# Teachers' and Pupils' Perceptions of Environmental Education in selected Primary Schools of Chipata District of Eastern Zambia

By

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## Author's Declaration

I, Zulu Naomi Mwanza, do hereby declare that this dissertation entitled:

"Teachers' and Pupils' Perceptions of Environmental Education (EE) in selected primary schools of Chipata District of Eastern Zambia" represents my own work and that all the resources used or quoted have been indicated and acknowledged by means of complete reference and that the dissertation has not previously been submitted for a degree at the University of Zambia or any other University.

Signed: .....

Date: .....

## Certificate of Approval

This dissertation is approved as fulfilling the requirement for the award of the Master of Education degree in Environmental Education by the University of Zambia.

| Examiners' Signatures | Date |
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## Dedication

I dedicate this work to my Grandson Thando, my husband Alick R. Mwanza and children Mwaka, Chinga, Aveless, Natalia, Victor, and Tisa for all the love, support and encouragement given to me throughout my studies.

I also dedicate this research work to my brothers and sisters in memory of our late father Gibson Bobo Zulu for his inspiration and the foundation he laid many years ago. It was his greatest desire to see to it that all his children get a basic education, and for me to have attained this higher education I owe it to him. I will always cherish his love.

May the Almighty God keep and bless you

I love you.

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I sincerely wish you all God's Blessings.

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## List of Acronyms

| | |
|---|---|
| CTS | Creative and Technology Studies |
| DEBS | District Education Board Secretary |
| ECZ | Environmental Council of Zambia |
| EE | Environment Education |
| EFS | Education for Sustainability |
| ESD | Education for Sustainable Development |
| FGI | Focus Group Interview |
| FGD | Focus Group Discussion |
| GRZ | Government of the Republic of Zambia |
| IEEP | International Environmental Education Programme |
| IUCN | International Union for the Conservation of Nature |
| MOE | Ministry of Education |
| NAAEE | North American Association for Environmental Education |
| NCS | National Conservation Strategy |
| NGO | Non- Governmental Organisation |
| PMS | Preventive Maintenance Systems |
| UK | United Kingdom |
| UNCED | United Nations Conference on Environment and Development |

| | |
|---|---|
| UNEP | United Nations Environment Programme |
| UNESCO | United Nations Educational Scientific and Cultural Organisation |
| UNZA | University of Zambia |
| WCED | World Commission on Environment and Development. |

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## Abstract

This study was aimed at establishing Teachers' and Pupils' perceptions of Environmental Education in selected primary schools of Chipata District of Eastern Zambia. The study was targeted at exploring teachers' and pupils' perceptions regarding the integration of Environmental Education into the primary school curriculum and determine approaches used by teachers in its implementation. It was carried out in ten selected schools and comprised 130 respondents. The study was qualitative. Semi structured questionnaires and Focus Group Interview guides were used as instruments of data collection. A descriptive survey research design was adopted in order to collect in-depth data.

Results showed that both teachers and pupils perceived Environmental Education as a means of acquiring knowledge and skills about the environment, which they mostly understood from the biophysical perspective; they had mixed perceptions about the integration of Environmental Education; the highest perception being that EE is integrated in all the subjects in the primary school curriculum while others perceived EE as only appearing in Integrated Science, Social studies, Creative and Technology Studies and extra curricula activities. On the contrary, some showed ignorance on integration of EE.

Results further showed that due to an examination oriented curriculum followed in Zambia, teacher-centred methods were preferred to participatory methods when teaching EE. Challenges faced by teachers in teaching EE, included lack of knowledge and inadequate training in EE, lack of guidelines, an unclear syllabus, lack of teaching and learning resources coupled with large class size, lack of time and ineffective monitoring and evaluation mechanism. On the other hand, some pupils' lacked reading skills. This hindered them from acquiring information on EE at individual level.

Based on the challenges highlighted above, the study concluded that EE is not effectively taught in the study area and recommended that teachers, who are implementers of the curriculum should undergo retraining in order to re-sharpen their pedagogical skills. EE should also be included as an independent subject in order to help broaden its content, scope and status. Finally, government should increase funding to the education sector to support and sustain learning of EE through the mass media.

# INTRODUCTION: CHAPTER ONE

## 1.0 Overview

This chapter gives an outline of the background to the study, the statement of the research problem, the purpose of the study, research objectives and questions, its significance and how the study has been organised.

## 1.1 Background Information

There has been a global out-cry over the deterioration of the environment due to industrialisation and its associated technological, economic, environmental and social developments by human beings. There are predictions that the current pattern of development is causing critical and irreversible changes to the biosphere, which in turn, jeopardises the earth's capacity to sustain human life as presently known (Ahmad et al., 2012). White (2001) observes that globally, people long for something better than they now possess. Now, in the quest to satisfy their desires and make life better, human beings have exploited, assorted and plundered the natural environment to such an extent that they are now head-on collision with a severe environmental crisis. Among some environmental issues that give rise to an environmental crisis include; climate change and altered weather patterns, depletion of the ozone layer, deforestation and degradation of agricultural land, pollution of the atmosphere, water ways and loss of habitat and biodiversity (Panneerselvan and Ramakrishnan, 2012).

It is alleged that the concern for environmental problems and the quality of the environment has never been as high as it is now (Palmer, 1998). However, it must be noted that the existence of an environmental crisis is not universally accepted, with other commentators such as Kane (2004) contending that the predictions of catastrophe arising out of research are ill-conceived and overly pessimistic. Whatever the debates, and despite conflicting views about the existence of a crisis, global concern for the environment has reached unprecedented levels throughout the world. Chacko (1998) associates most of these environmental problems to failure of our societies and education system to provide citizens with the basic understanding and knowledge about interrelationships in the environment.

Since the United Nations Conference on Human Environment (UNCHE) held in Stockholm in 1972, there has been a strong support for the development of Environmental Education as one

of the most critical elements of an all-out attack on the world's environmental crisis. Le Roux (2001) affirms that as the enormity of global environmental problems have increased in recent decades, there has been widespread and growing emphasis on Environmental Education. The same support was reiterated by Environment Australia which asserts that 'education is the most effective means that society possesses for confronting challenges of the future'. And during the 1990s, the Agenda 21, particularly emphasised the role of education as an agent of change for sustainable development.

Environmental Education is critical for improving the capacity of people in addressing environmental challenges. UNESCO (1977) states that Environmental Education aims at developing a citizenry that is conscious and motivated to develop and manage its own environment in a sustainable manner. This can only happen through imparting knowledge, skills, values and positive attitudes into individuals that enable them to effectively take action and participate either individually or collectively in finding solutions to environmental problems. Ballantyne et al. (1996), advocates that primary school Environmental Education is particularly important because of its potential to reach a wider audience than the pupil population through the process of intergenerational influence. He further emphasises that primary school Environmental Education must be taken very seriously because it facilitates attainment of knowledge, skills and desired values and attitudes in pupils at a younger age for better environmental management. Strong (1998) stresses that catching them young is an effective way of creating environmental awareness and this might result in eco-soldiers in their later lives. This statements is in agreement with biblical teachings which advocates for 'training up of children in the way they should go, so that when they are old, they would not depart from it'.

Cutter (2000) argues that almost thirty years have passed since Environmental Education has been in existence, yet existing research shows that knowledge of Environmental Education among many primary school teachers and pupils is at low levels and its implementation has been problematic and of limited success. The reasons for these shortcomings are far from being clear.

Zambia like many other countries has not been spared from an 'environmental crisis'. In responding to global calls and concerns about the environment, the school curriculum was revised to include aspects of Environmental Education in all primary school subjects in order to expatiate awareness among learners (MOE, 1996). However, since aspects of Environmental

Education were introduced in the primary school curriculum, the condition of the environment has not improved and seems to be worse now than then. Mweembe (2008) in a case study to establish knowledge, attitudes and practices of EE among high school teachers and pupils in Lusaka reported that knowledge of EE was lacking. This constitutes a problem in that many citizens are unable to articulate issues pertaining to environmental knowledge or awareness resulting from the Environmental Education learned at primary school. Namafe (2006) alludes to the fact that Environmental Education is not common and that it was an emerging subject in Zambia. Similar findings were reported by Lindhe (1999) who found that very little impact had been made in communities due to Environmental Education learned in schools.

It was this knowledge gap that gave thrust to this study to establish teachers' and pupils' perceptions of Environmental Education in the study area. The assumption was that understanding their perceptions of Environmental Education was important because primary school education is the foundation of all learning and primary school age (6-13 years) is appropriate for developing knowledge, skills, values and attitudes for the environment which would enable them live sustainably later in life. Gruenwald (2004) argues that understanding how people perceive information helps in being precise and makes the future more forecast and increases efficiency.

### 1.2 Problem Statement

Global concerns about escalating environmental degradation have called for strong support in the development and recognition of Environmental Education. Zambia like many other countries reoriented the school curriculum to include aspects of Environmental Education in order to create environmental awareness among learners in schools.

Despite decades of the existence of aspects of Environmental Education in the primary school curriculum and a strong National Policy, knowledge of Environmental Education has remained low and limited among many teachers and pupils. Mweembe (2008) confirms that knowledge of Environmental Education is lacking among some teachers and pupils in selected high schools of Lusaka. This lack of knowledge among teachers constitutes a problem in that they may not teach EE effectively. This further translates into pupils who graduate from primary school without necessary skills, values, and attitudes to enable them respond positively towards finding solutions to environmental problems. Furthermore, it was observed that nothing had been written about this topic in Chipata District. This knowledge gap gave thrust to this study

to establish teachers' and pupils' perceptions of Environmental Education in selected primary schools of Chipata District of Eastern Zambia.

### 1.3 Purpose of the Study

The purpose of this study was to establish teachers' and pupils' perceptions of Environmental Education in selected primary schools of Chipata District of Eastern Zambia.

### 1.4 Main Objective

The main objective was to establish teachers' and pupils' perceptions of Environmental Education in selected primary school of Chipata District of Eastern Zambia.

#### 1.4.1 Specific Objectives

The following specific objectives were considered:

(1) To explore teachers' and pupils' perceptions of Environmental Education in selected primary schools of Chipata District of Eastern Zambia
(2) To ascertain how teachers and pupils integrate Environmental Education into the curriculum in selected primary schools of Chipata District of Eastern Zambia
(3) To examine what methods teachers use to integrate Environmental Education into the curriculum in selected primary schools of Chipata District of Eastern Zambia
(4) To identify the challenges that teachers and pupils face in implementing Environmental Education in selected primary schools of Chipata District of Eastern Zambia.

#### 1.4.2 Main Research Question

This study was guided by the following main research question:

What are teachers' and pupils' perceptions of Environmental Education in selected primary schools of Chipata District of Eastern Zambia?

#### 1.4.3 Specific Research Questions

The following research questions guided this study:

1. What are the views of teachers and pupils on Environmental Education in selected primary schools of Chipata District of Eastern Zambia?

2. How do teachers and pupils teach and learn Environmental Education in selected primary schools of Chipata District of Eastern Zambia?
3. What methods do teachers use to teach Environmental Education in selected primary schools of Chipata District of Eastern Zambia?
4. What challenges do teachers and pupils face in teaching and learning Environmental Education in selected primary schools of Chipata District of Eastern Zambia?

### 1.5 Significance of the Study

It was important to carry out this study because findings may enable teachers to develop positive perceptions about Environmental Education and teach it effectively to the benefit of the learners. It may also arouse pupils' awareness and curiosity about the environment and encourage active participation in resolving environmental problems at an early age. Findings may help policy makers to rethink how best EE can be integrated into the school curriculum and how teachers can be supported in its implementation. Baseline information may also provide ideals which can inform teacher refresher programs and in-service workshops on EE.

### 1.6 Study Area and Motive for the study

The study was conducted in ten (10) selected primary schools of Chipata District namely; Chipangali, Mbulanda, Vizenge, Katopola, Mpezeni Park, St Atanasio, Kanjala, Katandala, Nyakutwa and Mnoro primary schools. There are a number of things which motivated the researcher to carry out this study. Firstly, as a primary school teacher and experience the researcher has in teaching motivated her to undertake this study to establish perceptions of teachers and pupils especially that aspects of EE are included into the curriculum yet it has remained an emerging subject. Secondly, Chipata District is fast growing with a lot of development taking place, the researcher wanted to explore the extent of environmental knowledge among participants who are usually mediators and disseminators of information in society. Above all, very little or no research of this nature had been undertaken in the study area before. These schools were particularly chosen because they fall in a catchment area of Urban, Peri-urban and Rural schools which the researcher targeted so as to get a balance of views on perceptions of Environmental Education. In addition to that, these schools could easily be reached on foot or by public transport since the researcher had no vehicle of her own and as you may be aware that rural schools can be quiet far apart.

