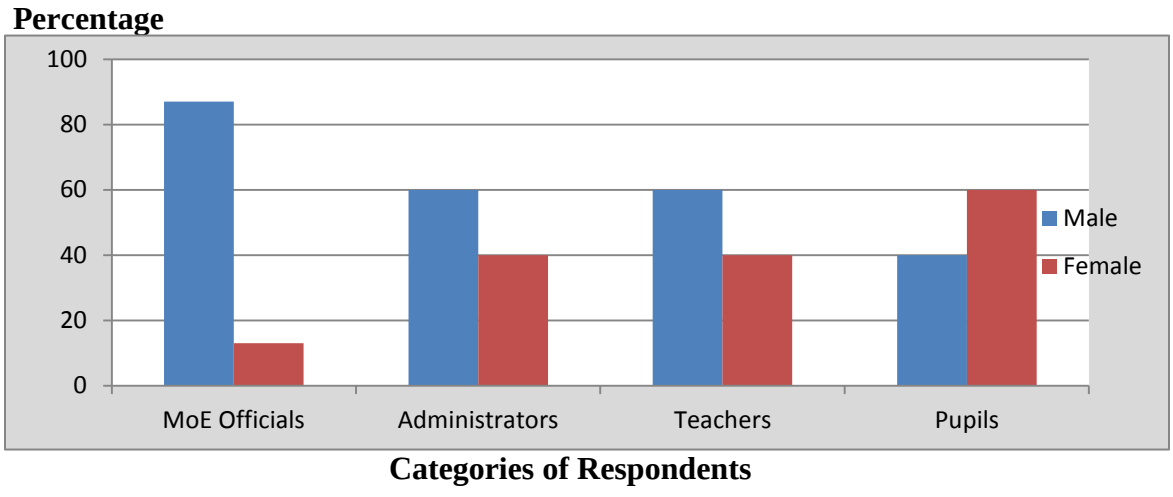


Source: Field Data (2010)

According to Figure 3, 44% of the study sample was females while 56% of the study sample was males.

There were four categories of respondents and these were MoE officials, high school administrators, high school teachers and pupils. Figure 4 shows the distribution of respondents by category and gender.

Fig 4: Composition of study sample by Category and Gender



Source: Field Data (2010)

Figure 4 shows that MoE respondents had more males (87%) than females (13%). The category of administrators had 60% male representation and 40% female representation. Teachers and pupils both had 60% male representation and 40% female representation.

3.6 Sampling Procedure

The study sample was made up of respondents from different institutions, hence, the sampling procedure differed from one group of respondents to another.

3.6.1 Sampling of High Schools

Purposive sampling procedure was used to select 6 high schools in Central Province. From Kabwe Urban District, 3 high schools were purposively selected while the other 3 were purposively selected from Kapiri Rural District. This procedure was chosen because it ensured that the schools selected were not in the same locality. Table 2 shows the details.

Table 2: Sampled High Schools and their Locations

Rural (Kapiri District)	**Urban (Kabwe District)**
St Paul's Boys High (Mission School)	Angelina Tembo Girls High (Mission School)
Mukonchi High (Government School)	Kabwe High (Government School)
Ellensmere High (Private School)	Bwacha High (Government School)

3.6.2 Sampling of High School Teachers

Selection of high school teachers was done with the aid of school managers who provided the staff lists and then names of respondents were selected by a simple random sampling method. This was done by attaching a number to each teacher on the list. The numbers were then written on separate pieces of paper, folded and put in a box. The researcher carefully shook the box and randomly picked 10 pieces of papers from the box one at a time. Whatever number was found on the paper represented the respondent that constituted the sample. This method was used to provide equal chances for all the teachers to be sampled. A total of 50 teachers in different teaching fields and with different qualifications were sampled. 20 of these teachers were female and 30 were male. The distribution of the sampled teachers by gender is shown in Table 3 while Table 4 shows the distribution of teachers by their location.

Table 3: Composition of Teacher Respondents by Gender

Gender	**Frequency**	**Percentage**
Female	20	40
Male	30	60
Total	**50**	**100**

Source: Field Data (2010)

The distribution of teachers in Table 3 shows that 20 of the sampled teachers which is a 40% representation of teacher respondents were female while 30 teachers that were sampled, a 60 % representation of the teacher respondents were male.

Table 4: Composition of teacher respondents by Location

Type of school	**Frequency**	**Percentage**
Mission Schools	20	40
Government schools	28	56
Private school	2	4
Total	**50**	**100**

Source: Field Data (2010)

Table 4 shows that out of the 50 teachers sampled, 20 teachers were from mission schools while 28 teachers were from government schools. This represented 40% and 56% of teacher respondents, respectively. Only 2 teachers were sampled at the only private high school in Kapiri District and this represented 4% of the total number of teacher respondents.

Table 5: Professional Qualifications of Sampled High School Teachers

Qualification	**Frequency**	**Percentage**
Diploma	35	70
Advanced Diploma	1	2
Bachelors Degree	14	28
Total	**50**	**100**

Source: Field Data (2010)

Table 5 indicates that 14 of the teacher respondents had Bachelors Degrees representing 28%. Only 1 respondent had an advanced Diploma giving a 2% representation while 35 of the teacher respondents had Diplomas which was a 70% representation.

3.6.3 Composition of High School Administrators

The high school administrators available in the school at the time of the research were also interviewed. A total of 5 administrators from 5 schools were interviewed. Distribution of the 5 administrators by gender is shown in Table 6, while Table 7 shows the distribution of administrators by their highest academic qualifications.

Table 6: Distribution of High School Administrators by Gender

Gender	**Frequency**	**Percentage**
Female	2	40
Male	3	60
Total	**5**	**100**

Source: Field Data (2010)

Table 6 shows that 2 of the school administrators interviewed were female, a 40% representation while 3 were male, giving a 60% representation.

Table 7: Academic Qualifications of High School Administrators

Qualification	Frequency	Percentage
Diploma	2	40
Degree	3	60
Total	**5**	**100**

Sources: Field Data (2010)

Table 7 shows that, of the 5 administrators that were interviewed, 2 of them representing 40% of the respondents, had Diplomas while 3 of them had Bachelors Degree a 60 % representation.

3.6.4 Sampling and Distribution of Pupils

The pupils were selected with the aid of class teachers and a total of 30 pupils were picked as part of the study sample. Distribution of the pupils by gender is shown in Table 8. The distribution of pupils by their grades is shown in Table 9.

Table 8: Composition of Pupil respondents by Gender

Gender	Frequency	Percentage
Female	18	60
Male	12	40
Total	**30**	**100**

Source: Field Data (2010)

Table 8 shows that 18 female pupils were sampled which gave a representation of 60 % while 12 male pupils were sampled giving a 40 % representation.

Table 9: Distribution of Pupils by Grade

Grade	**Frequency**	**Percentage**
10	8	27
11	12	40
12	10	33
Total	**30**	**100**

Source: Field Data (2010)

Table 9 shows that 8 of the pupil respondents were in Grade 10, 12 of them were in grade 11 and 10 of them were in Grade 12 giving a representation of 27%, 40 % and 33 % respectively.

3.6.5 Sampling and Distribution of Ministry of Education Officials

Under the MoE the officers that were available at the time of the study helped in giving information. This method was used to ensure that the relevant candidates with knowledge in Environmental Education were picked. 5 officials were from CDC while 3 were from the Provincial Education Offices (PEO) of Central Province. This gave a total of 8 MoE officials that were interviewed. All the five respondents from CDC were Curriculum Development Specialists in different subjects. The respondents from the MoE Provincial office were standards officers. Their distribution by gender is shown in Table 10 below.

Table 10: Composition of MoE Respondents by Gender.

Gender	**Frequency**	**Percentage**
Male	7	87
Female	1	13
Total	**8**	**100**

Source: Field Data (2010)

Table 10 shows that only 1 out of 8 MoE officials interviewed was female a 13 % representation while the other 7 were males giving 87 % representation.

3.7 Research Instruments

To obtain the required data in this study, structured interview schedule, structured questionnaires and focus group discussions were used.

3.7.1 Structured Interview Schedule

This was administered to the school managers and MoE officials. Interview schedule was used on this group of people because of the nature of their daily busy schedules. In addition to this, an interview schedule allowed the researcher to probe questions to some of the answers that needed further clarification.

3.7.2 Structured Questionnaire

A structured questionnaire was administered to high school teachers and pupils. The questionnaire was completed by the pupils in the presence of the researcher to give assistance where need arose.

3.7.3 Focus Group Discussion

This was administered to high school teachers offering different subjects. The same teachers that completed questionnaires independently later came together for a group discussion. The focus of the discussion was mainly on EE as a cross cutting issue and challenges faced in implementing EE in their various subjects.

3.8 Data Collection

Primary and secondary sources of data collection were used. Primary data were collected from all the respondents using the appropriate research instruments. Questionnaires were distributed to the high school teachers and pupils. Structured interviews were administered to the MoE Officials and School Managers. Focus group discussions with teachers were conducted at the high schools.

Secondary data were collected from University libraries, Curriculum Development Centre (CDC) Libraries. Data were also collected from various relevant ministries and dissertations. The internet was also used to obtain information from organisations that have websites such as Environmental Council of Zambia (ECZ).

3.9 Data analysis

Data was qualitatively and quantitatively analyzed. Qualitative data was analysed basing on emerging themes while some of the qualitative data was quantified manually and Microsoft Excel was used to present the information in form of tables with frequencies and percentages. Some of the data were presented in form of graphs.

3.10 Summary

This chapter presented the research methodology used in this study. It included a brief description of the study area, it also covered the research design, the research instruments, the target population, sampling procedures and data collection and analysis.

CHAPTER FOUR

PRESENTATION OF RESEARCH FINDINGS

4.1 Introduction

This chapter presents the findings of the study on barriers to the successful implementation of Environmental Education in Zambian High Schools (ZHS). The findings from the MoE officials are presented first, followed by those from high school administrators and teachers. Findings from pupils are presented last. The chapter also includes comparisons of the findings among government, mission and private schools. Rural and urban schools are also compared.

4.2 Ministry of Education's Position on Environmental Education in Zambian High Schools.

The first category of respondents was made up of officials from MoE. They were 8 in number consisting of 5 respondents from CDC and 3 from PEO in Central Province. An interview schedule was used to obtain information from MoE officials (Check Appendix 1 for details).

4.2.1 Definition of Environmental Education

One item on the schedule asked MoE respondents to define EE. This question aimed at finding out respondents' understanding of the term "Environmental Education". 76% of the respondents defined EE as a study of the environment or one's surrounding, where learners acquire knowledge on environmental benefits thereby making the learners to take care of that environment. 12 % of the respondents defined EE as using the environment sustainably. The other 12 % of the respondents defined EE as a component

that gives Sustainable Development (SD) to an individual within social, cultural, economical, political and environmental set up in a given society.

4.2.2 Implications of the statement of 'Environmental Education as a cross cutting issue'

The other item on the interview schedule aimed at finding out if MoE officials had the same view concerning EE being incorporated in all subjects as stated in GRZ (2001). The respondents were asked as to what was meant by "EE being a cross cutting issue." The following were their responses regarding the status of EE as a cross cutting issue:

- It could not stand on its own on the curriculum but could be covered in the existing subjects;
- It was related to various subject areas such as Science Education, Health Education, Geography and Civic Education;
- It was composed of various issues that affected society across life in given situations, for instance, issues on HIV/AIDS and deforestation and
- EE did not appear to have specific components hence it cuts across a number of issues in politics, economic and social life.