## 1.7 Organisation of the Study

The first chapter set the foundation on which the study is built. It presented the background to the study, statement of the problem, purpose of the study, research questions through which research objectives were addressed and it highlighted the significance of the study. Chapter two focused on literature reviewed in relation to the study starting with historical background of EE and perceptions of Environmental Education as reported in other parts of the world. In addition, the chapter reviewed integration of Environmental Education and methods used in implementing it. Finally, challenges which teachers and pupils face in teaching and learning Environmental Education were discussed.

Chapter three explained the research methodology and procedures that were used to collect data. It presented the main research design and the reasons for adopting it. This was followed by explanations on sampling methods and how the sample was arrived at. It also showed the processes of primary and secondary data collection and finally it outlined the method of data analysis as well as limitations of the study. Chapter four presented findings of the study using themes by following research objectives. The findings were discussed in chapter five to elaborate further on answers to the research questions and Chapter six provided conclusions and recommendations based on the findings and discussions.

## 1.8 Theoretical Framework

This study was guided by constructivist and social ecological theories. Constructivist learning suggest similarities between constructivist techniques and teaching strategies used by environmental educators. Constructivism suggest that knowledge is created by the child and not passively received from the environment. As such knowledge is constructed on foundations of children's existing knowledge. This means that children create new knowledge by reflecting on their physical and mental actions and ideas are constructed or made meaningful when children integrate them into their existing structures of knowledge. Klein & Merriet (1994). Reality has to be constructed by the learner thus teaching and learning themselves must be constructive Tice (1995).

The social ecological theory on the other hand deals with human interaction with the environment. Environmental Education demands that teachers and learners use the environment to acquire knowledge, skills, attitudes and competences to enable them handle environmental problems. The assumption here is that if primary school pupils are provided

with opportunities to actively construct their understanding of the environment, they would develop a deep sense of respect and care for the environment Zimmerman et al (1993). In order for learning to be meaningful, the social ecological theory focuses on four main salient features which include; introduction of real life-problem by the learner or the educator for the learner to solve, learner-centred instruction facilitated by the teacher, productive group interaction during the learning process and authentic assessment and demonstration of learner progress.

Taking these ideas on constructivism and social ecological seriously this study established what knowledge teachers have about EE and how they may apply this knowledge to provide pupils with basic understanding and skills needed to make informed choices about interactions in the environment.

# LITERATURE REVIEW: CHAPTER TWO

## 2.0 Introduction

This chapter presents a review of literature in relation to the study. It begins with a brief history and development of Environmental Education, definition and perceptions of EE, integration of Environmental Education in the primary school curriculum, approaches and methods used in Environmental Education and challenges faced in its implementation were highlighted. The chapter concludes by providing a summary of the reviewed literature and its significance to the present study.

## 2.1 Historical Trends and Development of EE

At global level there has be a glowing emphasis on EE as a tool for confronting the current environmental crisis. According to Sandell et al. (2003), the concept of Environmental Education (EE) can be traced back to ancient times when it was based on the belief that certain sets of perceptions were able to contribute to environmental friendly actions and solving of environmental problems than others. Palmer (1998) associates the modern Environmental Education to the industrial revolution in the eighteenth century. In the early days of its evolution the EE movement focused on education that would raise individual awareness, knowledge, and understanding of the environment in relation to conservation of resources. The focus was to induce people to think ecologically while maintaining a realistic approach towards nature (IUCN/UNEP/WWF, 1980). A significant step forward for Environmental Education was actually during the United Nations Educational Scientific and Cultural Organisation (UNESCO) which organised a Biosphere Conference that stressed global awareness on environmental problems, issues of improving materials for teaching EE, training, and construction of coordinating committees around the world (IUCN, 1970 cited in Palmer, 1998). Furthermore, EE gained fame during the United Nations Conference on the Human Environment held in Stockholm in 1972 where participating governments recommended that EE should be recognised and promoted on an international scale through the United Nations. Since then there has been strong support for the development of Environmental Education as one of the most critical elements of an all-out attack on the world's environmental crisis.

The second Intergovernmental Conference held in Tbilisi in 1977, formally approved the scope and action plans for EE and emphasised the wider use of EE in formal and non- formal

education and an EE that included opportunities for people to be actively involved in working towards the resolution of environmental problems (UNESCO, 1978). It was the provisions of the Tbilisi Declaration that identified the three goals of EE and these goals have provided the foundation for much of what has been done in the field of EE since 1978 (UNESCO, 1985).

Later in 1987, the World Commission on Environment and Commission (WCED, 1987), in its report, Our Common Future, suggested the focus on environmental problems to consider social, and economic factors as the major cause of environmental problems. The decline of natural environments and economic trends worldwide also served for international conferences and meetings to redefine and clarify the links between environment and development. The report of the WCED led to the United Nations Conference on Environment and Development (UNCED) the Earth Summit, which produced a report generally called Agenda 21, a lengthy blueprint for global implementation of sustainable development. Agenda 21 of the summit called for the re-orientation of Environmental Education towards sustainability. Chapter 36 of the action plan particularly focused on public education, awareness and training which confirmed the role of education and the importance of positioning Environmental Education in the perspective of sustainable development (Tilbury, 1995). Since the late 1990's, the concept of 'sustainability' or education for sustainability (EFS) has taken root and it has been conceived as reflecting development that meets the needs of the present without compromising the opportunity of future generations to meet their own needs ( WCED, 1987). The declaration of the decade for Education for Sustainable Development (ESD) beginning in 2005 provided further impetus. The goal was to create a sustainable world through active participation of citizens. Thus, ESD is seen as a process that develops vision, builds capacity, and empowers to make changes in human societies and since this declaration there have been strong attempts to supplant the use of the term EE with the new term ESD (Robottom, 2007). In this study, the term EE is used to embrace ESD and EfS as both ESD and EfS are off-springs of EE in spite of differences in terms of objectives and outlook. There is a local proverb which says the "Ears cannot grow bigger than the Head", so ESD should maintain its position as the ears and EE as the head.

### 2.1.1 Goals of EE

The major thrust of Environmental Education goals could be summarised as:

a. To foster clear awareness of and concern about economic, social, political and ecological inter-dependence in urban and rural areas

b. To provide every person with opportunities to acquire knowledge, values, attitude, commitment and skills needed to protect and improve the environment; and
c. To create new patterns of behaviour of individuals, groups and societies as a whole towards the environment.

These three goals have stood as a strong foundation for an internationally accepted view of the core concepts and skills that environmentally literate citizens need. In the researchers' opinion, these goals forms a spring board upon which individuals and social groups get total awareness and understanding of the total environment; helping them get concern, skills and sense of responsibility to protect and to produce solutions for environmental problems; helping them to realise environment in terms of ecological, political, economic, social, aesthetic and educational dimensions (UNESCO, 1980).

### 2.1.2 The Objectives of EE

According to the UNESCO (1980) objectives of EE focuses on awareness, knowledge, skills, attitudes and participation for environmentally responsible behaviour as follows:

#### (a) Awareness

The perception of EE is to create an overall understanding of the impacts and effects of behaviours and lifestyles on both the local and global environments. An environmentally aware and responsible citizen may be pleased with what he or she is doing to help the environment but this by itself is not enough. It is important that those who know tell others who do not know, so that the environmental message with its practical implications is passed on to others. Primary school teachers and pupils of Chipata District should perceive the opportunity they have to be used in sharing the environmental message with others because they are mediators and disseminators of information in society.

#### (b) Knowledge

It is always believed that knowledge is power. Primary schools are frontiers of knowledge and without which people's future is brink. Environmental Education aims to provide pupils with opportunities to acquire knowledge, understanding and skills required to engage effectively with environmental issues. Hungerford et al. (1980). Teachers' and pupils' perceptions of Environmental Education should help them to examine and interpret the environment from a

variety of perspectives, these being physical, biological, economic, political, technological, spiritual and aesthetic for the benefit of present and future generations.

**(c) Skills**

The focus of this objective is to help teachers and pupils of selected primary schools of Chipata District to perceive Environmental Education as a means of acquiring skills of environmental citizenship. These skills should help them to identify, anticipate environmental problems and work with others to minimise, prevent and solve them.

**(d) Attitude**

Through this objective it was perceived that life experiences should begin during the earliest years of life because they play a critical role in shaping lifelong attitudes, values and patterns of behaviour towards the natural environment. Teachers should know that pupils learn what they live. Positive perceptions and influence from teachers should help develop in the pupil positive attitude towards sustainability issues as well as a set of values upon which they could acquire feelings of concern for the environment and make value judgements about appropriate ways of acting to help maintain environmental quality and promote sustainable development.

**(e) Participation**

The main thrust of this objective is "learning by doing". For people to attain power over their natural resources and get actively involved in environmental management, they should participate in planning, execution and evaluation of actions performed in their environment. Effective environmental management and change of people's attitudes will require life- long EE. It provides an opportunity to show what one knows through actions. Teachers and pupils of Chipata district should showcase their knowledge and skills of environmental citizenship by actively getting involved at all levels in working towards finding solutions to current environmental problems and achieving sustainable development.

The establishment of teachers' and pupils' perceptions of EE should be taken as an opportunity to acquire awareness of and concern for the planet whereby the knowledge, skills, attitudes and values acquired should be used to protect and improve the environment. Also the perceptions of EE should aim at enabling learners to acquire new patterns of behaviour, including both personal lifestyle choices and informed social action. Environmental Education emphasises lifelong learning and according to literature, the real need is for educational systems that can

transform schools into institutions for social change. Given the urgent need for participative approaches towards sustainability there has been a call for re-visioning and reorientation of the education system, in which all interested parties would be involved and participate in sustainable practices (Sterling, 2001). This involves changing who we are by orienting our abilities to participate, to belong and to negotiate meaning, and change in perspective within education institutions to deal with problems that we are currently facing. It is within this viewpoint that the present study deliberately focused on teachers' and pupils' perceptions of Environmental Education in selected primary schools of Chipata District. The next section discusses the guiding principles of Environmental Education.

### 2.1.3 Guiding Principles of EE

According to the declaration, EE is seen as a life-long process that is interdisciplinary and holistic in nature and application. According to Wilson (1993), EE should foster a sense of wonder during the early childhood years. It concerns the interrelationship between human and natural systems and encourages the development of an environmental ethic, awareness, understanding of the environmental problems, and development of critical thinking and problem- solving skills. The International NGO Forum (1992), emphasises that effective EE should utilise diverse learning environments and a broad array of education approaches to teaching/learning about and from the environment with due stress on practical activities and first experience.

Education has a pivotal role to play in achieving a sustainable economy and society. The dilemma that an educator faces today is that, technological perspectives of sustainable development promote the view that advances in technology and the operation of free market economic forces will be sufficient to remedy the effects of an environmental crisis. In contrast, ecological perspectives of sustainable development promote radical world-views towards more fundamental transformative cultural changes. The ecological perspectives promote a 'humble and humane approach of harmony with ecological processes and a sense of true association with the earth...' which in turn requires a fundamental change of attitude away from a sense of technological hubris'. This theoretical divide has given rise to much conflict between and among academics, environmental groups, governments and educators with regards to determining the preferred sustainable development model for future development. By and large academic institutions should try by all means to transform people's attitudes and practices that

embrace an ideological orientation that emphasises conservation of cultural values, beliefs and practices that contribute to sustainable relationship with the environment (Lotz-sisitka, 2004).

## 2.2 Environmental Education

Environmental Education is a key concept in this study. According to Disinger (1983) the term 'EE' appeared for the first time in 1948 at the meeting of the International Union for the Conservation of Nature and Natural Resources while Gough (1997), Palmer (1998) and Sterling and Cooper (1992) date the appearance of the definition of EE to the end of the 1960s when this term began to be used and discussed on the international level. Among the many definitions of EE is one by Stapp et al. (1969), in which he defined EE as a process which is aimed at producing a 'citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve its problems and motivated to work towards their solution".

One of the most widely accepted definitions of EE was given in the Tbilisi Conference (IUCN, 1970) in which Environmental Education was defined as a process of recognising values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the interrelatedness among man, his or her culture and his or her biophysical surrounding. EE also entails practice in decision making and self- formulation of a code of behaviour about issues concerning environmental quality. This definition is important in our everyday life because human beings need to develop right values and attitudes towards the environment in order for them to appreciate the relationships between man and his/her biophysical world education (IUCN, 1970).

Le Roux (2001) also defined EE as a "planned process which enables participants to explore the environment, to investigate recognised concerns and take action to make the world a better place for all living things. Environmental Education should include practice in decision – making processes, the development of self-cognition, the formation of environmental ethics and environmental behaviour, and the development of skills for environment assessment. According to UNESCO (1980) EE is seen as a life-long process that is interdisciplinary and holistic in nature and application. It concerns the interrelationship between human and natural systems and encourages the development of an environmental ethic, awareness, understanding of environmental problems and development of critical thinking and problem-solving skills.

Palmer concludes that the specific feature of EE is that the knowledge of environmental laws and principles of functioning of the natural systems are studied within the environment which helps to develop practical skills and ability to make an assessment of the state of the environment. EPA (2006) on the other hand says that EE enhances critical thinking, problem solving and effective decision making skills and teaches individuals how to weigh various sides of an environmental issue before making decisions.

The researcher was of the view that various definitions of EE have not only created challenges in its interpretation but also in the way in which it has been approached and practiced. However due to the changing nature of environmental problems and solutions, Environmental Education conceptions change with each generation and, thus, so too does its definition. Jickling (1994) claims that Environmental Education has a 'definitional problem' and specifically argues that EE will continue to wallow along rocky shores until this field allows an important place for conceptual analysis within its research community. Different groups and organisations have defined Environmental Education differently. Whatever the debates, Environmental Education is viewed as a lifelong process encompassing all levels of education both within and beyond the formal school system. There is need to have an open mind when dealing with EE because all forms of knowledge about environment whether traditional, modern, scientific, cultural or technological is important. However, EE should have an open approach to issues considering the technological and cultural change of our time. The importance of EE cannot be over emphasised because it recognises knowledge which is diverse and it is an on-going process in which members of the public, teachers and pupils have a role to play. Indeed Environmental Education will shape the world for tomorrow because it is seen as a tool for achieving a sustainable future. This study focused on Environmental Education within the primary school level that should stimulate positive behavioural change towards good environmental practices among learners.

Environmental Education has been clearly defined in many regional and international studies and official documents. Although there are many definitions of EE, they have a lot in common. All of them agree to the fact that it is necessary to develop knowledge, skills, positive attitudes towards the environment and responsible behaviour. Its main objective is to develop the system of scientific knowledge and a positive attitude towards the environment, to form an understanding of the necessity of nature protection, to increase awareness of the problems which exist in these fields, as well as possible solutions and to lay the foundations for a fully

informed and active participation of the individual in the protection of the environment and the prudent and rational use of natural resources. This study assumed that the definition of EE would help teachers and pupils of selected primary schools of Chipata District to understand the meaning of EE and know the role they have to play.

### 2.3 Perceptions of Environmental Education (EE)

A review of literature reveals that Environmental Education is critical for improving the capacity of people in addressing environmental challenges. EE literature also reveals that there was little concern to integrate the environment into formal and non- formal learning in the 1960s. Le Roux (2001) argues that as awareness of the enormity of global environmental problems increased in recent decades, there has been increasing widespread and growing emphasis on Environmental Education. Educators perceive EE as a global movement established by United Nations Conference on the Human Environment. Ballantyne et al. (1996), particularly emphasised primary school Environmental Education because of its potential to reach out to a wider audience than the pupil population through the process of intergenerational influence. In this way, EE should be perceived as a process. Similarly, O'Donoghue in Le Roux, (2005) explains that it is imperative to think of EE not as a subject or body of knowledge but as a life- long learning process which takes on different meanings in different contexts. It is interesting to note that there is no single perception of EE as it has been perceived differently by various educationist and thinkers (Rao & Reddy, 1996).

As the character of Environmental problems became more and more evident, there has been a wide genesis of documentation and books have been written that refer to Environmental Education, ecology and sustainability. It can therefore be assumed that roots for formal learning situations in Environmental Education took place in the 1970s. However, despite the introduction of EE in most countries, Cutter, (2000) observed that its implementation has remained low and limited. In Zambia, Namafe (2006) argued that the field of EE was relatively new. Equally, Mweembe (2008) also revealed that despite the inclusion of some aspects of EE in the curriculum, knowledge of EE for many teachers and pupils was at low levels. Kalimaposo and Muleya (2014), also found that teaching EE is still a challenge on the part of teachers in schools in Zambia and pupils' understanding of EE was still at very low ebb. This study was conducted to establish teachers' and pupils' perceptions of Environmental Education in selected primary schools of Chipata District of Eastern Zambia as a contribution to the ongoing debate in the field of research on Environmental Education.

### 2.3.1 Importance of Environmental Education

Knowledge is power. In order for teachers to demonstrate the role they have to play in environmental protection and sustainable development, they should have good academic ability and rich understanding of Environmental Education and be able to communicate their knowledge clearly to the learners so that together they can find solutions to environmental problems that are confronting modern society. Teachers and pupils can effectively incorporate EE in their teaching and learning if they understand what it is and how it is supposed to be taught. EE shows what learners need to know, how learners are to achieve the intended goals, what teachers need to do to help learners develop the required knowledge, and the context in which teaching and learning occurs. If Environmental Education is not understood, it is unlikely that they would undertake a step towards its implementation.

Through EE, it was hoped that teachers and pupils of selected primary schools of Chipata District would develop patterns of responsible behaviour as well as awareness, skills, knowledge and attitudes necessary to act on behalf of the environment. Jekanyinfa and Yusuf (2005), explain that EE should not only be made as a study, but also as a way of life and the way of improving the quality of life of each individual who goes through the course. This perception fits well with the goal of EE which requires individuals to create new patterns of behaviour towards the environment (UNESCO, 1978). It was also assumed that Environmental Education would help teachers and pupils to realise and understand that environmental problems are a global concern and that it cannot be solved by one person. Therefore, knowledge gained through EE should help them partner with others such as the local community, government departments, NGOs and other stakeholders in solving these environmental problems. In this way the learners would not only learn about the environment, but they would also appreciate that they are part of an institution which is acting for the environment in partnership with other organisations and individuals. It is through EE that learners would be given the opportunity to get different experiences in their environment so that they could develop concern and various skills for taking action in their environment. Therefore, meaningful Environmental Education has to take into consideration finding information about the environment to develop the knowledge base needed, exploring through encounter experiences in the real environment, and taking action based on what one can see and knows for a better world, all of which contribute to a better environment and sustainable environmental management (O'Donoghue, 2001).

Apart from making learners develop concern for the environment so that they could take action to care for or improve the environment, it is also expected that they would act as change agents in the home and in the community (Uzzell et al. 1994). As earlier mentioned, an environmentally aware and responsible citizen should not be pleased with what he or she is doing to help the environment but those who know should tell others who do not know, so that the environmental message is passed on to others. It is evident that children would influence their parents' environmental performance after they have learnt about the environment in school (Ballantyne et al. 1996). But in some cases, the learners may fail to influence the environmental attitudes and behaviours of their parents and the community because no one would listen to their ideas about environmental change. Stapp et al (1969) believe that citizens should realise that the responsibility for the solutions to environmental problems belongs to them and the government which represent them. Thus EE should reach citizens of all ages and help them to understand how to play an effective role in solving environmental problems.

Literature has indicated that EE is essential for both the adults and children. However, the education for young people is more important. Although children may look like empty vessels at the beginning, with the passage of time, the empty part of the 'vessel' gradually fills with received knowledge and information. One evangelist confirmed that it is far easier to convert an atheist than one who already subscribes to a particular faith or belief system because in the case of the former, the 'vessel' is already empty and therefore easier to fill, while in case of the later, the 'vessel' must be emptied of existing knowledge and information before it could be refilled with new knowledge and information. The process of emptying and re-filling can be difficult because as a child grows up, he or she accumulates life experiences, norms and values specific to his or her socio-cultural context and this could be difficult to change. Hence an early-age Environmental Education is suggested so that pupils grow up with environmental values and attitudes. This view is enhanced by Christian teachings which says "train up a child in the way he should grow so that when he or she is old, will not depart from it".

Environmental Education should help learners to develop questioning and analysis skills, knowledge of environmental processes and systems, skills for understanding and addressing environmental issues (such as decision making, investigation, and citizenship skills) and personal and civic responsibility (NAAEE, 1999). However, Palmer (1998) notes that what is actually in practice does not reflect this pattern. For example, most reports indicate that students were seldom involved in decision making and little was done to empower the students to

address the issues and resolve the problems (Hart, 2003; Palmer, 1998). Similar concerns were raised by Chacko (1998) who associated most of the environmental problems to failure by education systems to provide citizens with basic knowledge and skills that would enable them take action. EE has been marginalised in most school curricula (Palmer, 1998). In some parts of the world however, EE is not mandated, it is left for schools and teachers to decide what and how to teach it (Bolstad et al, 2004). Hungerford et al (1980) sees the main aim of EE is to aid citizens in becoming environmentally knowledgeable and above all skilled and dedicated citizens who are willing to work individually and collectively towards solving and maintaining a dynamic equilibrium between quality of life and quality of the environment. All in all EE should provide learners with ecological knowledge and develop conceptual awareness and environmental action skills, as well as skills for investigation and evaluation.

On the contrary, Hart (2003), contends that a small number of studies suggest that students have mixed views of their Environmental Education in school. He argues that while EE undertaken with certain teachers or as part of particular action-oriented programmes is praised, there is criticism voiced in relation to EE teaching being concentrated in particular subjects or lacking practicality and relevance. According to Hart (2003), teaching like learning, is a personal activity with a strong basis in perception and action. It was important to establish teachers' and pupils' perceptions of EE so that necessary measures could be taken.

Literature reviewed further indicated that prior knowledge of issues is very important because it influences planning and action. For example, in a classroom situation, teachers may want to know how pupils perceive certain topics or things so that they know at what level they could start their teaching from. Therefore, it was assumed that establishing teachers' and pupils perceptions of EE would ensure that teachers know their role in implementation of EE and pupils develop positive behavioural change towards good environmental practices.

### 2.4 Integration of Environmental Education in the Curriculum

Literature has shown that Environmental Education has mostly been offered as an integrated component into existing subjects. According to Mtaita (2007), many countries have developed comprehensive national strategies for integration of EE in formal school curriculum to promote sustainable development and improving the capacity of people to address environment and development (UNCED, 1992; chapter 36, p. 2.) However, the complexity and the wide views of EE have been challenging and therefore create a debate about its place in the curriculum**.**

The curriculum might be a form of statement of what EE means. This is what is referred to as 'intended' curriculum while the operational curriculum, is what happens in the classroom. However, Cohen and Ball (1990), explain that the policy or curriculum statements vary in their effectiveness and can be interpreted and enacted in a variety of ways. They noted that while policy might have influence on practice, the practice also had a profound influence on the new policy. That is why for teachers to demonstrate the role they have to play, they should have an understanding of the issue in question. That is, if EE is not understood by teachers, it is unlikely that they would undertake a step towards implementation. For example, incorporating EE in their teaching involves teachers' views and understanding of teaching and learning of EE. According to Hart (2003), teaching like learning is a personal activity with a strong basis in perception and action. Hence when teachers implement the policy, they do so in terms of their pre-existing practice, knowledge, and beliefs. They can frame the policy in terms of what they already know, believe and do in classrooms. According to Lotz-Sisitka (2005), the focus for EE appeared to be somewhat unclear in policy processes as it was often with complexity of EE, the implementation in schools was open to multiple interpretations.

Palmer (1998) noted a gap between intended or mandated and interpreted EE. According to her, the intended EE may not be effectively implemented because teachers might not have been offered support. The world's teachers are said to have a crucial role to play in bringing about extensive social changes to address an environmental crisis, yet little was known about the extent to which primary school teachers of Chipata District integrated and incorporated Environmental Education in the primary school curriculum.

### 2.4.1 Placing EE as a Separate or Independent Subject in the Curriculum

There have been arguments against establishing EE as a separate subject. It has widely be acknowledged that EE is not a subject, a body of knowledge or skills like other disciplines. Rather it is considered as a situation in which a learner may be involved and others may be involved. It should be a non-orientation or emphasis permeating the whole curriculum (UNESCO, 1978), yet in practice this may not be so. There is evidence that EE has been and still is taught as environmental studies or environmental science as a newcomer among the other established subjects of the curriculum (Gough, 1997). This runs counter to the current focus on the participatory and holistic perspectives of EE and has been related to the dominant objective teaching approach.