4.2.3 Environmental Education in Zambian High Schools

One item on the schedule looked at whether EE was being offered in ZHS or not and how it was being offered. Further, it looked at why it was not offered in some ZHS. Table 11 has the details.

Table 11: MoE's Position on EE being offered in Zambian High Schools

Response	Frequency	Percentage
Yes	6	75
No	2	25
Total	**8**	**100**

Source: Field Data (2010)

The results shown in Table 11 indicate that 6 respondents agreed that EE was being offered in Zambian High Schools giving a representation of 75 % while 2 respondents (a 25 % representation) indicated that EE was not offered in ZHS. Of the 6 that indicated that EE was offered in ZHS, 4 of them indicated that EE was not offered as a single subject but integrated in all the other teaching subjects. The other 2 who agreed that EE was offered in ZHS indicated that it was integrated in subjects such as Natural Sciences and Geography, but not all the subjects. All the 5 respondents from CDC agreed that EE was being offered in ZHS. Only 1 respondent from Central Province MoE Provincial office agreed that EE was offered in ZHS. The 25% respondents that indicated that EE was not offered in ZHS were both from the PEO's office in Central Province.

4.2.4 Reasons why Environmental Education was not offered in Some ZHS

The other item on the schedule aimed at finding out why EE was not being offered in some ZHS, particularly from the respondents that indicated so. The findings as shown in Table 11, show that 2 respondents from MoE indicated that EE was not being offered in ZHS. The reasons advanced for EE not being offered in ZHS were that there were no

precise materials and curriculum for EE to be offered and that many people did not know anything about it.

4.2.5 Availability of School Environmental Education Policy (SEEP) in Zambian High Schools

The item on the schedule aimed at finding out if MoE officials were aware of any Environmental Education activities taking place in ZHS. The question sought to find out if there was need for high schools to have a School Environmental Education Policy. Table 12 shows the responses.

Table 12: Need for a School Environmental Education Policy

Response	**Frequency**	**Percentage**
Yes	7	87
No	0	00
Don't know	1	13
Total	**8**	**100**

Source: Field Data (2010)

Findings from Table 12 show that 7 respondents agreed that ZHS needed to have a School Environmental Education Policy (SEEP) thus giving 87% representation. From CDC 1 respondent indicated that she was not aware of any SEEP and hence could not give any response to that question. However, 1 out of the 7 respondents (14%) that indicated that high schools needed a SEEP explained that no one formulated it. 2 of the 7 respondents (29%) indicated that it was the MoE that formulated a SEEP, while the other

4 respondents (57%) indicated that the individual schools formulated their own SEEPs. All the 4 respondents that indicated that the individual schools formulated their own SEEP were from CDC.

4.2.6 Role of School Environmental Education Policy in Zambian High Schools

Another item on the schedule aimed at finding out the role of a SEEP in ZHS. The answers received indicated that a School Environmental Education Policy was needed in schools because:

- It ensured that people act for the environment;
- It was a measure of standards and a reminder on what was supposed to be followed in schools;
- It cemented what pupils learnt in classrooms;
- It guided the school on what their mandate towards the environment was and how they could drive their dreams within their context and
- It prepared the learners to understand the environment and global changes and be able to interpret the effects.

4.2.7 Role of Ministry of Education in implementing Environmental Education in Zambian High Schools

The other item on the schedule was the role played by the individual officers in helping to implement EE in ZHS. The aim of this question was to find out the specific roles of the offices held by the respondents in implementing EE in high schools of Zambia. One respondent indicated that his office had no role in implementing EE in ZHS. This response was given by one of the 2 respondents that earlier indicated that there was no

EE in ZHS. The other 2 MoE Standards Officers indicated that their role was to monitor the delivery of activities lined up in schools such as cleanliness, school health and nutrition. Most CDC officials stated that their role in implementing EE in ZHS was mainly in suggesting programmes on behalf of the MoE. The CDC open and Distance learning section for example, was at the time of the research writing a book on Education for Sustainable Development (ESD) in Adult Literacy. CDC officials from the science section also indicated that EE was already integrated in the science syllabi and that the office was also working on developing teaching and learning materials such as text books, articles and magazines on EE.

4.2.8 Availability of Environmental Education Teaching Materials in Zambian High Schools

One other item on the interview schedule was on the availability of teaching resources such as text books and tools for any practical work in EE. The respondents were asked to indicate whether there were teaching and learning resources on EE in ZHS. Table 13 shows the distribution of the MoE officials on the availability of teaching resources in schools.

Table 13: Availability of EE Teaching Materials in ZHS

Response	**Frequency**	**Percentage**
Yes	6	75
No	2	25
Total	**8**	**100**

Source: Field Data (2010)

The findings in Table 13 show that 6 respondents, which is a 75% representation, agreed that there were teaching resources on EE in high schools which were mainly text books. However, most of them indicated that these resources were inadequate in most schools as EE topics could only be found in the text books of already existing subjects. Other respondents explained that text books could be there in some subjects while in other subjects they could be lacking. The other 2 respondents (representing 25%) indicated that there were no teaching resources on EE in schools.

4.2.9 Problems faced by Ministry of Education in implementing Environmental Education in Zambian High Schools

One other item on the interview schedule aimed at finding out the problems that MoE faced in implementing EE in ZHS. The first part of the question required that the respondents indicate whether or not there were problems in implementing EE in ZHS while the second part of the question required the respondents to list the problems if any.

The information that was collected revealed that all the respondents affirmed that there were problems in implementing EE in ZHS thereby giving a 100% representation. The findings also revealed the challenges that MoE was facing in implementing EE in ZHS. Problems stated were as follows:

- There were no specific teaching and learning materials;
- There was no specific syllabus and curriculum on EE;
- There were no trained teachers in EE to handle the component;
- There was no political will;

- It was less popular and difficult to change the mind set of people;
- The funds to purchase the required tools and teaching materials were limited;
- There was limited contact time in schools and
- Since it was integrated in other subjects, the text books that were used were not sufficient to provide the relevant EE.

4.2.10 Role of National Policy on Education in helping easy Implementation of Environmental Education in Zambian High Schools

The other item on the schedule aimed at finding out the extent to which the National Policy on Education had helped easy implementation of EE in ZHS. Table 14 shows the responses of MoE respondents on whether the National Policy on Education (NPE) had a role in facilitating easy implementation of EE in ZHS.

Table 14: Responses by MoE officials on whether the National Policy on Education has a Role in helping easy Implementation of EE in ZHS

Response	**Frequency**	**Percentage**
Yes	8	100
No	0	00
Total	**8**	**100**

Source: Field Data (2010)

The findings in Table 14 show that all the respondents indicated that the NPE had a role in facilitating easy implementation of EE in ZHS. This gave a 100% representation of

MoE respondents. Of the 8 respondents, 2 of them indicated that the NPE provided guidelines on EE as a cross cutting issue.

4.3 Knowledge of Environmental Education among High School Administrators

As already explained in the introduction of this chapter, the other group of respondents was that of administrators from the sampled high schools. The high school administrators were interviewed using a structured interview schedule to get their views on the barriers to successful implementation of EE in ZHS. (For the schedule, check Appendix 2.) The school administrators that were interviewed were 5.

4.3.1 Definition of Environmental Education

The first item on this schedule was aimed at determining the level of knowledge on EE among high school administrators. There were 5 Administrators that were interviewed from five different high schools namely, Kabwe high, Bwacha high, Angelina Tembo high, St Paul's high and Mukonchi high schools. All of them managed to give a definition of EE in different ways. Three of the respondents attached EE to learning or teaching about the environment. The other definition included physical, social, political, and economic aspects of one's surrounding to imply the environment. One respondent defined EE as a deliberate policy established with a view to maintaining and keeping the environment free from harmful substances.

4.3.2 Availability of School Environmental Education Policy in the Selected Zambian High Schools

The second item on the schedule was aimed at finding out if high schools had their locally established Environmental Education Policies. Out of the 5 administrators, 3 indicated that they had School Environmental Education Policies (SEEPs) accounting for a 60% representation while 2 administrators indicated that they did not have such a policy in their schools which was a 40% representation. The information is shown in Table 15.

Table 15: Responses on the Availability of SEEP in the Selected ZHS

Response	**Frequency**	**Percentage**
Yes	3	60
No	2	40
Total	**5**	**100**

Source: Field Data (2010)

However, only 1 of the respondents that indicated that they had a SEEP could precisely explain what it stated. Other respondents simply gave ideas of what their SEEP stated. One respondent that indicated 'NO' explained that the reasons the school did not formulate a School Environmental Education Policy was due to lack of resources. The other respondent that indicated 'NO' did not have an idea of what a School Environmental Education Policy was and so could not give reasons why the school did not have one.

4.3.3 Teaching of Environmental Education in the Selected Zambian High Schools

The third item on the schedule was the teaching of EE in high schools. The aim of this question was to find out from administrators the teaching of EE in their schools. Table 16 shows the responses of administrators on whether EE was offered in their schools or not.

Table 16: Responses by Administrators on EE being offered in their schools

Response	**Frequency**	**Percentage**
Yes	2	40
No	3	60
Total	5	100

Source: Field Data (2010)

The information in Table 16 indicates that only 2 of the 5 administrators stated that EE was being offered in their schools. This represented 40% of the high school administrators that were interviewed. The other 3 administrators, a 60 % representation, indicated that EE was not offered in their schools. The administrators that indicated that EE was being offered in their schools explained that EE was offered as part of extra curricula activities in school and it was also integrated in some subjects such as geography, civic education and sciences.

The administrators that indicated that EE was being offered in their schools were both from the mission schools, St Paul's and Angelina Tembo high schools. The administrators from all the three government schools namely: Kabwe, Mukonchi and Bwacha high schools, indicated that their schools did not offer EE and the reasons were as follows:

- There were limited resources to offer EE;
- It was a new subject which had not yet been included in the curriculum for high schools and
- The policy on EE had not yet reached the schools.

4.3.4 The Role of the Administrators in Implementing Environmental Education in their Schools

The respondents were asked on the role of their offices in implementing EE in their respective schools. Administrators from the two mission schools indicated that their roles were basically to ensure that activities of EE in nature such as preventive maintenance and planting of trees were followed. St. Paul's administrator added that his office also taught pupils to follow religious practices which encouraged EE. One administrator from one government school explained that the role of his office was to create programmes that promote cleanliness of the environment. This school had a slogan which stated "keep Mukonchi High School clean."

4.3.5 Availability of Teaching Materials in the Selected Zambian High Schools

The other item on the interview schedule was on the availability of teaching and learning materials in high schools. The question sought to find out availability of teaching

resources on EE in high schools. This was a follow up on whether EE was being offered in high schools or not. The findings as revealed in Table 17 show that 2 of the respondents indicated that they had teaching resources on EE in their schools. These were mainly text books of subjects that contain EE components in them while the other 3 respondents indicated that they did not have teaching resources on EE in their schools. The percentage representation of both categories shows 40% and 60 % respectively. This is shown in Table 17.