### 2.4.2 Placing EE as an Integrated Component

There has been promotion of EE as a placement in the curriculum with the idea in mind that the aim of EE is not to be achieved by any one subject (Gough, 1997). The perception of EE as a situation in the curriculum was intended to capture the involvement of all subjects within existing school programs, best approached as across-curriculum initiative. It has been perceived that by integrating EE within broad learning areas students could develop understanding, skills and attitudes which enable them to participate in the care and conservation of the environment. However, Gough (1997) explains that despite the advocacy for a whole curriculum approach to EE, the school curriculum tends not to be organised in broad learning areas, but in subject discipline whose proponents rarely communicate with each other. Many teachers view EE as a further burden to the existing pressures of the already demanding curriculum. EE is not treated as a priority instead it is often taught as a single topic in an existing subject. It tends to be a small component in science, geography, or Social studies.

### 2.4.3 Placing EE as a Holistic Approach

EE has been recognised as holistic in nature (Tilbury, 1995). The complexity and totality of EE thus suggests a holistic approach to teaching and learning. The Tbilisi declaration stated that EE should consider the environment in its totality, natural and built, technology, cultural, historical, moral and aesthetic (UNESCO, 1978). The holistic nature of EE underpins participation in all aspects of life. The approach to EE in schools should, therefore, be interdisciplinary, drawing on the specific content in each discipline. EE does not intend to replace any subject, but its success depends upon the holistic treatment of environment and development issues through all areas of understanding and experience, aesthetic and creative, human and social, moral, physical, scientific, spiritual and technological (Tilbury, 1995).

Thus, emphasis in EE has been curriculum integration. This according to Bolstad, et al. (2004), creates opportunities for exchange or collaboration among different subjects and discipline, for example, concepts from more than one discipline may be integrated by a central theme, issue, problem, topic or experience. However, the inter/multi-disciplinary nature of EE has been creating considerable challenges in the education system (Palmer, 1998). Many multi or inter-disciplinary programs of EE fail to clarify or have students develop a clear appreciation of what different discipline or forms of knowledge contribute to an understanding of environmental topic (Mappin & Johnson, 2005).

Secondly, EE has been historically marginalised within formal education systems, often placed on the periphery of regular school subjects such as science, geography, or social studies and usually dominated by a traditional conception of knowledge transfer within body of discrete disciplines (Gough, 1997). The situation has been described 'rhetoric-reality gap' that is, the mismatch between what is EE and what is actually practiced in schools. There is need for schools to integrate EE in all subjects and adopt holistic interdisciplinary approaches so as to close the rhetoric gap.

### 2.5 Methods of Teaching Environmental Education

It has been argued that there are no standardised methods for teaching EE. But the effective implementation of EE requires appropriate teaching and learning methods which can positively influence the behaviour of learners and effectively address environmental challenges.

To a great extent, a person's specific view on environmental issues and their individual environmental knowledge influences the way to approach and conduct EE (Sandell, 2005). The correct approach towards EE is also determined by how one perceives education in general. Education encompasses general ideas on the role and purpose of schools in society as well as that which directly affect the teaching process. Within the education circles there are a number of methods that could be used to teach EE. Palmer (1998) suggests that the teaching and learning of Environmental Education be based on the thinking that meaningful EE should comprise three dimensions; education *about* the environment, education *in* the environment and education *for* the environment.

#### 2.5.1 Education about the Environment

The perception of Environmental Education as education about the environment is a traditional view which is sometimes referred to as the objective view. It was developed at the beginning of Environmental Education movements, when the focus was on developing knowledge and understanding about the environment and creating environmental awareness among the people (Gough, 1997. Tilbury, 1995). It was assumed that if people developed an understanding of the environment, they would take action to solve environmental problems in their surroundings and also prevent further degradation of the environment. Therefore, the teaching of Environmental Education involved mere transmission of content and information about the environment and environmental problems. In this approach the learner plays a passive role as opposed to learner-centred approaches in which learners actively participate in learning and

construct knowledge through involvement and interaction in problem solving. Based on this view, the topics included in the school curriculum were about the physical environment, different activities that caused environmental problems and nature of different environmental problems (Kimaryo, 2011). It is argued that it is not enough to teach learners about the environment and related environmental problems because doing so may result in making them desperate about their future. Currently, there has been a shift from the perceived provision of knowledge about the environment and environmental problems to carrying out investigations and taking action in the environment (O'Donoghue & Russo, 2004).

### 2.5.2 Education in the Environment

Education in the environment is perceived as favouring pupil-centred and activity based learning. This approach usually takes the form of outdoor education or field work in developing environmental awareness and concern by encouraging personal growth through contact with nature. Learning in the environment helps learners learn how to learn, an aspect which is currently being emphasized in education. Education in the environment perceives environmental improvement as an actual goal of education where learning happens through experiences. The more the learners interact and come in contact with reality they tend to develop connections with what they see and experience. Experiences in the environment enhance learning and appreciation of the way the natural world functions. This learning is based on constructivism since learners construct their own meaning from their experiences in the environment. It is through positive experiences that learners could be helped to overcome fears of the environment and to establish that important sense of connectedness with nature. Emphasizing the central role played by experience in teaching and learning of Environmental Education, Palmer (1998) stressed that "first hand experiences" of the environment should be perceived to be at the forefront of teaching and learning of Environmental Education

### 2.5.3 Education for the Environment

Whilst education in and about the environment limit themselves to promoting understanding, appreciation and concern for the environment, education for the environment goes beyond this to develop a sense of responsibility and active pupil participation in the resolution of environmental problems. Learning for the environment is influenced by social constructivism and socially constructed ideas (Le Roux, 2001). This type of learning encourages learners to reflect on their learning and develop the skills to act on what they have learned. It adopts a

holistic outlook to the study of environmental problems reflected in its global and interdisciplinary approach. However, to achieve the goals of Environmental Education requires integration of these three approaches to environmental work. It must be realised that the successful implementation of Environmental Education require teachers to have good background knowledge of these approaches in order for them to make an impact in the lives of the learners. However, its complexity has not only created challenges in its interpretation but also in the way in which it has been approached and practiced.

### 2.6 Perceived Challenges

Literature revealed that many teachers in various parts of the world are faced with a lot of challenges in the process of implementing EE in primary schools. Challenges are things which create problems for teachers and pupils, making them unable to teach or learn effectively. Kimaryo (2011) cited the following problems in incorporating EE into teaching in primary curriculum: lack of knowledge and training in EE by teachers, lack of teaching and learning materials, lack of time, large class size and lack of funding. Ketlhoilwe & Jeremiah (2010) in their study on mainstreaming environment and sustainability issues in institutions of higher education found that there was not much time available to teach students to pass the examination and to inculcate an 'environmental culture'. In the final analysis, teachers were interested in the pass rate than the behaviour, culture and attitudes developed in school pupils.

### 2.7 Past Studies on Perceptions of EE

This section deals with literature on perceptions of EE as reviewed from international and local sources. Much of the literature on EE arises from outside Zambia while a small volume of literature is locally based. The reason for this trend according to Namafe (2006) was because EE was relatively a new field in Zambia.

At international level, EE gained fame during the 1972 Stockholm conference on the environment. Recommendation 96 of this conference recommended EE as a critical means to address the worlds' environmental crisis. Impacts of the above outlined series of conferences, summits and declarations influenced the school curriculum in many different ways, at different times, in several countries of the world. Despite many countries around the world embracing education to achieve sustainability, only limited progress has been made on any level (Cutter, 2000). This lack of progress stems from many sources. In some cases, perceived lack of vision was cited as having impeded progress while in other cases, it was perceived lack of policy and

funding. However, countries such as the USA, UK and Australia have strived and recorded some successes in implementation of EE.

### 2.7.1 The Case of USA

In USA the first environmental teaching probably appeared in the early part of the 20th century at the time when the first Boy and Girl Scout troupes were created, and when the first YMCA programs were established. In 1971, the North American Association for Environmental Education (NAAEE) was formed in order to promote EE and support the work of individuals and groups engaged in EE through teaching, research and service (NAAEE, website). With establishment of these organisations it became very clear that one of the best ways to help their environment was to educate the citizens to be environmentally considerate.

Since the 1980s, EE has been mandated in every grade and in nearly every subject. This was a requirement of the state law adopted by the Washington State Legislature and the Washington State Board of Education, according to which "instruction and conservation, natural resources and the environment was to be provided to all grade levels in an interdisciplinary manner through science, the social studies, the humanities and other appropriate areas" with the emphasis on solving the problems of human adaptation to the environment. However, reports taken showed that, there was lack of awareness, commitment, interest and competencies among teachers to teach EE effectively.

### 2.7.2 The Case of UK

In the UK, research has indicated that major government initiatives have aided the development of EE and that publication of the white paper in 1990, curriculum guidance for educators in environmental topics and reviews of the national curriculum continued to emphasise Environmental Education and encouraged public participation in environmental matters (Palmer, 1998). One of the requirements of the revised National Curriculum was for schools to develop pupils' awareness and understanding of, and respect for, the environments in which they lived, and secure their commitment to sustainable development at a personal, local, national and global level (Rickinson, 2001). Littledyke (2002) further argued that increased moral, ethical, and political concerns in the environment due to global warning resulted in the development of increased interest in EE and awareness of children in the UK. Therefore, in order to strengthen and foster environmental management activities, EE was integrated into the

UK school curriculum as a valuable technique in promoting environmental protection and resource conservation in the world (QCA, 1999).

### 2.7.3 The Case of Australia

In Australia, studies examining Environmental Education teaching practices in the school system have shown that despite the raising levels of support for Environmental Education, policy expectations were rarely met. Cutter (2000) reports that EE teaching practice was limited and most often taught through curriculum domains such as Science and Social studies. He further claimed that EE practice, with regards to its take-up in primary schools, was inadequate in that it did not achieve the outcomes communicated in policy documents. On the contrary, educators such as Clark and Harrison suggested that teachers in Australia were practicing Environmental Education action components although they may not call it that and claimed that primary school teachers considered Environmental Education to be an important learning area, but seemed to lack the knowledge and skills to teach it successfully.

## 2.8 African Perspective of EE

In Africa, Environmental Education is not a new phenomenon. Our ancestors had knowledge and skills in EE that were passed on from one generation to another through traditional practices such as folktales taboos, myths, songs, and many more. Although most of the people in the traditional societies were not literate in terms of knowing how to read and write, they were environmentally literate. They had the power to understand the different factors that contributed to environmental conservation and sustenance. This knowledge is what was referred to as indigenous knowledge (IK). This was the wisdom shared and held by people in a given community based on experience, often tested over centuries and adapted to local culture and environment.

Indigenous people had a wide knowledge of the ecosystem they lived in and generally had ways to ensure that natural resources were used sustainably. This kind of knowledge was built from awareness and understanding of the components of the system and the links between them and the dynamics of the system. This was evidenced by the fact that many local or indigenous people lived in harmony with nature and managed their resources wisely within the carrying capacity of life support systems. For example, people conserved and managed the catchment areas by declaring the forest around them to be sacred places. So nobody was allowed to go

into these forests for whatever reason. This enabled them to get enough clean water throughout the year. In addition, to keep the people from polluting the water sources, some traditional tales taught children that if they urinated in the river or rake, their sex would change to become female if they were male and or male if they were female. As a result, since nobody wanted their sex to change, they did not urinate in the water source. Other tales that targeted the conservation of forests taught children that if they set fire in the bush and the fire passed sweep through the burial sites, then the spirits of the dead would be annoyed with them and bad things would happen to the whole village or community. Such conservation practices differed from one society to another because different societies had different ways of understanding their environments and the environmental problems.

Although scientific knowledge is used as a reference point for environmental literacy, indigenous knowledge should still be considered because according to the social ecological theory, every individual lives and interacts with his or her environment always and environmental literacy develops in daily life activities as people interact with the environment (Barton, 2002). In 1987, the World Conservation of Environment and Development (WCED) proclaimed that "indigenous people were repositories of accumulations of traditional knowledge and experience". EE should thus take cognizance of the IK systems as a body of knowledge and a component of social processes of linking humanity with its ancient origins-carrying forward the treasure of knowledge to enhance and facilitate rational utilisation of conservation and natural resources. However, the situation has changed with the emergency of science and technology where things have to be proven scientifically unlike relying in traditional beliefs.