Table 17: Availability of Teaching Resources in High Schools

Response	Frequency	Percentage
Yes	2	40
No	3	60
Total	5	100

Source: Field Data (2010)

4.3.6 Problems Faced by Administrators in implementing Environmental Education in Zambian High Schools

Another issue of concern that was on the interview schedule was on problems faced by administrators in implementing EE in their schools. Table 18 shows the results of the findings as indicated by the 5 administrators.

Table18: Responses by Administrators on whether they faced problems in implementing EE in their schools or not

Response	**Frequency**	**Percentage**
Yes	3	60
No	2	40
Total	**5**	**100**

Source: Field Data (2010)

The findings in Table 18 show that 3 of the respondents stated that they were facing problems in implementing EE in their schools, giving a 60 % representation of the respondents while 2 respondents, representing 40%, indicated that they did not face any problems. The reasons the 40% representation gave was that EE did not exist in their schools, hence there was nothing they were doing to implement it in their schools.

The problems faced by high school administrators in implementing environmental education were listed as follows:

- The curriculum was very full;
- Some schools were still working on the infrastructure and purchasing other school equipment such as computers thus found it difficult to implement EE and
- Lack of personnel trained in EE.

4.3.7 Role of The National Policy on Education in implementing Environmental Education

The other item on the schedule was on the role of the National Policy on Education in helping easy implementation of EE in ZHS. The aim of this question was to find out if the administrators were aware of the 1996 National Policy on Education (Educating our Future) and their views on how effective it was in helping easy implementation of EE in ZHS. Table 19 shows that 4 respondents, 80% representation of the interviewed administrators, acknowledged that the 1996 National Policy on Education had a role in implementing EE in high schools. However, when asked to justify their responses, most of them could not precisely explain how the Policy helped to implement EE in high schools. Some of the respondents explained that ideas found in the National Policy on Education, gave a clue on how schools were to operate and ensured safety and cleanliness.

Only 1 respondent (a 20 % representation) indicated that the National Policy on Education did not have a role in implementing EE in high schools and the reason for his response was that environmental education was not yet officially recognised in his school. He further explained that if the National Policy on Education had a significant role in implementing EE in schools, he would be aware as an administrator and would have implemented EE in his school.

Table 19: Responses of Administrators on whether the National Policy on Education has a role in Implementing EE in ZHS

Response	Frequency	Percentage
Yes	4	80
No	1	20
Total	**5**	**100**

Source: Field Data (2010)

4.4 Challenges faced by Teachers in implementing Environmental Education in Zambian High Schools

The other group of respondents consisted of teachers from the 6 sampled high schools in Central Province. The two instruments that were used to collect data from high school teachers were questionnaire and focus group discussion. Check Appendix 3 for the questionnaire.

4.4.1 Definition of Environmental Education

The first item on this schedule was to define EE. This question aimed at finding out the levels of knowledge on environmental education among high school teachers. Table 20 shows the details.

Table 20: Teachers' Awareness of the Term Environmental Education

Response	**Frequency**	**Percentage**
Yes	35	70
No	15	30
Total	**50**	**100**

Source: Field Data (2010)

Table 20 shows that 35 teachers, representing 70% of the teacher respondents, understood the term EE while 15 teachers (a 30% representation) did not understand what was meant by EE. The Table further indicates that 30% of the teacher respondents could not define the term EE. Most of the teachers that attempted to define EE, defined it as knowledge about the environment, taking care of the surrounding and keeping it clean. Other definitions looked at EE as a science that dealt with the relationship of human beings and the environment. Other definitions included Environmental Education as a way of passing skills concerning the environment in relation to health, it was also seen as a process of imparting knowledge on environmental matters to pupils and community as well as a study of the environment as a home for man and a process that increased people's knowledge and awareness about the environment and associated challenges. It develops the necessary skills and expertise to address the challenges and foster attitudes, motivations and commitments to make informed decisions and take responsible actions.

4.4.2 Availability of a School Environmental Education Policy

The second item on the questionnaire was on the availability of a SEEP. The teachers were asked if their schools had an environmental education policy and whether they knew what it stated. Table 21 has the details.

Table 21: Teachers' Position on the Availability of SEEP

Response	**Frequency**	**Percentage**
Yes	24	48
No	11	22
Don't know	15	30
Total	**50**	**100**

Source: Field Data (2010)

The findings in Table 21 show that 24 respondents indicated that their schools had a SEEP, 11 respondents indicated that their schools did not have a SEEP and 15 respondents indicated that they did not know. The percentage representations were 48%, 22% and 30% respectively. Most of the respondents who indicated that they had a SEEP failed to explain what their policies stated. The respondents who did not know whether their schools had environmental education school policies indicated that they had no idea of what it was all about or they were not aware of its existence in the school. Other respondents who indicated that their schools did not have SEEP had the following reasons:

- The issue of a School Environmental Education Policy was never discussed at the school;
- The school management had not considered it serious and no importance was attached to it and
- No one spear headed the idea of a SEEP within the schools.

The administrator from Mukonchi High School indicated that the school did not have a School Environmental Education Policy while 8 of the 10 teacher respondents from the same school indicated that they had a SEEP. However, most of them indicated that they did not know precisely what the policy stated. On the other hand, Angelina Tembo School administrator indicated that they had a SEEP but only 4 of the 10 teachers that were interviewed indicated that they had a SEEP. The other 6 indicated either 'NO' or they did not know. The trend was the same with St. Paul's, Bwacha and Kabwe high schools.

4.4.3 Offering of Environmental Education in Zambian High Schools

The other item on the questionnaire was on EE and the curriculum. The question aimed at finding out from teachers how EE was offered in their schools. 50% of the teacher respondents indicated that EE at their schools was offered to the pupils through cleaning of the school environment. Only one tenth of the teacher respondents indicated that EE was offered as an integrated subject in other existing subjects and these were mostly teachers of science. A few respondents did not indicate anything.

4.4.4 Integrating Environmental Education in the existing Subjects

The other question aimed at finding out from the teachers to what extent EE was integrated in their teaching subjects. Table 21 shows the responses of teachers.

Table 22: Teacher's Position on integration of EE in their subjects

Response	**Frequency**	**Percentage**
Yes	39	78
No	9	18
No answer	2	4
Total	50	**100**

Source: Field Data (2010)

The findings on Table 22 reveal that 78% of the teacher respondents agreed that EE was integrated in the subjects that they taught. Most of the respondents that agreed that they had EE components in their teaching subjects were teachers of science, geography and civic education. In fact, all the teachers of science that answered the questionnaires indicated that they had EE components in the different science subjects such as physics, biology, chemistry and agriculture science. A good number of teachers of English also indicated that they had EE components in their subject. On the other hand, 18% of the teacher respondents indicated that they had no components of EE in the subjects that they taught. Most of the respondents that indicated that they had no EE components in the subjects that they taught were teachers of commercial subjects and mathematics. 2 of the respondents did not indicate anything.

A 22% of the teachers claimed that they either did not have EE components in their subjects or they did not know whether there was EE components in their subjects.

4.4.5 Availability of Teaching Resources in Zambian High Schools

The other item on the questionnaire was an enquiry in the availability of teaching resources for EE in ZHS. This question aimed at finding out the availability of teaching materials for EE in subjects that had EE components. Table 23 shows the responses.

Table 23: Responses on the Availability of Teaching Materials for EE

Response	**Frequency**	**Percentage**
Yes	10	20
No	36	72
No answer	4	8
Total	**50**	**100**

Source: Field Data (2010)

The findings in Table 22 show that only 20% of the respondents agreed that they had teaching materials for EE components in their subjects while 72% of the teacher respondents indicated that they had no materials for teaching EE in their schools. The other 8 % of the respondents did not indicate anything. The teaching materials that were basically being referred to were text books. 72 % of the teacher respondents indicated that they had no teaching resources for EE. Even the respondents that indicated that they

had teaching resources explained that the information on EE was not sufficiently covered in the available text books.

4.4.6 The Role of National Policy on Education in implementing Environmental Education in Zambian High Schools

The other item in the questionnaire was on the National Policy on Education (Educating our Future). The aim of this item on the questionnaire was to find out from the teachers how NPE had helped to implement EE in the schools. Table 24 shows the distribution of the teacher respondents on their awareness of the NEP.

Table 24: Teachers' Responses on Awareness of the NPE

Response	**Frequency**	**Percentage**
Yes	24	48
No	25	50
No answer	1	2
Total	**50**	**100**

Source: Field Data (2010)

Table 24 reveals that only 48 % of the teacher respondents were aware of the NPE. The table also shows that 50 % of the teacher respondents were not aware of the policy and 2% of the respondents did not indicate anything. Of the 48 % that indicated that they were aware of the National Policy on Education, 40% indicated that not much was

covered on the implementation of EE in the policy. The other 8%, however, indicated that the NPE has helped in integrating EE into the curriculum.

More than half of the teacher respondents were not aware of the National Policy on Education. One would wonder how the Policy on Environmental Education, once formulated, would reach down to the teachers when they are not familiar with the policy that looks at the whole education system.

Most teachers also expressed concern on lack of access to such important documents such as the NPE. Some schools did not avail such documents to the teachers so that they could acquaint themselves on what the policy stated. Some of the respondents explained that they came across the NPE at college or university and not in their respective schools.

4.4.7 Problems faced by Teachers in implementing Environmental Education in Zambian High Schools

One of the items on the questionnaire was on the problems that teachers faced in implementing Environmental Education in high schools. The findings revealed that teachers faced many challenges in implementing EE in High Schools. Some of the problems listed were as follows:

- There was lack of teaching resources in EE;
- There was limited spare time for EE activities;
- Some children uprooted trees meant for EE projects;
- There was lack of adequate water supply for EE practicals in rural schools;
- There was apathy among teachers and pupils;

- There was less cooperation from the administration and community;
- There was lack of manpower;
- EE came as a small component and was easily neglected;
- EE was perceived to be of less importance;
- Society's resistance to change;
- There was lack of adequate information from Curriculum Development Centre on EE and the curriculum;
- There was no training on EE that was given to teachers;
- The 1996 National Policy on Education was not readily available to teachers;
- Schools lacked Environmental Education Policies;
- Putting what was taught or learnt in classrooms into practice and
- Difficult to change the mind set of pupils.

These were the problems that high school teachers faced in trying to implement EE in high schools.

4.5 Knowledge of Environmental Education among Zambian High School Pupils

The last set of respondents consisted of pupils from the six sampled schools. Information from the pupils was collected using a guided structured questionnaire. See Appendix 4 for the questionnaire.

4.5.1 Knowledge Levels of Environmental Education among High School Pupils

The first item on this questionnaire was the determination of the knowledge levels of EE among high school pupils. Table 25 shows the response of the pupils on their knowledge of EE.

Table 25*: *Pupils' Awareness of the concept "Environmental Education"

Response	**Frequency**	**Percentage**
Yes	15	50
No	15	50
Total	**30**	**100**

Source: Field Data (2010)

The information in Table 25 shows that 50% of the pupil respondents had heard about environmental education and the other 50% of the pupil respondents had never heard about it. Of the 50% pupils that indicated that they had heard the phrase environmental education before, 40% could not, however, give a precise definition of it. They defined EE as the study of the relationship of man and his environment or simply the study of the environment.

4.5.2 Source of Environmental Education Information Among high School Pupils

The other question on the questionnaire aimed at finding out the source of EE information for those respondents that indicated that they were aware of it. Of the 15 pupils, representing 50% of those that indicated that they were aware of EE, 9

respondents (30% representation of pupil respondents) indicated that they first heard of EE from their teachers at school while the other 6 respondents (a 20% representation of pupil respondents) indicated the media as their first source of information on EE.

4.5.3 Awareness of a School Environmental Education Policy

The other item on the pupil's schedule was on a School Environmental Education Policy. The pupil respondents were asked to indicate whether they were aware of any School Environmental Education Policy and their responses are shown in Table 26.

Table 26: Pupils' Awareness of SEEP

Response	**Frequency**	**Percentage**
Yes	10	33
No	8	27
Don't know	12	40
Total	**30**	**100**

Source: Field Data (2010)

The findings in Table 26 show that 10 respondents, a 33 % representation of the pupil respondents, were aware that their schools had SEEPs while 8 of the pupils, a 27 % representation of the pupil respondents, indicated that their schools did not have such a policy. 12 of the pupils that accounted for a 40 % representation of the pupil respondents did not know whether or not their schools had SEEPs.

4.5.4 Effectiveness of School Environmental Education Policy

This item was to find out, basically, the effectiveness of SEEP. The pupils that indicated that they had a SEEP were asked to state how effective they thought it was in implementing EE in their schools. 60% of the pupils that indicated that their schools had a SEEP explained that the policy was very good and was working well in their schools, 30% of them indicated that the effectiveness of SEEP was average and only one respondent (10%) indicated that their policy was not effective. The respondents who indicated that they did not know whether their schools had environmental education policy or not explained that the reasons they were not aware of the policy could have been that the administration was not firm at formulating one or if they had one, there could have been no effort made to explain it to the pupils. Other pupil respondents explained that there was no one to spearhead and impart the knowledge in the pupils.

4.5.5 Learning of Environmental Education in Zambian High Schools

Another item on the schedule of the pupil respondents was on ways of learning EE in schools. Of all the respondents, 70% of indicated that it was integrated in some subjects such as geography and science, and through environmental work. A few (30%) indicated that they did not know.

No pupil respondent indicated that EE was integrated in Commercial subjects such as accounts and commerce or in mathematics.

4.5.6 Availability of learning Materials in Schools

An item on the availability of learning materials was another component that was part of the schedule for pupil respondents. Table 27 shows the responses that were given by the pupil respondents.

Table 27: Pupils' Responses on Availability of Learning Materials in EE

Response	Frequency	Percentage
Yes	9	30
No	12	40
Don't know	9	30
Total	30	100

Source: Field Data (2010)

The information in Table 27 shows that 30 % of the pupil respondents indicated that they had learning resources for EE in their schools. However, these pupil respondents also indicated that the resources were not enough. A 40% of the pupil respondents indicated that they did not have learning resources in EE while the other 12 % indicated that they did not know.

4.5.7 Frequency of Environmental Education Programmes in Schools

It was also necessary to find out from the pupils the occurrence of EE related programmes in their schools. The aim of the item was to find out how often EE programmes or promotions were conducted in schools. The pupil respondents were asked to select from the provided options how often EE programmes were conducted in their

schools. More than half (60%) of the pupil respondents indicated that they had never been exposed to any EE programme in their schools where as 40% of the pupil respondents indicated that they had EE programmes every week.

4.5.8 Problems of Introducing Environmental Education as a Separate Subject in Schools

Another item in this study required pupils to explain what they thought would be problems of introducing EE as a separate subject in the curriculum. The following were the two main responses they gave:

- there would not be enough time due to too many subjects already existing in the curriculum and this would disturb the learning of other subjects and
- EE, as a new subject, would require funding to equip the subject with teachers as well as teaching resources. This would not be easy for the MoE sector to meet as it could not meet the demands of the existing subjects then.

4.5.9 Information on Environmental Education among pupils

This item was meant to determine how informed the pupils were on environmental issues in general. A good number (84%) of the pupil respondents stated that they were not well informed on environmental issues. Table 28 has the details.

Table 28: Responses of Pupils on how informed they were with Environmental Information

Response	Frequency	Percentage
Well informed	5	16
Averagely informed	17	57
Not informed	8	27
Total	30	100

Source: Field Data (2010)

The information in Table 28 shows that 5 of the pupils, a 57% representation of the pupil respondents, were averagely informed while only 17 of the respondents, a 16 % representation of the pupil respondents, indicated that they were well informed on environmental issues. 8 of the pupils (a 27% representation of the pupil respondents) indicated that they were not informed on any environmental issues.

4.6 Challenges faced by Rural Schools in implementing Environmental Education

Some challenges faced by high schools in implementing EE were common to both rural and urban schools. However, there were a few challenges that were noted in rural schools but were absent in urban schools. The following were the challenges:

- It was not easy to disseminate EE to the pupils because the communities surrounding the schools were not well informed;

- The schools did not receive any communication from relevant environmental authorities such as ECZ and
- The effort of planting trees as a way of promoting EE was sometimes hampered by thieves who stole the small plants.

4.7 Challenges faced by urban Schools in implementing Environmental Education

In both rural and urban schools, the common answer to the challenges of implementing EE was the lack of cooperation from the pupils. The teacher respondents explained that implementing EE by making the pupils to clean or work in the environment was more of a punishment to the pupils. Hence, implementing EE became a challenge.

4.8 Offering of Environmental Education in Mission and Government Schools

There were 5 administrators that were interviewed of which 3 were from government schools while 2 were from mission schools. The two administrators from mission schools indicated that EE was being offered in their schools while the other three administrators from government schools indicated that EE was not offered in their schools.

4.9 Summary

This chapter presented the findings of the study. These findings were presented in form of tables as well as basing on emerging themes. The findings from the MoE officials were presented first, followed by those from high school administrators and teachers. Findings from pupils were presented last.

CHAPTER FIVE

DISCUSSION OF FINDINGS

5.1 Introduction

This chapter presents the discussion of the findings based on the barriers to successful implementation of Environmental Education in Zambian High Schools. The findings will be discussed in the sequence they have been presented in chapter four. The aim of this chapter is to discuss the findings in order to provide answers to the main research question of this study.

5.2 Ministry of Education's Position on Environmental Education in Zambian High Schools

The following discussion is on the findings from the MoE officials.

5.2.1 Definition of Environmental Education

According to the results in section 4.2.1 of this study, 76% of the MoE respondents defined EE as a study of the environment or one's surrounding, where learners acquire knowledge on environmental benefits thereby making the learners to take care of that environment. A 12% representation of the respondents defined EE as using the environment sustainably. The other 12 % of the respondents defined EE as a component that gives Sustainable Development (SD) to an individual within social, cultural, economical, political and environmental set up in a given society.

From these results, it was clear that all the MoE officials were aware of EE. Both Diploma and Bachelors Degree holders were able to define EE. No respondent expressed ignorance or indicated that he or she was hearing the term EE for the first time. From

these findings it was clear that there was potential of implementing EE in ZHS because all the MoE respondents, who are the policy makers, indicated that they were aware of it. Most of them attached the word 'learner' to the definition of EE. This showed that the respondents also acknowledged that pupils, being learners, needed to have EE in their curriculum. A learner needs a teacher or an instructor. This also indicated that MoE acknowledged the need for teachers to be aware of EE if the knowledge on environmental benefits was to be passed on to the learners.

5.2.2 Implications of the statement of 'EE as a cross cutting issue'

From the findings outlined in section 4.2.2, the MoE officials indicated that EE was not a single subject or component but rather made up of a number of other subjects and other aspects of life. From the MoE's position, EE was incorporated in all the teaching subjects in high schools and that was why it was being referred to as a cross cutting issue. It was, however, strange to discover that some teacher respondents particularly those teaching commercial subjects indicated that they had no EE components in their subjects. This is discussed later in this chapter.

According to the MoE, EE could not stand out on its own as it was a complex subject or matter that included a number of other issues. As a consequence, EE had so many definitions as was seen in section 4.2.1 of this study. No respondent defined EE as exactly as the other respondent. This implied that in as much as there was potential of implementing EE in high schools, as indicated by the definitions of EE given by the respondents, its complexity may have hindered its successful implementation.

5.2.3 Position of Ministry of Education on Environmental Education being offered in Zambian High Schools

From the findings, all the MoE officials indicated that EE was a cross cutting issue, cutting across all the subjects. However, 2 respondents from the PEO indicated that there was no EE being offered in ZHS. This implied that the MoE was not very certain on the stance that they took concerning EE being offered in schools. This also meant that other officials did not acknowledge the EE that was integrated in some teaching subjects in high schools. If the MoE officials, who are the overseers of all school programmes in Zambia, differ in their responses, the situation in schools was therefore not expected to be any better. This state of affairs is one of the formidable barriers to the implementation of EE in ZHS. Curriculum Development Centre officials and the other officials from the PEO in Central Province did not agree in their responses. All CDC respondents indicated that EE was being offered in ZHS while 2 out of the 3 officials from PEO indicated that there was no EE offered in ZHS. Despite all the MoE respondents acknowledging that EE was a cross cutting issue, 2 of them did not agree that it was being offered in ZHS. In their views, EE was a cross cutting issue just in other matters of society such as economic, social and political issues but not in ZHS. This clear difference among policy makers may delay the introduction of EE as a separate and independent subject and not as a cross cutting subject.

The difference in responses among MoE respondents also confirmed why even some teachers did not acknowledge EE components integrated in their subjects. It also confirms why school administrators differed on EE being offered in their schools.

5.2.4 Reasons why Environmental Education was not offered in Some Zambian High Schools

While EE was being referred to as a cross cutting issue, 2 respondents indicated that EE was not offered in ZHS. The respondents explained that:

- there were no precise materials and curriculum for it to be offered and
- EE was not known by most people.

Despite EE being considered a cross cutting issue by MoE, 2 respondents from MoE indicated that there were no precise materials and curriculum to teach EE in ZHS. From that statement, it was clear that the declaration of EE as a cross cutting issue was not followed by actual preparations such as acquisition of teaching materials.

The second statement implied that the MoE did not take the responsibility of making EE be known to the people, particularly to the pupils and their teachers in ZHS and that was why it was not known to the people.

5.2.5 Availability of School Environmental Education Policy in Zambian High Schools

According to the information in Table 12, 7 respondents agreed that high schools needed to have a School Environmental Education Policy which gave 87% representation. 13% of the respondents indicated that they were not aware of SEEP.

Despite the 7 respondents agreeing that schools needed a School Environmental Education Policy, CDC and PEO officials differed on who formulated the School Environmental Education Policy. 4 out of the 5 respondents from CDC indicated that the

individual schools formulated their own SEEP. The other respondent from CDC indicated that they were not aware of such a policy. From the PEO, 2 of the 3 respondents indicated that it was the duty of the MoE to formulate SEEP. The other respondent from the PEO indicated that no one formulated this policy. It was very clear from this difference that respondents from the PEO did not know what was meant by a School Environmental Education Policy and as such they only gave ideas of what they thought it was. This explained why school administrators, teachers and even pupils from the same schools, gave different views on the availability of a SEEP in their schools.