### 2.8.1 The Case of Tanzania

In Tanzania just like any other country in the world, education has a fundamental role to play in solving environmental problems. For many years EE has been implemented through sector-oriented programmes which include agriculture, forestry and community development outreach or extension programmes. In 1995 the National Education and Training Policy called for the need to teach Environmental Education in schools. Although EE has been included in the school curriculum in Tanzania, the situation has not improved. Recent studies by Mtaita (2007), Kimaryo (2011) found that implementation of EE has not been successful because evidence of environmental degradation can still be observed in many areas around the communities. Mtaita (2007) conducted a research to explore stakeholders' views of

involvement and participation in EE, findings of this study indicated that the views and teaching of EE amongst participants was limited to education about the environment. Little emphasis was given to education in and for the environment. This situation is described by Palmer (1998) as the question of match and miss-match between rhetoric and reality in EE. In other words, it is an indication that there is a gap between theory and practice or a gap between the ideal curriculum and what is actually taught in the schools. Some of the reasons advanced for these gaps as noted by Kimaryo (2011) included lack of time to teach effective EE, inadequate knowledge of EE by teachers due to lack of training, lack of skills to integrate EE into existing subjects, lack of teaching and learning resources and lack of funding. The above account implies that EE was perceived to be creation of awareness, knowledge and understanding but that it was a challenging field to implement.

### 2.8.2 The Case of Botswana

Ketlhoillwe (2003) in his study which addressed the status of EE in Botswana revealed that teachers did not have training in EE during their training at college. He also observed a negative attitude by teachers towards its activities, as it was not timetabled and examinable. Teachers felt discouraged to teach EE because in the end it was not examinable. EE was looked at as an additional burden and not a necessity in the curriculum. The existing curriculum was too theoretical to infuse a practical subject such ad EE.

## 2.9 Environmental Education in Zambia

EE has been in existence since time in memorial. Mwanakatwe (1968) argues that for the vast majority of Zambian traditional societies, education has been an integral part of the everyday life, long before colonialists and western education came to this part of the world. It was envisaged that environmental issues and problems cut across all disciplines and sectors of human life such as culture, social- economic issues, politics education, indigenous knowledge systems and many more. In Zambia, like in other countries, the concept of Environmental Education emerged in the mid- 1990s as a result of international concerns to protect planet earth from destruction. The Zambian government produced its National Environmental Strategy (NES) in 1985. In an attempt to partially implement this strategy the whole school curriculum was reviewed in 1993 (MOE, 1996). In this curriculum reform, EE themes were infused, most of which appeared in Geography, Science and Social studies. The process of curriculum review was followed by the programme of in-service-training for teachers who would teach EE using the interdisciplinary approach. The World Wide Fund for Nature (WWF-

UK) through the Ministry of Education sponsored the training programme which offered two-week training courses for a period of five years (1990-94). During this period about 2000 primary school teachers were trained with an understanding that they also train others to produce a multiplier effect.

Consequently EE has been introduced in primary school curriculum as a basis to impart knowledge and equip learners with values and attitudes for positive behavioural change towards the environment and how to utilise the natural resources sustainably. Schools were further required to form environmental clubs such as 'Think Green' and Chongololo where environmental issues could be discussed in detail. Schools were encouraged to take part in environmental activities such as Greening activities, picking litter, providing waste bins and commemorating 5$^{th}$ June as World Environment Day. Although EE has been taught in primary schools, as well as in colleges, it has not yielded the results to meet the goals of Environmental Education which is to develop a citizenry that is aware and knowledgeable about environmental issues so that they can acquire skills, values and attitudes necessary for responsible behaviour and take action in finding solutions to environmental problems.

However, almost two decades have passed since some aspects of EE were included into the curriculum but it seems implementation of effective EE in primary schools still poses big challenges with very little or no progress made in many areas. Research findings by Namafe, (2006) indicated that EE was an emerging subject. Mweembe (2008) in his study to establish Environmental knowledge, attitudes and practices of EE in selected high schools in Lusaka found that knowledge of the same was missing among some teachers and pupils. Similarly, Lukonde (2011) in a case study to establish teacher educators' perceptions of EE and participation in Kitwe and Mansa College of education found that EE was not being taught as an integrated component in college subjects. These findings seem to correspond with findings of studies done in other countries. Due to none implementation of effective EE in primary schools, surveys of young people in several countries report generally low levels of knowledge of EE among them (Rickinson, 2001). In view of the findings stated above, it was not known how teachers and pupils of selected primary schools of Chipata District of Eastern Zambia perceived Environmental Education, hence this study.

## 2.10 Summary

The literature reviewed suggests that EE is complex and an evolving field. Worldwide EE has been implemented as integrated into existing subjects. This has not only created challenges in its interpretation but also in the way it has been approached and practiced. This chapter has discussed the historical trends and development of EE, the goals and importance of EE, the integration of EE into the curriculum. It has also highlighted on the methods that are used in EE as well as challenges that impede the effective implementation of EE.

# METHODOLOGY: CHAPTER THREE

## 3.0 Introduction

This chapter outlines the research methodology used to collect the data. It includes explanation and justification of the research design, which basically outlines the research approach and research method. This chapter further explains the methods and sources of data collection, the target population and sample size, the sampling procedure, the data collection instruments used, the method of data analysis, ethical considerations and the limitations encountered during data collection.

## 3.1 Research Design

A descriptive survey design was employed in this study. According to Kombo & Tromp (2006) a descriptive survey is a method of collecting data through interviews or administering a questionnaire to a selected sample of individuals in order to collect information about attitudes, opinions and habits of selected participants. This study employed a descriptive survey design to enable the researcher collect in-depth data from teachers and pupils on their perceptions of Environmental Education through using semi structured questionnaires and semi structured interview guides. This technique was employed because of the freedom and liberty the interviewer has to ask many questions to get more detailed information than limiting themselves to a set of pre-determined questions.

The research applied qualitative approach in order to generate the required data and also because the information that was generated were subjective experiences of teachers and pupils based on their views, opinions and attitudes on Environmental Education without interference from the researcher.

## 3.2 The Pilot Study

A pilot study was carried out at Umodzi primary school because it had similar characteristics to the group of schools on which the final instruments would be used to collect data. The main aim of piloting the research instrument was to determine whether or not the items in the instrument were going to draw out from respondents the required information. The other reason

was to determine the best way of administering the research instrument to ensure maximum response. Findings from the pilot study showed that the instruments were reliable and were going to yield useful results for the main study although a few changes were made to the instruments in sections where respondents could not understand the questions or what was not required.

### 3.3 Target Population

A population as defined by White (2003) is the universe of units from which a study sample is selected. With a population of 141 404 pupils and 2 951 teachers of Chipata District the sample had to be representative. The population included all pupils and teachers of Chipata District from 219 primary schools.

### 3.4 Sample Size

A sample is defined as a number of individuals or objects from a population, containing elements representative of the characteristics found in the entire group. In this study, the sample consisted of 130 respondents comprising 30 teachers and 100 pupils selected from 10 primary schools. Their selection was influenced by the aim of the study so as to get a balance of views and experiences from different localities as much as possible.

**Table 1: Distribution of respondents in the sample**

| **Location of school** | **Number of pupils** | | **Number of Teachers** | | **Sample** |
|---|---|---|---|---|---|
| | **Boys** | **Girls** | **Male** | **Female** | |
| 3 Rural schools | 15 | 15 | 5 | 4 | 39 |
| 3 Peri-urban schools | 15 | 15 | 3 | 6 | 39 |
| 4 Urban schools | 20 | 20 | 3 | 9 | 52 |
| **Total** | **50** | **50** | **11** | **19** | **130** |

**Source: Field Data, 2014**

Table 1 shows that the number of pupils in the sample was higher in the urban locality than the Rural and Peri-urban localities. This was purposively done because schools in urban areas are usually close to each other and this made it easy for the researcher to visit more schools in the urban locality. The aspect of gender was considered in order to get balanced and diverse views since both gender hold certain perceptions of Environmental Education. The perceptions from

both gender groups provided a full and reliable representation to the findings of the study. This was in agreement with Tromp (2006) who suggested that study samples to do with perceptions should consider both gender in order to have full, balanced and diverse views on a particular study.

### 3.5 Sampling

This is a procedure that is used in selecting a sample. Kombo and Tromp, (2006) refer to sampling as a process of selecting a number of individuals from a population such that the selected group contains elements representative of the characteristics found in the entire group.

#### 3.5.1 Sampling Procedures

In this study, Simple random and purposive sampling procedures were used to select study participants. White (2003) defined Simple random sampling as a selection technique that provides each population element an equal chance of inclusion in the sample. According to Singleton et al. (1988) in Creswell (1994), purposive sampling is based entirely on the judgment of the researcher in which a sample is composed of elements that contain the most characteristics, representative or typical attributes of the population.

Purposive sampling was used when selecting sample schools for the study. Firstly, schools were clustered into Zones from where three (3) schools from rural, three (3) schools from peri –urban and four (4) schools from urban localities were purposively selected. This method was applied based on the premise that rural schools are usually situated too far apart, so only schools that were easily accessible by the researcher using public transport were included in the sample. Schools were chosen from different localities because it was assumed that the location of the school might influence teachers' and pupils' perceptions of Environmental Education. However, although the schools were in different localities, they were similar in some way because they all used a centralized curriculum and faced similar challenges in implementing EE. The main difference in them was that they served different communities. The urban schools serve communities which are engaged in commercial and employed activities, while the rural schools serve communities which are involved in subsistence activities, mostly farming.

Teachers and pupils were randomly selected. Class registers were used as a technique for selecting pupils. Ten pupils from each school were selected for participation in the study. Of the total number of participants that were selected, 50 were boys and 50 were girls. The researcher, simply cut strips of paper and label them 'Yes' and 'No' which represented each

unit in the population. These strips of paper were mixed and randomly selected by conducting a raffle draw until the required sample size is reached. In this way, equal chances were given to each unit. Pupils who picked strips of paper labelled 'Yes' were included in the sample while those pupils who picked strips of paper labelled 'No' were not included in the sample. Three teachers who taught grades one to six from each school were included as long as they were available.

### 3.6 Research Instruments and Sources of Primary Data Collection

In order to collect primary data, Semi-Structured Questionnaires and Focus Group Interview guides were used. Primary data is empirical data obtained through direct observations and experiences. The importance of utilising primary data is that it is the most reliable, valid and relevant data to enable the researcher adequately answer the questions raised from the topic.

#### 3.6.1 Semi-Structured Questionnaires

Semi-structured questionnaires were administered to primary school teachers. Semi-structured questionnaires incorporate elements of both quantifiable and fixed choice responses to explore and probe in more depth areas of interest. In this study, Semi-structured questionnaires (Appendix 1) were used because they offered flexibility and incorporated open-ended questions which allowed teachers to add their own views or opinions.

FGDs were convened after teachers had answered the questionnaires. This was used in order to give the researcher an opportunity to talk and listen to the participants as they shared their insights and understanding of the phenomena being studied. According to Cohen and Manion, (2007), FGDs are conducted to enable participants shade more light on issues raised and not clarified in the questionnaire. In this study 10 FGDs were convened with teachers to enable them shade more light on their perceptions of Environmental Education.

#### 3.6.2 Focus Group Interview Guides

Focus Group Interview Guides were used to gather data from pupils. This instrument was used to get complete and detailed views from pupils on how they perceived Environmental Education. Twelve questions were prepared prior to the interviews as initial prompts, but some were subject to change with additional and follow-up questions based on their responses. Semi-structured interviews were used because it gave pupils an opportunity to express their views freely as the information that was needed required giving opinions, feelings and beliefs about

Environmental Education. It also provided flexibility to approach pupils of different grades (1-6), age and abilities.

Ten (10) face to face FGI schedules were conducted with pupils from 10 schools in the sample. During the process the researcher was listening and making observations in the pupils' expressions and picked meaningful cues and phrases about their perceptions of Environmental Education. Note taking was used to record pupils' responses.

### 3.7 Secondary Data

Secondary data refers to data already available in various documents. This was sourced from the University of Zambia (UNZA) library by reviewing published and unpublished literature such as Thesis, dissertations and other books related to Environmental Education. Materials from symposiums, international network (internet) in form of reports and journals were greatly used and government policy documents were also consulted.

### 3.8 Data Presentation

The guiding principle for the presentation and analysis of data was based on the four research questions in which qualitative data analysis techniques were used. Data collected from teachers through semi-structured questionnaires was presented using simple distribution tables to generate frequency and percentages. Focus Group Interview guides were used to collect data from pupils. Results from FGIs were presented using verbatim.

### 3.9 Data Analysis

In this study, data was analysed thematically using qualitative methods of data analysis. The reason was to allow the actual pattern to prevail and research findings to merge from the data rather than being influenced by the researcher's knowledge of Environmental Education.