5.2.6 Role of School Environmental Education Policy in Zambian High Schools

From responses outlined in section 4.2.6 of this study, it was clear that a SEEP was a very important document within a school in helping implement EE. Unfortunately, MoE did not indicate their efforts in ensuring that ZHS possessed School Environmental Education Policies. This explained why even some of the school administrators indicated that they did not have School Environmental Education Policies. This left a question as to how EE could easily be introduced in ZHS. There was an urgent need to call for a national seminar or symposium of all stake holders to iron out these differences if a head way was to be seen in the successful implementation of EE in ZHS.

5.2.7 Role of Ministry of Education officials in implementing Environmental Education in Zambian High Schools

The results in section 4.2.7 of this study show that, 80% of CDC respondents stated that their role in implementing EE in high schools was mainly in suggesting programmes on behalf of the MoE. All the respondents from PEO indicated that their role was mainly to

monitor the delivery of activities lined up in schools such as cleanliness, school health and nutrition. One example on the role of the officers in implementing EE was from CDC under the Directorate of Standards and Curriculum. This section produced a training manual in 1996 that was aimed at providing teachers with information on the current trends in EE. This document was a training manual for Basic School Teachers. The implementation of this document can be studied further to verify if it really worked in Basic Schools or not. Check Appendix 5 for a copy of this manual.

5.2.8 Availability of Environmental Education Teaching Materials in Zambian High Schools

According to the findings, 75% of the respondents agreed that there were teaching resources on EE in high schools. However, all the 75% respondents indicated that these resources were inadequate in most schools as EE topics could only be found in the text books of already existing subjects. Other respondents explained that resources such as text books could be there in some subjects while in other subjects they could be lacking. 2 of the respondents (representing 25%) indicated that there were no teaching resources on EE in schools. The 2 respondents are the very ones who indicated earlier that EE was not being offered in ZHS. The respondents indicated that this was one of the main barriers in successfully implementing EE in high schools. One thing that was also clear was that there were no books specifically meant for EE because EE was integrated in already existing subjects.

5.2.9 Problems faced by Ministry of Education in implementing Environmental Education in Zambian High Schools

The problem of insufficient teaching materials was indicated by 88% of the respondents. When teaching resources are insufficient, implementing EE or any other given subject would be very difficult. Another response that was common among the respondents was lack of a prescribed syllabus and trained manpower to handle EE in schools. This explained why some teacher respondents did not acknowledge the EE components integrated in their subjects because they were not probably trained to teach those particular components.

5.2.10 Role of National Policy on Education in helping easy implementation of Environmental Education in Zambian High Schools

The information in Table 14 shows that a 100% representation of MoE respondents indicated that the NPE had a role in facilitating easy implementation of EE in ZHS. Although all the respondents indicated that the National Policy on Education had a role in helping easy implementation of EE in high schools, most of them could not give clear explanations on how the policy achieved this. Some respondents did not give any explanation while others indicated that the role of the Policy in helping easy implementation of EE in high schools was not very adequate. Two respondents indicated that the National Policy on Education provides guidelines on EE as a cross cutting issue.

It was clear from the responses given that most MoE officials were not familiar with the contents of the National Policy on Education, particularly on how the policy had helped easy implementation of EE in ZHS. All the respondents indicated that the National Policy

on Education had helped easy implementation of EE in ZHS. They could not however get into the details of how the policy had achieved that. None of the respondents quoted any section of the policy to verify how it helped easy implementation of EE in ZHS.

5.3 Knowledge of Environmental Education among High School Administrators

This section discusses the findings on the knowledge levels of administrators in Environmental Education.

5.3.1 Definition of Environmental Education

The definitions of EE by administrators, as outlined in section 4.3.1 of this study indicate that most of them took EE to mean cleanliness of the school environment. This problem was also encountered in schools found in Botswana. This was according to a research report by Ketlhoilwe (2007). The research was trying to find out challenges of implementing Environmental Education Policy into BNES. One of the challenges listed by Ketlhoilwe and outlined in chapter two of this study was that of equating EE to environmental management activities in schools.

It was also noted that most of the administrators actually needed brief explanations on EE before proceeding with the interview. This just showed that administrators had little knowledge or information on EE.

5.3.2 Availability of School Environmental Education Policy in the Selected High Schools

The findings as outlined in section 4.3.2 show that, 60% of the respondents agreed that they had SEEPs while a 40% representation of the administrators indicated that they did not have such a policy in their schools.

However, only 1 of the respondents that indicated that they had a SEEP could precisely indicate what it stated. Other respondents simply gave ideas of what their SEEP stated. One respondent explained that the reasons the school did not formulate a SEEP was due to lack of resources. This just showed lack of knowledge on SEEP. The other respondent did not have an idea of what a SEEP was and so could not give reasons why the school did not have one. Both the former and the latter respondents belong to the administrators that indicated that they did not have SEEPs in their schools.

Both mission schools indicated that they had a SEEP. The other two government schools indicated that they had no SEEP.

It was not surprising that some school administrators were not aware of school environmental education policies because differences in opinions on who formulated it were indicated by the overseers of the whole education system who are the MoE officials. It was therefore evident that even the school administrators that indicated that their schools had SEEPs could have meant preventive maintenance programmes because none of them produced a copy of their SEEP.

5.3.3 Teaching of Environmental Education in the Selected Zambian High Schools

EE is said to be a cross cutting issue from the MoE's point of view. The results from CDC respondents showed that EE was not taught as a single subject but integrated in all the subjects. Once again, there was a disparity between what MoE respondents had stated and what most administrators stipulated. 60 % of the administrators indicated that EE was not being offered in their schools. This showed that the administrators were not aware of EE being integrated in the subjects that were taught in their schools. This also meant that CDC did not educate the administrators on EE matters hence most of them were not aware of any EE components offered in their schools.

It was also clear that the administrators that indicated that EE was not offered in their schools did not also acknowledge or have EE activities within their schools. One would therefore wonder how EE would be implemented in ZHS if the administrators were not aware of its existence. Other administrators claimed that EE was not taught in their schools because the EE policy had not reached their schools. If the integration of EE in the existing subjects was made known to the administrators, no administrator would have claimed that EE was not being taught in their schools simply because the policy on EE had not reached them.

5.3.4 The Role of Administrators in Implementing Environmental Education in their Schools

From the discussions held with the administrators and the results outlined in section 4.3.4 of this study, it was clear that some administrators did not acknowledge that EE was being offered in their schools. Therefore, one would not expect such officials to have any

role in implementing EE in their schools because it was something that did not exist in their schools. It was strange to discover that one administrator, despite indicating earlier on that his school did not offer EE, was able to explain that the role of his office in implementing EE in his school was to create and promote cleanliness in the school. From this item, it was also clear that administrators mistook EE to the mere cleaning of their school surroundings.

5.3.5 Availability of Teaching Materials in the Selected Zambian High Schools

The same administrators that indicated that EE was not offered in their schools were the ones that indicated that their schools had no teaching and learning resources on EE. However, even the respondents that indicated that they had teaching resources on EE in their schools stated that the resources were not adequate. Lack of teaching resources was also indicated by the MoE respondents as one of the challenges they faced in successfully implementing EE in ZHS.

5.3.6 Problems Faced by Administrators in implementing Environmental Education

According to the findings, 60 % of the respondents stated that they were facing problems in implementing EE in their schools. One problem that was listed was that of a full curriculum.

The problem of a full curriculum as a barrier in implementing EE confirmed what was also indicated in a report by Ballantyne (1995). Among the four major barriers to successful implementation of EE that he listed was competition for time in an already full

curriculum. This problem was also expressed by pupil respondents as outlined in section 4.5 of this study.

From these responses, one could also deduce that most administrators did not subscribe to the idea that EE was integrated in the subjects that were already being taught in their schools. Otherwise, they would not indicate that one of the problems of implementing EE was building of extra infrastructure and purchasing of school equipment. Working on infrastructure would not in itself inhibit the teaching of EE that was integrated in the already existing subjects.

5.3.7 Role of The National Policy on Education in implementing Environmental Education

Table 19 shows that 4 respondents (80% representation of the interviewed administrators) acknowledged that The National Policy on Education had a role in implementing EE in high schools. However, most of them could not precisely explain how the policy helped to implement EE in high schools when they were asked to justify their responses.

Like the MoE respondents, the high school administrators could only indicate that the policy had a role in implementing EE but could not quote any part of the policy that stated so.

5.4 Challenges faced by Teachers in implementing Environmental Education in Zambian High Schools

The teachers are the direct implementers of EE in schools. This section discusses the knowledge levels on EE among high school teachers.

5.4.1 Definition of Environmental Education

According to the findings in section 4.4.1, 35 respondents, a 70% representation of the teacher respondents understood the term EE while 15 teachers (30% representation) did not understand what was meant by EE. The information could also be interpreted that 30% of the teacher respondents could not define the term EE because they were not aware of it.

This implied that despite EE being a cross cutting issue, there were some teachers who were not actually aware of it. All the teachers that taught sciences and civic education indicated that they were aware of EE. It was surprising to learn that 80% of the teachers that taught commercial subjects and mathematics indicated that they were not aware of the term environmental education. However, all teachers should have had knowledge on EE if it was to successfully be implemented in high schools. This also explained that the teachers were not aware of any EE being integrated in their subjects.

5.4.2 Availability of a School Environmental Education Policy

Most of the responses that the teachers gave to this question were different from the responses that were given by the respective administrators. The administrator for Mukonchi high school indicated that the school did not have a School Environmental Education Policy while 8 of the 10 teacher respondents from the same school indicated that they had a SEEP. However, 75% of the teachers that indicated that they had a SEEP did not know precisely what their policy stated.

On the other hand, the administrator from Angelina Tembo high school indicated that they had a SEEP but only 4 of the 10 teachers that were interviewed indicated that they

had a SEEP. The other 6 indicated either that they did not have a SEEP or they did not know. The trend was the same at St Paul's, Bwacha and Kabwe high schools. The responses of the teachers from these schools did not match with the responses from their respective school administrators. From these responses, it was clear that teachers mistook SEEP for weekly environmental activities such as PM. Most administrators expressed lack of knowledge of SEEP and that confirmed why even most teachers did not know about it. Most school administrators were not aware of having a SEEP and there was no way they could talk about it with the teachers.

5.4.3 Offering of Environmental Education in Zambian High Schools

One thing to take note of was that 50% of the teacher respondents stated that EE was offered to the pupils through cleaning of their school environment. In most schools, cleaning of the surrounding was done by pupils. This explained why some schools were facing resistance from the pupils because EE meant working by the pupils. The teachers themselves would not be involved in the cleaning and so pupils took it as punishment. Since EE was taken to be mere cleaning of the environment, pupils regarded it as a punishment and therefore became a barrier to implementing EE in ZHS.