### 3.10 Reliability and Validity

It is always important to ensure that the information gathering methods are reliable (precise). This means that a method measures the same thing every time it is used. Therefore, reliability is about consistency of the results obtained from a measuring instrument in research. On the other hand, it is also important to ensure that the information gathering methods are accurate

or valid. Accuracy refers to whether or not an instrument or method truly measures what is intended to measure or the degree to which the findings are interpreted in a correct way. To ensure that this study produced realistic, reliable and valid results, the researcher first piloted the questionnaires to ensure that they were precise and valid in producing intended results.

### 3.11 Ethical Considerations during Primary Data Collection

In order to collect data on teachers' and pupils' perceptions of EE in selected primary schools of Chipata District, the following ethical considerations were put in place:

- Permission was sought from the District Education Boards Secretary (DEBS) of Chipata who wrote an introductory letter to enable the researcher visit schools and collect data.
- The researcher then handed over the introductory and the consent letter to the Head teachers or any assigned officers of the ten visited schools.
- The respondents were not allowed to write their names on the questionnaire and none of them were photographed
- The researcher used both English and Nyanja during Focus Group Interview Schedules since it was more comfortable for the respondents.

### 3.12 Delimitation of the Study

This study was limited to 10 selected primary schools of Chipata District of Eastern Zambia. Creswell (1994), observed that delimitations were used to address how the study would be narrowed in scope.

### 3.13 Limitations

Environmental Education is an emerging subject in Zambia. Therefore, one of the major limitations of the study was lack of availability of literature on perceptions of Environmental Education in Zambia. As a result, most of the literature that was reviewed came from studies done outside. However, this was used as a spring board for carrying out this study to fill the gap and add literature to the body of knowledge.

Secondly, the researcher was faced with financial constraints. This affected the study in that the researcher could collect data only from 10 selected primary schools that could be reached easily by public transport.

### 3.14 Summary

This chapter explained the research methods that were used to collect data from teachers and pupils. A descriptive survey method was used to carry out the study. Qualitative techniques were employed in order to collect information from 30 primary school teachers and 100 pupils using thematic categorisation procedures. The design involved the use of semi-structured questionnaires, interview guides and focus group discussions in order to get detailed information. Lastly, all ethical considerations and limitations of the study were explained.

## PRESENTATION OF RESEARCH FINDINGS: CHAPTER FOUR

### 4.0 Introduction

This chapter presents findings on teachers' and pupils' perceptions of Environmental Education (EE) in selected primary schools of Chipata district of Eastern Zambia. Findings were presented according to research questions which include: (1) What are teachers' and pupils' perceptions of Environmental Education (2) How do teachers' and pupils' integrate Environmental Education in the primary school curriculum, (3) What methods do teachers use to teach Environmental Education in primary schools and (4) what challenges do teachers and pupils face in teaching and learning EE in selected primary schools of Chipata District.

### 4.1 Perceptions of Environmental Education

In order to establish teachers' and pupils' perceptions of Environmental Education, semi structured questionnaires and Focus Group Interview guides were used to collect data. Presentation of findings began with teachers' perceptions which are presented in table form showing frequencies and percentages while pupils' responses were presented as quotations. Under objective number 1, responses were sought for the following questions: (1) define environment, (2) what is your view of the physical environment? (3) How do you define Environmental Education (4) state whether or not EE is taught in primary schools and (5) what do you think is the importance of teaching and learning Environmental Education?

#### 4.1.1 Definition of Environment by Teachers

Teachers defined 'environment' in various ways. Some responses are shown in Table 2.

**Table 2: Definition of Environment by Teachers**

| Definition of environment by teachers | Frequency | Percentage |
|---|---|---|
| A place that surround human beings | 15 | 50.0 |
| All the things that influence peoples' lives | 12 | 40.0 |
| A place that is conducive for organisms to survive | 2 | 6.7 |
| A place that has both living and non-living things | 1 | 3.3 |
| Total | 30 | 100 |

**Source: Field Data. 2016**

Table 2 shows that 15 (50%) of teachers perceived 'environment' as all the things that surround human beings while 12 (40%) of teachers perceived environment as all the things that influence peoples' lives. Further 2 (6.7%) of teachers perceived environment as a place that is conducive for organisms to survive. The highest perception of environment by teachers was that environment is a place that surrounds human beings.

### 4.1.2 Definition of Environment by Pupils

Findings from 10 FGDs showed that pupils just like teachers gave varied definitions of 'environment'. Of the many definitions given, the following were most common:

*"Environment means our surrounding" – Respondent 5*

*"A place where we live and play" – Respondent 10*

*"Environment means man and all the things around him/her"- Respondent 26*

As presented above, the highest perception of 'environment' by pupils was that it is a place or surrounding. The 'environment' was taken to mean the biophysical aspect.

### 4.1.3 Teachers' Views on the Physical Environment

Teachers were asked to give their views on the physical environment as it were in their different localities. Responses are shown in Table 3.

**Table 3: Views on the Physical Environment**

| Views on the physical Environment | Frequency | Percentage |
|---|---|---|
| Greatly changed | 17 | 56.7 |
| Slightly changed | 7 | 23.3 |
| It is likely to change in years to come | 5 | 16.7 |
| It has not changed | 1 | 3.3 |
| Total | 30 | 100.0 |

**Source: Field Data, 2016**

Table 3 shows that 17 (56.7%) of teachers indicated that the physical environment had greatly changed while 7 (23.3%) said it had slightly changed. Five (16.7%) of teachers projected that it was likely to change in years to come and 1 (3.3%) said it had not changed. The highest perception on the physical environment by teachers and pupils was that the physical environment had greatly changed.

It was important to seek responses to this question in order to assess and appreciate differences in view of the prevailing environmental changes.

### 4.1.4 Pupils' views of the Physical Environment

The findings revealed that pupils gave various views about the physical environment. Quotes below reflect some of their perceptions about the physical environment.

> *"The environment has changed very much here, development has grown; Tarmac roads, shopping malls, houses are built all over even on top of hills, people sell things everywhere along the roads. Things like salaula (second hand clothes, Mapulanga (planks), vegetables and Spare parts for bicycles". – Respondent 3*
>
> *"This place has changed very much, there used to be a lot of big trees around but since people started growing tobacco, the land is bare. So we experience a lot whirlwinds and rainfall has changed". - Respondent 17*
>
> *"Our place has changed because they built for us a new school (new classroom block) and a borehole. Before, we were learning from a grass thatched classroom and we didn't have water". – Respondent 2*

### 4.1.5 Definition of Environmental Education by teachers

The main aim of this study was to establish teachers' and pupils' perceptions of Environment Education. Table 4 shows responses given by teachers.

**Table 4: Definition of EE by teachers**

| Definition of EE by teachers | Frequency | Percentage |
|---|---|---|
| A process of acquiring knowledge about the things around us | 12 | 40 |
| Awareness about the environment and how to care for it | 8 | 26.7 |
| Education that deals with the environment | 7 | 23.3 |
| Study of relationships and interactions between natural and human systems | 2 | 6.7 |
| Study of the environment and the impact it has on inhabitants | 1 | 3.3 |
| Total | 30 | 100.0 |

**Source: Field Data 2016**

Table 4 shows that 12 (40%) of teachers defined EE as a process of acquiring knowledge and understanding about the environment while 8 (26.7%) said EE was a means of giving people awareness about the environment and how to care for it. Seven (23.3%) of teachers defined EE as education that deals with the environment and 2 (6.7%) defined it as a study of relationships between natural and human systems. Finally 1 (3.3%) of teachers defined environment as a study of the impact the environment has on inhabitants. Based on the definitions given in Table 4, and responses from FGDs, EE was perceived by majority 40% of teachers and most pupils as a means of acquiring knowledge and understanding about the environment.

### 4.1.6 Definition of Environmental Education by Pupils

Pupils were asked to define EE and varied definitions were given. The following definitions came out strongly from most Focus Group Discussions:

> *"I think EE is education that tells us about our surrounding". - Respondent 15*
> *"Since environment is a place that surrounds us and education means learning, then EE means, education about a place that surrounds us". – Respondent 16*
> *"Learning that can help people to know about the environment". – Respondent 25*
> *"Mmm…! EE! Kaaya..!"(meaning Mmm…! EE… I don't know) - Respondent 27*

### 4.1.7 Recognition of EE

Teachers and pupils of selected primary schools were asked to indicate whether or not EE was taught or learned by answering 'Yes' or 'No'.

**Table 5: Recognition of EE by Teachers**

| Response | Frequency | Percentage |
|---|---|---|
| Yes | 29 | 96.7 |
| No | 1 | 3.3 |
| Total | 30 | 100.0 |

**Source: Field Data 2016**

Table 5 shows that 29 (96.7%) of teachers affirmed that EE was taught in primary schools by marking Yes while 1 (3.3%) of teachers marked No. The reason for its recognition was the fact

that aspects of EE appeared more in Creative and Technology Studies, Social and Development Studies and in Integrated Science.

### 4.1.8 Recognition of EE by Pupils

The pupil respondents were asked if they learned Environmental Education in selected Primary schools. The following quotations came out strongly from some Focus Groups Discussions:

> *"We learn EE mainly in science, Social studies and CTS. – Respondent 20*
> *"Ise benangu EE sitiiziba cifukwa a ticha sibakambapo za EE mu klasi. ("Some of us do not know about EE because our teacher does not mention it in class"). "Ise ba Ticha bathu sibamatiphunzisako EE, koma timaphunzira literacy". (Our teacher does not teach us EE we only learn literacy"- Respondent 9*

### 4.1.9 Importance of EE by Teachers

Teachers and pupils were asked to give their views on the importance of EE in primary schools. Some of the responses are tabulated in Table 6.

**Table 6: Importance of EE by Teachers**

| Importance of EE teaching EE | Frequency | Percentage |
|---|---|---|
| EE can make pupils aware of their environment and take responsibility | 12 | 40 |
| 6-13 is the right age for developing environmental knowledge in pupils | 8 | 26.7 |
| Get pupils involved in finding solutions to environmental problems | 7 | 23.3 |
| It will help change pupils attitudes for better environmental management | 2 | 6.7 |
| People will learn more about the environment | 1 | 3.3 |
| Total | 30 | 100.0 |

**Source: Field Data 2016**

Teachers were asked to give views on the importance of teaching EE in primary schools. Findings revealed that 12 (40%) of teachers said that EE could make pupils aware of their environment and take necessary measures to prevent and protect it from damage. About 8 (26.7%) of teachers said that primary school age of 6 to 13 was the right age when pupils

develop environmental knowledge, while 7 (23.3%) said that EE would help pupils get involved in finding solutions to environmental problems. Other 2 (6.7%) indicated that teaching EE would help change pupils' attitudes for better environmental management while 1 (3.3%) of teachers said that EE would help a lot of people to learn more about the environment. The common reason given for teaching EE was that pupils should be aware of their environment and take necessary measures to prevent and protect it from damage.

### 4.1.10 Importance of EE by Pupils

In the same vain pupils were asked to state the importance of learning EE at primary level. The following were common responses given in most FGDs:

> *"I think that EE can help us know more about our environment". Respondent 54*
> *"EE can help us know what is going on in the environment" – Respondent 36*
> *"EE can make us gain knowledge about the place where we live and play". Respondent 2*
> *"EE will make us aware of a lot of things around us". – Respondent 13*

The common reason given for learning EE was that it would help them know more about the environment.

## 4.2 Integration of EE in the Primary School Curriculum

Integration involves making connections across different subjects. Teachers and pupils were asked to indicate how EE was integrated in the primary school curriculum.

### 4.2.1 Teachers' Views on Integration of EE

Teachers were asked to give their opinions on integration of EE as it is currently taught. Table 7 shows the distribution of their opinions.

**Table 7: Teachers' Views on Integration of EE**

| Teachers' views on integration of EE | Frequency | Percentage |
|---|---|---|
| In all subjects | 17 | 56.7 |
| In some subjects | 7 | 23.3 |
| Extra-curricular activities | 5 | 16.7 |
| Not offered | 1 | 3.3 |
| Total | 30 | 100.0 |

**Source: Field Data, 2016**

Table 7 shows that 17 (56.7%) of teachers indicated that EE was integrated in all subjects taught at primary level while 7 (23.3%) of teachers said that it was integrated in few subjects.

The other 5 (16.7%) of teachers indicated that integration of EE was through extra-curricular activities and 1 (3.3%) indicated that EE was not offered. Findings revealed that most teachers said that EE was integrated in all the subjects taught at primary level.

### 4.2.2 Pupils' Views on Integration of EE

Pupils were asked in their FGDs how EE was integrated into the primary school curriculum. Findings revealed that pupils had varied responses as quoted below.

> "*Me I see some aspects of EE in social studies, science and CTS". - Respondent 23*
> *"I think that EE is also practiced by sweeping, slashing and picking papers around the School surrounding". – Respondent 71*
> *"Me I don't know about EE, because our teacher does not tell us about EE". - Respondent 43*

Prompting further on integration, pupils were asked to cite environmental related topics that they covered in different subjects. These included plants and animals, pollution, deforestation, soil erosion and global warming.

### 4.2.3 Teachers' Suggestions on how to Integrate EE at Primary Level

Teachers were asked to give suggestions how best EE could be integrated in the primary school curriculum. Table 8 shows the distribution.

**Table 8: Teachers' Suggestions on how best to integrate EE**

| Suggestions for integrating EE | Frequency | Percentage |
|---|---|---|
| Make it compulsory and teach it separately | 29 | 96.7 |
| Taught through all the subjects | 1 | 3.3 |
| Total | 30 | 100.0 |

**Source: Field Data 2016**

Table 8 shows that 96.7% of teachers indicated that EE should be made compulsory and taught as a separate subject while 1 (3.3%) of the teachers indicated that EE should continue to be taught through all the subjects.

### 4.2.4 Pupils' Suggestions on how to Integrate EE at Primary Level

The question on pupils' suggestions on how best to integrate EE at primary level was aimed at finding out if they had any suggestions on the improvement of delivery of EE. Quotations below came out strongly from FGDs.

*"The way we learn our subjects is just ok we should not change". - Respondent 37*
*"I feel that we can learn better if it is taught alone". – Respondent 59*
*"We should learn separate from other subjects so that some people Can know that EE is there" – Respondent 66.*
*"I am not sure about EE. I don't know much about it". – Respondent 73*

### 4.3 Methods used in Teaching Environmental Education

Through an open ended question, teachers were asked to mention methods that they used when teaching EE at primary level.

#### 4.3.1 Methods Used in Teaching EE

Teachers were asked to give examples of methods they used in teaching EE at primary school level.

**Table 9: Methods used in Teaching EE.**

| Methods used in teaching EE | Frequency | Percentage |
|---|---|---|
| Question and answer | 12 | 40 |
| Lecture | 8 | 26.7 |
| Discussion | 7 | 23.3 |
| Observation | 2 | 6.7 |
| Field work | 1 | 3.3 |
| Total | 30 | 100.0 |

**Source: Field Data, 2016**

Table 9 shows that 12 (40%) of teachers used Question and answer while 8 (26.7%) of teachers used lecture method. Field work was the least used method. Findings revealed that majority teachers used question and answer to teach EE.

#### 4.3.2 Methods used in Learning EE

Pupils were asked on methods used in teaching EE. It was aimed at finding out what methods teachers used when teaching EE. The following responses were common from most FGDs.

*"A ticha amatifusa ma questions then ise tiyankha". Respondent 74*
*"Penangu tichita discuss ma topics muma groups". Respondent 91*
"*Preventive Maintenance Systems (PMS) is also used to teach pupils cleanliness".*

### 4.4 Challenges faced in EE

Findings revealed that teachers and pupils were faced with a number of challenges in teaching and learning EE respectively. The responses were a summary of what was collected from teachers and presented according to schools. These challenges are given in Table 10.

**Table 10: Challenges Faced by Teachers**

| **CHALLENGES FACED** | **NAME OF SCHHOOL** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **CP** | **MBP** | **VP** | **KP** | **MPP** | **St A** | **KJP** | **KTP** | **NYP** | **MNP** |
| Lack of training in EE | ✓ | ✓ | ❖ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Lack of guidelines | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Lack of T/L materials | ✓ | ✓ | ✓ | ❖ | ❖ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Lack of funding | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Large class size | ✓ | ❖ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ❖ |
| Lack of time | ❖ | ❖ | ❖ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Negative attitude | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| No Monitoring | ✓ | ✓ | ✓ | ❖ | ✓ | ✓ | ✓ | ✓ | ❖ | ✓ |

**Source: Field Data 2016**

**Key**

- ✓ Presence of challenge at a particular school
- ❖ Absence of challenge at that particular school

**CP** = Chipangali Primary **MBP =** Mbulanda Primary **VP**= Vizenge Primary
**KP** = Katopola Primary **MPP**= Mpezeni Park Primary **St A**= St Atanasio Primary
**KJP**= Kanjala Primary **KTP =** Katandala Primary **NYP**= Nyakutwa Primary
**MNP**= Mnoro Primary

Table 10 show that the major problems faced by teachers in the study area were; lack of training in EE, lack of guidelines to follow when teaching EE, lack of teaching and learning materials in EE and lack of funding. Other challenges included large class size, lack of time and negative attitude towards teaching by some teachers. Lack of monitoring of programmes by inspectors also contributed to under – performance in some cases.

Pupils were also asked to state problems which they encountered in learning EE. Quotations below reflect responses coming from most FGDs. Some pupils were heard saying……"*kubelenga kumabvuta so kambiri tiyembekezera a ticha for information". ( reading is a problem for most of us, so we always wait upon the teacher to share information with us on a number of issues).* Lack of books in EE, TVs and radios where pupils could get information on EE were also some of the problems pupils were facing. However, teachers and pupils were putting measures in place to address these problems.

### 4.5 Measures Put in Place to Address Challenges Faced in Teaching and Learning of EE

The measures included; encouraging teachers to study EE at UNZA or any University, enhance TGMs and workshops, purchase or improvise teaching and learning materials through locally available resources, Lobby government to build more schools, produce guidelines for EE and increase funding to primary schools. Teachers to develop positive attitudes towards teaching of EE and inspectors of schools to regularly monitor programmes in schools. Teachers to endeavour teach reading to pupils from grade one.

### 4.6 Summary

This chapter presented findings of the study that explored teachers' and pupils' perceptions of Environmental Education in selected primary schools of Chipata district. The findings were that: Environmental Education was perceived as a means of acquiring knowledge of the environment. Teachers and pupils viewed environment from the biophysical perspective.

Both the teachers and pupils had mixed perceptions about integration of Environmental Education in the curriculum. The highest perception was that EE was integrated in all primary school subjects, while others said that it was integrated only in subjects such as CTS, Social studies, Cinyanja and Integrated science. Further findings showed that EE was integrated through Preventive Maintenance Systems (PMS) and extra - curricular activities. A smaller number of pupils did not know how EE was integrated. Methods that were used in teaching EE included; question and answer, Lecture and Field work. The most commonly used method was question and answer. The major challenges that teachers and pupils faced in teaching and learning EE included; lack of training, guidelines, teaching and learning materials and funding. Others challenges were large class size, lack of time, lack of monitoring of programmes by inspectors and negative attitude of some teachers towards teaching EE.

# DISCUSSION OF THE FINDINGS: CHAPTER FIVE

## 5.0 Introduction

The main focus of chapter five was to elaborate further on answers to research questions presented in chapter four. The discussion was done following the four research objectives which included (1) To establish teachers' and pupils' perceptions of Environmental Education in selected primary schools of Chipata District, (2) To ascertain how teachers and pupils integrate Environmental Education into the primary school curriculum in selected primary schools of Chipata District, (3) To examine the methods used by teachers in teaching Environmental Education in selected primary schools of Chipata District of Eastern Zambia (4) To find out the challenges that teachers and pupils face in teaching and learning Environmental Education in selected primary schools of Chipata District of Eastern Zambia.

## 5.1 Perceptions of Environmental Education

Perception is an important element of human life because it deals with how one feels or thinks about something or a situation. These findings are based on information obtained from semi-structured questionnaires, Focus Group Interviews and Focus Group Discussions. Although the study was based on perceptions of EE, it was important to first define 'environment', as EE cannot be defined independent of the term environment.

### 5.1.1 Definition of Environment by Teachers

The word environment has many different definitions. When asked to define 'environment' 15 (50%) of teachers defined it as a "place that surround human beings". Teachers revealed that many things surrounded human beings and these included farms, buildings, hills, roads, plants and animals. Furthermore, 12 (40%) of teachers defined 'environment' "as all the things that influenced people's lives". When asked to elaborate on things that influenced peoples' lives, they referred to modern shopping malls (Spar, Shoprite), tarred roads and free trade among others. The construction of modern shopping malls enabled people to access most essential commodities which could only be found in Lusaka (capital town) a few years back, teachers said. An open trade system locally known as "Bwandile" usually conducted over the weekends between Malawians and Zambians was also said to have influenced peoples' livelihood in a very positive way. People obtained essential goods without spending on transport because goods followed them. Secondly, teachers who lived in rural areas revealed that a goad road network eased peoples' movements and transportation of farm products to markets. The least

definition of environment was given by 1(3.3%) of teachers who defined it as a place where living and non- living things were found. This finding was similar to that of Senthusha (2006) findings of earlier studies in that those studies only focused on Pupils' definitions of 'environment' while this one focused on both.

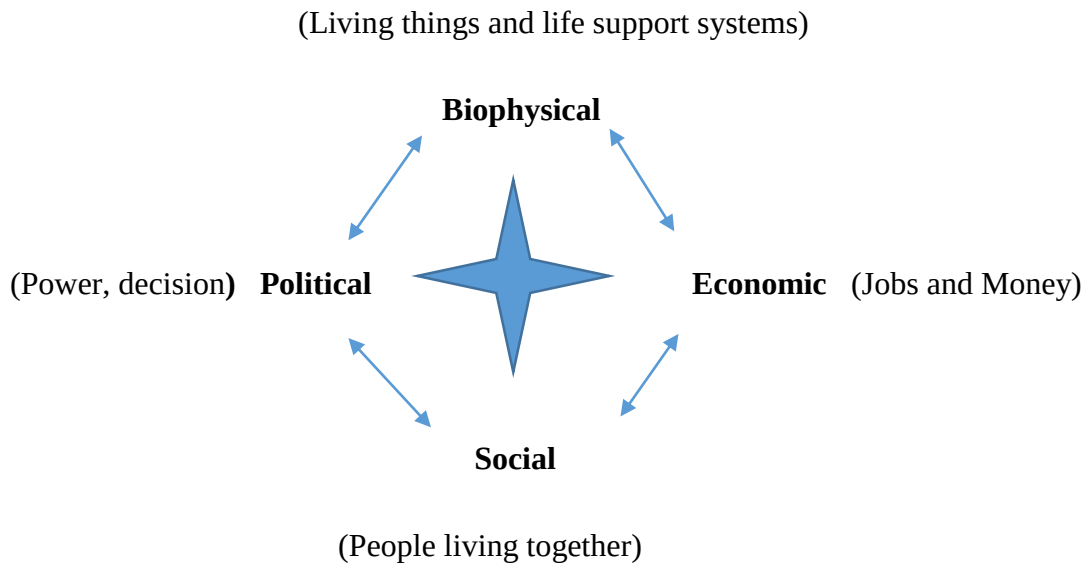
It was thought that teachers' perceptions of the term environment would have an influence on the way they taught Environmental Education in creating awareness, knowledge, skills, values and attitudes to the pupils. During FGDs teachers were asked whether or not they had a clear understanding of the various dimensions of environment. Findings revealed that environment was mainly understood from the biophysical perspective.

### 5.1.2 Definition of Environment by Pupils

Just like teachers, pupils in most Focus Groups defined 'environment' in similar ways as "our surrounding", "a place where we live and play" and "a place where human beings and other living and non-living things are found". Pupils also gave examples of things that were found in the environment such as plants, animals, insects and stones. The findings confirmed that of Sethusha (2006) who found that 'environment' was defined as a place or surrounding. However, in this present study, pupils were further asked to give examples of things that are found in the environment as opposed to the earlier study. Shepardsons' (2005) findings revealed that environment was defined as an area where animals lived. This finding differed from that of the current study in that pupils viewed environment as comprising of human beings and all the things around him/ her which included living and non-livings.

Both the teachers and the pupils defined environment in similar ways as 'surrounding' or 'place' and perceived it from the biophysical dimension. This was because the biophysical dimension offers the base of life support systems which everyone was aware about. This view was sustained by the social ecological theory which deals with how human beings related with the environment and its life support systems consciously or unconsciously on daily basis. Further findings revealed that both the teachers and pupils lacked in-depth knowledge and understanding of environment as comprising the interacting dimensions of natural, social, economic and political as illustrated in figure 1.