5.4.4 Integrating Environmental Education in the Existing Subjects

From the group discussions held with teacher respondents, all teachers of science agreed that they had EE components in their subjects. The teachers, however, suggested that despite limitation in time and an already compressed curriculum, it would be better for EE to stand out as a subject on its own. This was because they discovered that most of the environmental issues included in their subjects were treated and taught as secondary

information. The teachers further explained that due to scarce information on EE topics integrated in their subjects, it was very easy for a teacher to put aside such topics and concentrate on topics whose information was readily available in the text books. Further more, EE components in these subjects (sciences) are not many in examination questions, hence, the teacher would wish to concentrate on the topics that were highly examined. Another issue that came out from these discussions was that most of the learning that took place in schools was mainly examination centered. The interest of the teacher was to ensure that the pupils passed the examination and this saw less emphasis on the moral development of the pupils.

These results further indicate that there was lack of coordination between schools and MoE. Some administrators, as mentioned earlier, were not aware of EE in their schools. Once again, 22% of the teachers either claimed they did not have EE components in their subjects or that they did not know whether there was EE components in their subjects. Meanwhile, all CDC respondents indicated that EE was integrated all the subjects in ZHS.

5.4.5 Availability of Teaching Resources in Zambian High Schools

The findings in Table 22 show that only 20% of the respondents agreed that they had teaching materials for EE components in their subjects. The majority (72%) of the teacher respondents indicated that they had no materials for teaching EE in their schools.

It is therefore clear that it was not easy for the teachers to successfully implement the EE components that are integrated in their subjects. Ballantyne (1995) also observes that a cross disciplinary approach or infusion of EE in other subjects was actually a barrier to

implementing EE in schools. The EE integrated in some subjects was not actually recognised and was likely to be ignored.

From the group discussions that were conducted with the teachers, one thing that also came out was the scarcity of practical materials as well as limited funds to conduct environmental tours. The teachers explained that for EE components to be successfully taught, the pupils needed to go into the field and see the reality other than just ending on theory as was the case.

5.4.6 The Role of the National Policy on Education in implementing Environmental Education in Zambian High Schools

More than half of the teacher respondents were not aware of the National Policy on Education. One wondered how the Policy on Environmental Education, once formulated would reach down to the teachers when they were not familiar with the policy that looked at the whole education system.

30% of the teacher respondents expressed concern on the lack of access to such important documents such as the NPE. Most schools did not avail such documents to the teachers so that they acquaint themselves with what the policy stated. Some of the respondents explained that they came across the NPE at colleges or university and not in their respective schools. The document could be there in schools but not availed to teachers.

5.4.7 Problems faced by Teachers in implementing Environmental Education in Zambian High Schools

Lack of teaching materials for EE was mentioned by all the other categories of respondents. The teachers who were the direct implementers of EE in schools had also listed lack of teaching resource as one of the main hindrances to successful implementation of EE in ZHS. Most teachers revealed that the schools did not have enough text books and that some text books did not have sufficient information on EE. Tools for practical work were also not enough. The rural government school also listed among other problems, lack of adequate water supply for EE practical work to be carried out successfully.

Another problem worthy noting was that EE was considered to be less important. This confirmed why some teachers indicated on item 4.4.7 that EE components, integrated in the existing subjects, were not many in examination papers. This was because most people, including examiners, did not regard EE as an important component that was worthy examining. Putting what was taught into practice could not only have been a challenge of EE but a challenge to many other practical subjects. EE is a practical subject that requires the learners to put into action the knowledge they acquire. Some teachers also expressed lack of support from the administrators particularly in releasing funds for educational tours to allow pupils to be exposed to real environmental issues as leant in their classrooms.

Lack of teachers with knowledge in EE was repeated by the teacher respondents. Tilbury (1992: 268) has explained the vital role of teacher education and has argued that teacher

education did not only equip teachers to teach EE effectively but also acted as a stimulus to the introduction of EE into the school curriculum. If all teachers knew what they were supposed to teach they would be stimulated and confident to present the lessons to the learners.

5.5 Knowledge of Environmental Education among Zambian High School Pupils

One way of determining the effectiveness of EE in schools was by determining the knowledge levels of EE among the pupils. This section discusses the findings on the effectiveness of EE in ZHS.

5.5.1 Knowledge Levels of Environmental Education among High School Pupils

The findings in Table 25 show that 50% of the pupil respondents had heard about Environmental Education and the other 50% of the pupil respondents had never heard about EE. It was encouraging to note that at least 50% of the pupils were actually aware of EE despite some school administrators indicating that EE was not being offered in their schools. Most of the Grade 10 respondents were not aware of EE probably because they had not yet tackled EE topics in their various subjects. However, it was also possible that the pupils could have covered EE topics but because they were not aware of it, such topics may not have been considered as Environmental Education.

5.5.2 Awareness of a School Environmental Education Policy

Just like the teacher respondents, most of the pupils that indicated that they had a school EE policy could not give clear explanations on what it stated. Surprisingly, even pupils from the same school gave different explanations on what their school EE policy stated. This was an indication that SEEP was not known among the pupils. The famous

environmental activities that the pupils knew were Production Unit (PU) and Preventive maintenance (PM). These were the weekly activities that the pupils were exposed to in most of the schools.

5.5.3 Effectiveness of School Environmental Education Policy

The administrators from the 3 government schools indicated that their schools did not have SEEPs. It was therefore clear why pupils indicated that the administration spoke nothing pertaining to SEEP. One could not expect the pupils to be aware of SEEP when most of the administrators were not also aware of its existence.

5.5.4 Learning of Environmental Education in Schools

Following the responses in section 4.5.4, no pupil respondent indicated that EE was integrated in Commercial subjects such as accounts or commerce and in mathematics. This confirmed what most teachers of commerce and mathematics had stated. EE components were integrated mainly in science subjects, geography and some components in civic education.

5.5.5 Availability of learning Materials in Schools

The responses that were outlined on this item in section 4.5.5 match with the answers from all the other groups of respondents on this item. It was therefore clear that all the respondents in this study agreed that learning and teaching materials for EE were not adequate in schools.

The results also show that very few pupils noticed learning materials on EE in their schools. It was also be easy to note that some pupils could have indicated that they had no

materials for EE because they could not identify EE components integrated in the subjects.

UNESCO (1980) advises that Strategies for the integration of Environmental Education into formal education should take into account the various components of the educational process, such as teaching and learning materials among others. This showed how cardinal the issue of teaching and learning materials was to the implementation of EE in schools.

5.5.6 Frequency of Environmental Education Programmes in Schools

The pupils who indicated that they had EE programmes weekly were referring to the weekly PM and PU programmes conducted in the schools.

One thing that came out from these responses was that school authorities had never or rarely invited resource personnel from outside to conduct EE programmes within the schools. Though a few clubs such as chongololo with EE activities existed, they lacked support from teachers that had the knowledge in EE.

5.5.7 Problems of Introducing Environmental Education as a Separate Subject in Schools

One problem indicated by the pupils was that of a full curriculum. Pupils indicated that their curriculum was already loaded and that there would be no extra time to fit EE as a separate subject. On the contrary, teachers of science emphasized the need of making EE stand out on its own as an independent subject, despite limited time. This was because EE components were usually left out by teachers due to reasons stated by the teachers in section 4.4.7 of this study.

5.5.8 Environmental Education Information among Pupils

According to the findings, 73% of the pupils were informed on environmental issues while 27% indicated that they had no information on environmental issues. It was clear from the results that administrators and their teachers had a huge task of educating the pupils on environmental issues. The pupils were not exposed to real environmental issues and concerns by the school authorities.

5.6 Challenges faced by Rural Schools in Implementing Environmental Education

One challenge that was identified in rural schools was that it was not easy to disseminate EE to the pupils because the communities that surrounded the schools were not well informed on environmental issues. What was taught therefore was contrary to what the pupils saw in their communities. The surrounding communities exerted too much pressure on resources such as trees and water because they were not well informed on the consequences of such activities. Most people in the surrounding communities still used primitive ways of disposing waste such as burning.

5.7 Challenges faced by Urban Schools in Implementing Environmental Education

In urban schools, the common answer to the challenges of implementing EE, as outlined in the findings, was lack of cooperation from the pupils. From that statement, it was very clear why there was apathy among pupils towards EE. Teachers wanted to make the pupils to concentrate mainly on working and cleaning of the school environment in their hope to implement EE. Implementing EE in schools using this strategy was definitely not going to succeed.

5.8 Offering of Environmental Education in Mission, Government and Private Schools

From the discussions with the administrators, it was easy to note that mission schools based their definition of EE on cleanliness and health of the school environment. This could be seen from the way the school environments in the mission schools appeared. The Mission Schools had cleaner school surroundings compared to Government Schools. Government schools' administrators revealed that the schools had less financial resources to help them implement EE successfully. Lack of finances, however, was not a hindrance for the implementation of EE in Mission Schools.

According to the responses given by teachers from the Private School, EE was not acknowledged as a component integrated in the existing subjects. The Private School, just like Mission Schools, considered EE as a component of taking care of the school environment. However, contrary to the Mission Schools, the Private School did not have a very clean school environment. Their responses further showed that they were not even aware of a SEEP.

5.9 Reflections on Extent to which Research Questions have been Addressed

The general research question tackled in this study was, 'What were the barriers to the successful implementation of Environmental Education in Zambian High Schools?' This question was addressed through three specific research questions. All the three research questions in this study were fully addressed. The first research question asked: "How effective had the 1996 National Policy on Education been in facilitating implementation

of Environmental Education in Zambian High Schools?" This question has been addressed under items 4.2.10, 4.3.7 and 4.4.6.

Research question number two which asked: "what problems did technocrats face in implementing environmental education in the ZHS Curriculum?" has been featured under items 4.2.8 and 4.2.9.

The third research question which asked: "what challenges did Zambian High School teachers face in teaching Environmental Education in their subjects?" This question has been answered by items in sections 4.4.5, 4.4.7, 4.5.5, 4.5.7, 4.6 and 4.7.

5.10 Summary

This chapter presented the discussion on barriers to successful implementation of Environmental Education in Zambian High Schools. It also included a reflection on the extent to which research questions were addressed in the study.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter gives the conclusions and recommendations derived from the findings in this study. From the data analysis, a number of issues concerning EE in Zambian High Schools were raised from which the conclusions were drawn. Therefore, the outlined recommendations in this chapter seek to address the issues raised in the study.

6.2 Conclusions

Based on the responses that were given by the respondents in this study, it can be concluded that the current National Policy on Education has little help in facilitating the implementation of EE in ZHS. Despite all MoE respondents indicating that the current NPE has facilitated the implementation of EE in ZHS, they could not explain precisely how the policy has achieved that. Most teachers are not aware of this policy and therefore they are not aware of how it helps in implementing EE in ZHS.

Secondly, the declaration of EE as a cross cutting issue was a positive move in implementing EE into the curriculum. However, integrating EE in a number of subjects has been a challenge. Integrating EE has only been a success in science related subjects such as chemistry, physics, biology and agricultural sciences. Other subjects where integration of EE has succeeded are geography and home economics. English language also has EE in terms of exercises such as comprehension and compositions writing that are given to the pupils. As a cross cutting issue, EE is taken to be a subject that cannot stand on its own in the curriculum but covered in all existing subjects. However, this is

not what is taking place in schools because a number of subjects such as commercials and mathematics still do not have EE components in them. Therefore, as long as EE remains to be a cross cutting issue to be integrated in other subjects, it will stand out to be a challenge to MoE.

The study also revealed that there is lack of proper coordination between CDC and other MoE offices, as well as MoE and the schools or school administrators. When asked whether EE was offered in schools or not, all the CDC officials indicated that EE was being offered in ZHS while the respondents from PEO indicated that EE was not being offered in ZHS. This showed lack of coordination among officials of the same ministry. The high school administrators were also not aware of EE being integrated in the existing subjects, hence, giving different answers on whether EE was offered in their schools or not. One can therefore conclude that CDC had not taken a chance to explain to the administrators together with their teachers on the integration of EE in the existing subjects.

The other challenge of implementing EE revealed in this study was limited finances in securing teaching and learning materials for EE in ZHS. According to MoE, EE is a cross cutting issue. This implies that all text books of different subjects need to have EE components in them. This is expensive and as such most schools do not have materials for EE. Other problems include difficulty in changing people's mind set to accept and acknowledge EE, lack of a political will to facilitate the implementation of EE, less manpower to handle EE components in schools and limited contact time in the school curriculum.

Furthermore, most schools have limited text books on EE making it difficult to teach and learn. Due to limited information on EE, teachers tend to leave the EE component integrated in their subjects and concentrate on those topics whose information is readily available in the text books. EE is therefore neglected by many teachers.

The study has further shown that not all administrators and teachers acknowledge that EE is being offered in their schools. This in itself is a barrier to successful implementation of EE in ZHS. MoE has stated that EE is a cross cutting issue incorporated in all the subjects in ZHS. Some administrators do not know that or they do not accept that there is EE in those subjects. One can therefore conclude that most administrators are ignorant of the existence of EE in the existing subjects. There is no way such administrators will enforce the teaching of EE which themselves do not know. On the other hand, even most of the teachers do not acknowledge that EE is there in the curriculum as an integrated component in their subjects. If teachers cannot acknowledge that EE is integrated in their subjects then it will not be implemented.

The fact that some of the teachers of English indicated that they have EE in their subject while others indicated that they did not have showed a discrepancy in the way EE components are being handled by some teachers. This shows that most teachers, particularly those that do not teach science related subjects, have difficulties in interpreting EE components integrated in their subjects.

The study also revealed that rural schools, particularly government schools, lacked adequate water supply to carry out EE activities. The rural government school that was visited had only one hand pump at the time of the study to supply water to the whole high

school. This in itself is not sufficient to supply the school with the required water. A few programmes such as watering of plants are therefore neglected as it is not easy to fetch water from the only hand pump to supply the whole school. The rural mission school had extra supply of water from water pumps and reservoirs. Another problem faced by rural schools is less cooperation from the surrounding communities. The communities surrounding rural schools are not well informed about environmental activities such as burning. It is therefore not easy for teachers, for instance, to teach pupils the right methods of waste disposal when the surrounding communities burn their waste. Rural schools are never visited by relevant environmental authorities such as ECZ to promote Environmental Education.

Finally, the study has also shown that Mission Schools consider EE as taking care of the school surroundings and this was seen from the way their schools appeared. Mission Schools had cleaner school environments than Government Schools. Government schools' administrators explained that their schools lacked resources in implementing EE.

6.3 Recommendations

Based on the findings of the study, the following recommendations are made;

- **MoE should disseminate appropriate information to High Schools at appropriate times.**

  MoE must improve on its communication with schools and their managers. It was interesting to learn from the findings that CDC considered EE as a cross cutting issue and yet most administrators and teachers were not aware of that. The issue of a School Environmental Education Policy was another item that was known

only by CDC officials. Other MoE respondents from PEO did not have knowledge on who formulated a SEEP. 60% of the administrators were not aware of it and yet CDC respondents stated that such policies were formulated by school authorities. A lot of information is lacking in schools because of poor communication between the MoE and the school authorities. The MoE must ensure that decisions made at the higher offices reach the schools. The MoE should visit schools and inform them on any new developments in the system so that relevant officers are aware of what is being introduced.

- **EE should be embedded in all National Policies on Education**

  This recommendation is based on the finding that the MoE officials, high school administrators and teacher respondents could not explain precisely how the 1996 NPE has helped easy implementation of EE in ZHS. The findings also revealed that some teachers were not aware of the 1996 NPE.

  Therefore, whenever a new Policy on Education will be formulated, implementation of EE should be clearly outlined to give proper guidance to the stake holders. Policies such as Education Policies should be availed to the teachers because they are the ones in direct contact with the pupils.

- **The MoE should train more Teachers to handle Environmental Education in Zambian High Schools**

  The finding of this study revealed that most teachers neglected EE components in their subjects because they lacked the skills of handling those components. Teaching of EE should therefore begin with Colleges of Education if the

integrated components of EE in the subjects are to be successfully taught to pupils. EE could also be taught to serving teachers during Continuous Professional Development programmes (CPD). Schools should organise CPD programmes where they invite EE specialists to facilitate. This would help teachers who never came across EE during their training to gain some knowledge and skills on how to handle EE integrated in their subjects. Workshops can also be organised to help teachers of non science subjects to know how to handle EE on components integrated in their subjects.

- **Environmental Education should be taught as an Independent Subject**

  This recommendation arises from the finding that some high school teachers leave out the EE components that are integrated in their subjects because teachers wanted to concentrate on topics that were frequently examined. This implied that EE would continuously be set aside by most teachers because of examination 'centered' type of teaching. Therefore, one way of ensuring that EE is implemented in schools is for MoE through CDC to find ways of introducing EE as an independent subject in the ZHS curriculum. This will be the best way to ensure that EE is taught in schools. Teachers should also be taught to teach for the development of the child so as to build a child who is going to contribute to a sustainable future and not mere memorization of examination facts.

- **Environmentalists to Visit Rural High Schools**

  From the findings, it was not easy for the teachers in rural schools to disseminate EE to the pupils because the communities surrounding the schools were not well

informed. Rural schools need to be visited by environmentalists to help them solve the problems that they face in the light of the negative environmental activities taking place in the surrounding communities. A deliberate programme has to be put in place by MoE in conjunction with the rural schools' administrators to organise environmentalists to educate the communities surrounding the schools on how to take care of the environment.

- **MoE to Secure Teaching and Learning Resources in Environmental Education**

  This recommendation arises from the finding that all respondents in this study indicated that teaching and learning resources in EE were not adequate. Expensive as it may be, the MoE has to secure teaching and learning resources for EE in ZHS. The ministry has to enquire from as many publishers as they can to suggest text books with relevant EE material. Head teachers should also put educational tours on their school budget as a priority. Pupils need to go out and see the real environmental situation to cement what they learn in class.

6.4 Suggestion for further study

Suggestion for further study could be on the effectiveness of The Training manual for Basic School Teachers in environmental Education and Education for Sustainable Development. It was stated in chapter four that the Directorate of Standards and Curriculum, in trying to implement EE in schools came up with a training manual for Basic School Teachers. It would be helpful to find out how effective this manual has been in implementing EE in Basic schools.

REFERENCES

Ballantyne, R.R. (1995), Environmental Teacher Education: Constraints, approaches and Course Design, International ***Journal of Environmental Education and Information***, *14*(2): 115-28

Clacherty, A (1994), Trends in environmental education in South Africa. In: Levy S (ed). ***Projects speak for themselves 1993/1994***. Houghton: Sharon Levy.

Doll R, C. (1989), ***Curriculum improvement***, Allyn and Bacon, London

Department of Education and Training (DET), (2001) ***Environmental Education Policy for Schools,*** Curriculum Support Directorate, New South Wales.

ECZ (2001), ***State of the Environment in Zambia***, *2000*, ECZ, Lusaka, Zambia.

Environmental Education Bulletin, December 2008- may 2009, Volume 34 and 35, Environmental Education Association of South Africa, South Africa.

Filho, W.L. and O'Loan. K. (eds) (1996), ***Teacher education for the environment: European perspectives***. New York: Parthenon Publishing Group.

Green J.M. (1998), Curriculum review and reorientation programme, ***Journal of Family Ecology and Consumer Sciences,*** 26(1), pp 27-33

GRZ (1996), ***Educating our Future, National Policy on Education***, Lusaka, Zambia

GRZ (2001), ***Teacher's Curriculum Manual***, Lusaka Zambia

Harde, R.B. (1982), ***Environmental studies: The undergraduate curriculum***. Unpublished Dissertation, The Union for Experimenting Colleges and Universities.

Irwin P. (1990), The concept of environmental education and the development of environmental education in South Africa. Keynote address delivered at an annual workshop of the ***Environmental Education Association of southern Africa,*** 17/09/90. Grahams town: Rhodes University.

Janse van Rensburg.E,(1999). The Education Response to the Environmental Crisis.

Ketlhoilwe, M.J. (2007), Environmental Education policy implementation challenges in Botswana Schools: ***Southern African Journal of Environmental Education***.*24 pp 171-184*

Le Roux, K (2001), ***Environmental Education Processes, Active Learning in Schools***, Learning Guide, 2nd Edition, University of Natal Press, South Africa

Le Grange L, (1999), Addressing environmental Concerns through Science Teaching, in a Chapping Educational Milieu, ***Journal of Education,*** 24, University of Natal: Pietermaritzburg pp 31-34

Lotz-Sisitka, H.B. (2004), ***Positioning Southern African Environmental Education in a changing context.*** Howick, Share-Net/ SADC REEP South Africa

MacGregor, D. (2003), ***Citizenship and Environment***, Oxford, Oxford University Press

Mosidi, S (1997) Infusion confusion? Environmental education in the new outcomes-

based education in South Africa. Paper presented at the 15th annual conference of the ***Environmental Education Association of southern Africa***. Pretoria: Pretoria Technikon.

MTENR (2007) ***National Policy on environment***, Lusaka, Zambia

Mweembe O. M. (2008), ***Environmental Knowledge, Attitudes and Practices of High School Teachers in Zambia: A case study of selected Schools of Lusaka City*****.** Unpublished Dissertation, School of Education, University of Zambia.

Palmer, J.A. (1998), ***Environmental Education in the 21st Century, Theory, Practice, Progress and Promise***, Routledge, London.

Rao. V. K. and Reddy R.S. (1997), *Readings in Learning Education Series, Environmental Education*, Common wealth in conjunction with Dr Zakir Hussain

Sandel, K., Öhman J. and Östman L. (2005), ***Education for sustainable development, Nature school and Democracy*****.** Student litterateur, Sweden.

SADC Regional environmental education programme (2005), ***Cases of course development in Environmental and Sustainability Education in Southern Africa***. South Africa

Scott, W.A.H. (1996), "Pre-service 'environmental teacher education': A critique of recent arguments about constraints, approaches and course design." ***International Journal of Environmental Education and Information***. **15**(3): 307-18.

Tilbury, D. (1992), "Environmental education within pre-service teacher education: The priority of priorities." ***International Journal of Environmental Education and Information.*** **11**(4):268.

Taylor, D.E. (1988), "Environmental education in Jamaica: The gap between policymakers and teachers. ***Journal of Environmental Education***. **20**(1): 22-28.

UNESCO (1979) ***Man and His Environment***: An overview of UNESCOS's involvement, United Nations, Paris.

UNESCO (1980), ***Environmental Education in the light of the Tbilisi Conference***. Paris

UNESCO, (1991), ***A National Strategy for Environmental Education***, Helsinki University printing house

UNESCO, (1997), ***Environment and Society: Education and public awareness for Sustainability***, Background Paper prepared for UNESCO International Conference, Thessalonica, 7.

Wilke, R.J. (1985), Mandating preservice environmental education teacher training: The Wisconsin experience, ***Journal of Environmental Education.*** **17**(1): 1-8.

APPENDIX 1

INTERVIEW GUIDE

TO BE ADMINISTRED TO MINISTRY OF EDUCATION OFFICIALS

Brief introduction

This interview is aimed at finding out your opinion concerning the factors that prevent implementation of environmental education in high schools. You are therefore requested to be as objective as you can in view of what you know about environmental education in Zambian high schools.

SECTION A: PERSONAL AND GENERAL INFORMATION

1. Date of interviews……..

2. Name of the Office……..

3. Gender : Male [ ] Female [ ]

4. Professional qualification

Diploma	[ ]
Advanced Diploma	[ ]
1st Degree	[ ]
2nd Degree	[ ]

Any other specify ……

5. Position Held in the ministry…….

6. How long have you been in this position? ……..

SECTION B: Environmental education information

7. What do you understand by “Environmental Education?”

……

……

8. From the Ministry of Education's point of view, EE is a cross cutting issue what does this statement imply?

……

……

……

……..

9. Is Environmental Education offered in the Zambian High Schools?

Yes [ ] ii) No [ ]

10. If yes to question 9 above, how is it being offered?

i) Integrated in all the subjects

ii) Integrated in some subjects

iii) As a separate subject

iv) As part of extra curricula activities

v) Any other specify……

11. If no , why is it not being offered

……

……

……

12. Do Zambian High Schools need an Environmental Education policy?

    i) Yes [ ] ii) No [ ]

13. Give an explanation to the answer given to question 12 above

    ……..

    ……

    ……

14. Who formulates Environmental Education policies in the High Schools?

    ……

    ……

15. What role does an environmental education policy play in high schools?

    ……

    ……

    ……

16. What role does your office play in implementing environmental education in the high schools?

    ……

    ……

    ……

17. Are there teaching and learning resources on environmental education in the Zambian High Schools?

    i) Yes [ ] ii) No [ ]

18. If yes to question 17, who is responsible for the supply of teaching and learning resources in high schools?

    ……

19. Are there any problems faced in implementing environmental education in the high schools?

    i) Yes [ ] ii) No [ ]

20. If yes to question 19, State the problems

    i)……

    ii)……

    iii)……..

    iv)……

    v)……

21. Do you think the National Policy on Education has a role in helping implement environmental education in Zambian high schools

    i) Yes [ ] ii) No [ ]

22. If yes to question 21, to what extent do you think it has helped to implement environmental education in the high schools?

    ……

    ……..

23. Is there any other information on Environmental education that has not been captured in this interview that may be vital to this research?

    ……..

    ……

    ……

    ……

Thank you for your participation.

THE END

APPENDIX 2

INTERVIEW GUIDE

TO BE ADMINISTRED TO HIGH SCHOOL MANAGERS

Brief introduction

This interview is aimed at finding out your opinion concerning the factors that prevent implementation of environmental education in your school. You are therefore requested to be as objective as you can in view of what you know about environmental education at your school.

SECTION A: PERSONAL AND GENERAL INFORMATION

1. Date of interview……..

2. Gender Male [ ] Female [ ]

3. Name of the School……

4. Professional qualification

   Diploma [ ]
   Advanced Diploma [ ]
   1st Degree [ ]
   2nd Degree [ ]
   Any other
   specify…….

5. How long have you been serving in this position of school manager?……..

SECTION B: ENVIRONMENTAL EDUCATION INFORMATION

6. What do you understand by the phrase Environmental Education?
   ……

   ……

   ……

   ……

7. Do you have an environmental education policy in your school?

   i) Yes [ ] ii) No [ ]

8. If yes what does it state?

   ……
   ……
   ……
   ……
   …….

9. If no to question 9, what are the reasons why your school does not have an EE policy

   ……

   ……

   ……

   ……

10. In your own opinion, what role does an environmental education policy play in Zambian high schools

    ……

    ……

11. Is Environmental Education offered in your school?
    i) Yes [ ] ii) No [ ]

12. If yes to question 11, how is it being offered

    i) Integrated in all the subjects
    ii) Integrated in some subjects
    iii) As a separate subject
    iv) As part of extra curricula activities
    v) Any other specify……

13. If no to question 11, why do you think it is not being offered?

……

……

……

14. What role does your office play in implementing environmental education at your school?

……

……

15. Do you have teaching and learning resources on environmental education at your school?

i) Yes[ ] ii) No [ ]

16. Give a reason to your answer in question 15 above

……

……

……

17. Are there any problems faced in implementing environmental education in this school?

ii) Yes [ ] ii) No [ ]

18. If yes to question 17, State the problems

1)……..

2)……

3)……

4)……

5)……

19. Do you think the national Policy on Education has a role in helping implement environmental education in high schools?

i) Yes [ ] ii) No [ ]

20. Give an explanation to the answer given on question 20?

    ……

    ……

    ……

21. Is there any other information that is not captured in this interview that you feel can be included?

    ……

    ……

Thank you for participating in this study.

THE END

APPENDIX 3

QESTIONNAIRE

TO BE ADMINISTRED TO HIGH SCHOOL TEACHERS

Brief introduction

This questionnaire is aimed at finding out your opinion concerning the factors that prevent implementation of environmental education in your school. You are therefore requested to be as objective as you can in view of what you know about environmental education at your school.

Instructions

I) *Complete this form by filling in the blank spaces or by placing a tick [√] where applicable.*

II) *Where not applicable indicate N/A*

III) *Give a brief but adequate information for descriptive questions*

SECTION A: PERSONAL AND GENERAL INFORMATION

1. Date of the interview: ……/……/……

2. Gender Male [ ] Female[ ]

3. Professional qualification.

   Diploma [ ]

   Advanced diploma [ ]

   Degree [ ]

   Masters [ ]

   Any other please specify……

4. How long have you served as a teacher?

……..

5. What is the combination of your teaching subjects

   a) ……

   b)……

   c)……

SECTION B: ENVIRONMENTAL EDUCATION INFORMATION

This section contains questions on Environmental education

6. Do you understand the term environmental education?

   i) Yes [ ] ii) No [ ]

7. If the answer to question 6 is yes, what do you understand by environmental education? If it is no, proceed to question 8.

   ……

   ……

   ……

   ……

8. Do you have an environmental education policy at your school?

   i) Yes [ ] ii) No [ ] iii) Don't know [ ]

9. If yes to question 8 , do you know what it states?

   i) Yes [ ] ii) No [ ]

10. If no to question 8, give reasons?

    ……

    ……

    ……

11. How does your school offer environmental education to the pupils?

    i) As an independent subject

ii) It is integrated in other subjects

iii) Using posters on the school notice board

iv) Through cleaning the school environment

v) Any other

specify……..

……

SECTION C: ENVIRONMENTAL EDUCATION AND THE CURRICULUM

12. In the subject/s that you offer, do you think there are any components of environmental education?

    i) Yes [ ] ii) No[ ]

13. If yes to question 12, do you have adequate resources to teach the environmental education components found in the subject/s that you teach?

    i) Yes [ ] ii) No[ ]

14. Are you aware of the National Policy on education?

    i) Yes [ ] ii) No [ ]

15. If yes, to what extent do you think the National Policy on education is influencing the implementation of environmental education at your school?

    ……

    ……

    ……..

    ……

16. Which of the groups below do you think are the best implementers of Environmental education in schools (more than one option is possible)

    i) The teachers in their respective subjects

    ii) Teachers specifically trained to teach environmental Education

    iii) The School Managers

iv) The pupils

v) The Curriculum Development centre

vi) Others

specify……

17. What problems do you face as a teacher in implementing environmental education

    i)……..

    ii)…….

    iii)……

    iiv)……

18. If there is any other information that is not captured in this questionnaire include it in the spaces below.

    ……

    ……

    ……

    ……

    ……

    ……

    ……

Thank you for your participation.

THE END

APPENDIX 4

QUESTIONNAIRE

TO BE ADMINISTRED TO HIGH SCHOOL PUPILS

Brief introduction

This interview is aimed at finding out your opinion concerning the factors that prevent implementation of environmental education in high schools. You are therefore requested to be as objective as you can in view of what you know about environmental education in Zambian high schools.

Instructions

IV) Complete this form by filling in the blank spaces or by placing a tick [√] where applicable.

V) Where not applicable indicate N/A

VI) Give a brief but adequate information for descriptive questions

SECTION A: PERSONAL AND GENERAL INFORMATION

1. Date of the interview……/……../2010

2. Name of the school…….

3. Sex : Male [ ] Female [ ]

4. What is your Grade?: 10 [ ] 11[ ] 12[ ]

5. How long have you been in this school?

   i) 1 year [ ]
   ii) 2 years[ ]
   iii) 3 years[ ]
   iv) 4 years[ ]

SECTION B : ENVIRONMENTAL EDUCATION INFORMATION

6. Do you know the phrase Environmental education? If yes proceed to question 7 and 8 and if your answer is no proceed to question 9.

   i) Yes [ ] ii) No [ ]

7. What do you understand by the phrase Environmental Education?

   ……

   ……

   ……

8. Where did you first hear about environmental education?
   1) At School from a teacher during a lesson
   2) At school from a friend
   3) From the media i.e. TV, Radio, Newspaper, etc
   4) Any other specify……

9. Do you have an environmental education policy at your school? If yes proceed to question 10 and 11.

   i) Yes [ ] ii) No [ ] iii) I don't know [ ]

10. State your school environmental education policy

    ……

    ……

    ……

11. If yes to question 9 above, how do you rate its usage on environmental education at your school?
    i) Very Good [ ]
    ii) Good [ ]
    iii) Average [ ]
    iv) It is not used at all [ ]
12. If your answer to question 9 above is no, why do you think you don't have an environmental education policy at your school?

    ……

……

……

13. How do you learn environmental education at your school?
    i) As an independent subject
    ii) It is integrated in other subjects
    iii) Through environmental work
    iv) Through clubs
    v) Any other specify……..

14. Do you have learning materials for environmental education?

    i) Yes [ ] ii) No [ ] iii) I don't know [ ]

15. How often does the school organize environmental education programmes for you?

    1) Every week
    2) Every month
    3) Every term
    4) Every year
    5) Once in a while
    6) It has never organized one
    7) Any other specify…….

16. What do you think are/would be the problems of putting environmental education in your learning programme?

    ……
    ……
    ……
    ……..

17. How well informed are you in environmental issues?
    1) Very well informed [ ]
    2) Averagely informed [ ]
    3) Not informed at all [ ]

18. In your own views which of the following groups do you think are the best implementers of environmental education in schools?

    i) The school Administration

ii) The teachers
iii) The pupils
iv) The Media i.e. ZNBC
v) Any other specify……..

19. Give a reason for your answer to question 18 above.

……

……

……

20. If any important information is left out by this questionnaire, add it below.

Thank you for your participation.

THE END

APPENDIX 5:

Training Manual for Basic School Teachers in EE/ESD

See over leaf for the copy