**Figure 1: Linkage between Biophysical, Economic, Social and political dimensions**




**Source: Roux, 2001:19**

This finding was contrary to the guiding principles of EE which are concerned with a broad array of interrelationships between human and natural systems. Teachers and pupils in the study area were encouraged to develop an environmental ethic, awareness, understanding of environmental problems, and development of critical thinking and problem- solving skills. This was further emphasised by the social ecological theory which deals with an understanding of the dynamic interplay among groups of people and their socio-physical milieus (NGO forum, 1992). According to Barton (2002), knowledge and understanding of the different environments would help teachers and pupils to develop a deep sense of respect and care for the environment because it provides resources to pay for services. He further argued that it was through a critical approach to Environmental Education that political, social, cultural and economic processes could be understood for the role they played in an environmental crisis (Gough, 1997). Barton (2002), concluded that while students had a high awareness of environmental problems, they had very low understanding of how social, political and economic environments influenced the situation. Due to limited knowledge and lack of understanding of the different dimensions of environment, teachers and pupils might not fully understand that their actions now had implications for the future and in the same way knowledge of environment could help them participant in finding solutions to environmental problems.

It was important to establish how teachers and pupils perceived environment because teachers transmit knowledge to the learners and their positive perceptions of 'environment' would help learners gain necessary knowledge, skills, values and attitudes and take keen interest in caring for the environment. In case of any misconceptions, Loughland et al. (2002), argues that they could be corrected by developing beneficial and effective EE strategies.

### 5.1.3 Teachers' Views of the Physical Environment

The physical environment was perceived differently by teachers depending on the locality they were found. Findings revealed that 17 (56.7%) of teachers revealed the physical environment had greatly changed due to population increase. Perceived changes were associated to human activities such as massive infrastructural development, cutting down of trees for construction roads, settlement, farming, and charcoal burning. Other 7 (23.3%) of teachers revealed that it had slightly changed. Seven (23.3%) of teachers projected that it was likely to change in years to come and 1 (3.3%) said it had not changed. Pupils in various FGDs also presented similar views that the physical environment had changed in one way or the other. Other 7 (23.3%) of teachers revealed that changes in the physical environment were associated to tremendous change in weather patterns. It was clear that all the teachers had noticed changes in the physical environment due demand for construction of houses and shopping malls especially within Chipata town and land for settlement in case of 'Madziatuwa settlement scheme'. This massive development had negative impact on weather patterns as a result of clearance of large pieces of land. Further changes were attributed to cutting down trees for charcoal burning to meet the demands of a growing population. The least views were contributed by 1 (3.3%) of teachers who projected a likelihood of worse changes to occur in future due to global warming whose negative effects could already be felt through climatic changes and altered weather patterns.

This perception was in agreement with the constructivist approach which recognises that individuals vary in the way they make sense of the world and that both individual and collective views about the world undergo change over time. Cutter, (2000) argued that human activities usually contributed to severe and potentially irreversible changes to the biosphere.

### 5.1.4 Pupils' Views of the Physical Environment

Similarly, pupils revealed that the physical environment had changed very much. They attributed the changes to various development that was taking place there, such as construction of tarred roads and shopping malls and people trading in different goods along the streets of

Chipata town. These included; second hand clothes, planks, vegetables and bicycles spares. Other pupils revealed that growing of tobacco in the area had negative impact on the physical environment because large pieces of land were cleared thereby making the land bare and prone to whirlwinds and altered rainfall patterns. Speaking further of physical changes that had taken place in various places, some pupils revealed that a one by three classroom block and a bole hole had been constructed at their school. This was a positive change in that before that, the pupils were learning from a grass thatched classroom which was small and dark inside.

The differences in perceptions about the physical environment was foreseeable because teachers and pupils were drawn from different localities of urban, peri-urban and rural areas. The finding coincided with what the constructivist theory states by saying "despite having the same experience, each individual constructed his or her own meaning which only they hold" (Tice, 1985). This finding was related to the constructivist theory because it deals with individuals who vary in the way they make sense of the world around them and that both individual and collective views about the world (environment) does undergo change over time.

Understanding constructivist ideas and social ecological theories would help teachers in the study area to apply this knowledge and provide pupils with basic understanding and skills needed to make informed choices about interactions in the environment. Findings revealed that change in physical environment was caused by population growth. As people interacted with the environment, a number of things got affected and changed. It was important to include this valuable in order to appreciate perceptions of teachers and pupils drawn from different localities.

### 5.1.5 Definition of EE by Teachers

Environmental Education was defined by teachers differently as presented in Table 4. The findings revealed that 12 (40%) of teachers defined Environmental Education as a process of acquiring knowledge about the environment while 8 (26.7%) defined it as awareness of the environment and how to care for it. The other 7 teachers representing 23.3% defined EE as a study of the environment and the impact it has on its inhabitants while 2 (6.7%) defined it as education that deals with the environment. in addition, 1(3.3%) defined it as a study of the relationships and interactions that occurred between the biophysical (natural) and human systems.

Majority of teachers 12 (40%) showed simple understanding of the term Environmental Education when they related to it as education about the environment. 'Education about' something or environment is concerned with transmission of knowledge or information by the teacher to the pupil. These findings were in line with Chatzfotiou (2006) who argued that any education is expected to provide knowledge to individuals. Knowledge is power and EE is aimed at producing a 'citizenry that is knowledgeable'. Among the many definitions of EE is one by Stapp et al. (1969), in which EE is defined as a process that is aimed at producing a 'citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of and how to help solve its problems and motivated to work towards their solution". Similarly, UNESCO (1977) defined EE as a learning process that increases people's knowledge and awareness about the environment and its associated challenges, develops the necessary skills and expertise to address the challenges and foster attitudes, motivations and commitments to make informed decisions and take responsible actions either individually or collectively.

Further findings revealed that while some teachers were concerned with acquiring knowledge about the environment, 8 (26.7%) defined it as awareness about the environment and how to "care for it" and 1 (3.3%) of teachers defined EE as a study of the relationships and interactions that occur between human beings and the biophysical (natural) environment. These findings were supported by the social ecological theory which states that human beings relate with the environment. Teachers in the two categories suggested that knowledge alone (knowing about) the environment was not enough but to develop an understanding of various relationships that occurred between human beings and the biophysical environment through day to day activities.

### 5.1.6 Definition of EE by Pupils

Pupils showed varied definitions of Environmental Education as presented under section 4.1.6. Environmental Education was defined as "education that tells us about our surrounding", or "learning that can help people know more about the environment" and some pupils could not define EE.

Pupils just like teachers were concerned with obtaining knowledge in order to understand the environment. Knowledge in this context referred to the rational and logical part of human thinking that lead to knowing of facts, ideas, concepts or information about something. Knowledge also widens the scope of an individuals' understanding of a phenomena.

On the contrary, other pupils showed ignorance about the existence of EE in the curriculum hence they could not define it. The common reason for failure to define EE by some pupils was the fact that teachers did not mention EE or talked about it in the classroom. However, they acknowledged learning Science, Creative and Technology Studies, Social and Development Studies among other subjects. Further arguments were that EE did not show on the time table meaning that it did not exist as a subject or area of learning. The study concluded that EE was not correctly presented to the learners hence failure to define EE. This was contrary to the constructivist theory which states that learners should construct knowledge and develop a sound relationship with the environment by doing activities and experiencing real life environmental issues which should eventually lead them to making informed decisions and sound judgement about the environment and take action in solving environmental problems.

These findings were in agreement with Chacko (1998) who associated failure to defining EE by respondents to failure by the education system to provide basic knowledge and understanding of EE to its citizens. Similarly, Cutter, (2000); Namafe, (2006); Mweembe (2008) as well as Kalimaposo and Muleya (2014) also observed that knowledge and understanding of EE by many teachers and pupils was low. Perhaps the common reason for low levels of knowledge in EE could be associated to what Namafe (2006) referred to as 'the field of EE being still in its infancy in the curriculum'. Kalimaposa and Muleya (2014) also observed that knowledge of EE was not only at low ebb among primary school pupils but at both teacher training and school teaching levels in Zambia. The question posed by this study is "for how long will EE remain a new field in the curriculum?"

The study felt that although teachers and pupils defined EE in varied ways, it was not fully understood or appreciated the way EE was supposed be. This showed that knowledge of EE was still low and limited among teachers and pupils. It was suggested that in order for EE to be fully defined, understood and appreciated, teaching and learning should be done within the environment where learners have an opportunity to experience real life situations and do hands-on activities. However, the teaching of EE did not take that approach. Now, as long as EE will continue to be treated as a new field in the curriculum, teachers and pupils who are supposed to be agents of change in society would continue to exhibit lack or limited knowledge of EE.

### 5.1.7 Recognition of EE by Teachers

Teachers unanimously affirmed and recognised the presence of EE in the primary school curriculum as presented in Table 5. Findings revealed that majority 29 (96.7%) of teachers affirmed that EE was taught in primary schools in the study area while 1 (3.3%) said it was not.

The common reason for the recognition of EE in the curriculum by teachers was that aspects of EE were found in subjects such as Creative and Technology Studies, Social Studies, Integrated Science and Cinyanja. On the contrary, 1 (3.3%) said that EE was not taught in primary schools in the study area. The reason for this response was that it did not appear on the time table as a separate subject and it did not have text books. Similar findings were recorded by Kimaryo (2008)

### 5.1.8 Recognition of EE by Pupils

Pupils from most FGDs confirmed that EE was taught in primary schools while a small number of pupils said that EE was not taught. Findings were confirmed by statements such as "we learn EE not as a subject on its own, but in Science, Cinyanja, Social studies and Creative and Technology Studies". The findings were similar to what Kirmayo (2008) found, the only difference was that her sample only comprised of teacher respondents. It was clear that majority 29 (96.7%) of teachers and most pupils in the study area had insights about aspects of EE although their understanding was very low and limited to the biophysical dimension.

### 5.1.9 Teachers' Views on the Importance of EE

Teachers gave varied responses as regards the importance of teaching EE in primary schools as presented in Table 6.

Findings revealed that 12 (40%) of teachers viewed EE as an important field of study believed to instil knowledge of environment and enhance pupils' awareness of the dangers of environmental degradation and hoped that it would change the way they viewed things for the betterment of the environment. Additionally, eight (26.7%) of teachers perceived primary school education as the foundation of all learning and that primary school age of (6-13 years) was the appropriate age for developing knowledge and skills about the environment. A local proverb entitled "Imiti ikula empanga" (meaning young trees of today will grow to become future forests), teaches that exposure of pupils to EE at an early age would not only develop environmental knowledge and skills in them, but also values and attitudes to help them act

responsibly towards the environment for the current and future generations. This finding was supported by studies from Cyprus, Germany, the United Kingdom and Switzerland on importance of EE (Lindermann- Matthies et al. 2009). That study proposed that it was important to teach biodiversity (a component of EE) at primary school level because learners were at a suitable age range of awareness development. At that time between grades one and five, children develop affective, emotional and concern for living things, therefore, it was imperative to introduce EE to learners as early as possible in their life.

Further findings revealed that 7 (23.3%) of teachers believed that through EE pupils would act as agents of change in their societies by getting involved in finding solutions to environmental problems. As children learn, they usually share whatever information they get with others therefore a wider audience gets to know about what goes on in society. Through EE this mechanism would be enhanced through consistent day to day increase in knowledge and interactions with the environment if our Zambian primary school teachers were to teach EE effectively. Other 2 (6.7%) indicated that EE would help change pupils attitudes for better environmental management. This submission was also echoed by Jekayinfa et al (2005) who alluded to the fact that through EE, children would be adequately equipped intelligently, emotionally and with the necessary manipulative skills that would help them meet the challenges posed on them by both the present and the future environments

In addition to what has been highlighted above, WCED (1987), emphasises that through EE learners would know that the environment was part of nature and their cultural heritage which should be handed down to the next generation and also that some resources found in the environment were not easily replaceable and needed to be managed sustainably in order to prevent their extinction. These arguments were in line with the Social Ecological theory which explains that dynamic interplay among persons, groups, and their socio- physical milieus largely stem from unequal and exploitative relationships between humans across the spectrum of race, gender, class or location with the environment. The theory explains how personal-focused efforts can modify a person's behaviour with environmental focused interventions to enhance their social- physical surroundings. Likewise, environmentalists such as (Stapp et al. 1969, Uzzell et al. 1994, Ballantyne, 1996, Palmer, 1998, Hungerford et al. 1980) have advanced in the history and development of global EE that the aim of EE was to aid citizens in becoming environmentally knowledgeable and skilled and dedicated citizens who would be willing to work individually and collectively towards solving and maintaining a dynamic equilibrium between quality of life and quality of the environment. These authors emphasised

that the development of EE was a continuing process that takes place during the whole life of an individual. But the starting point being the earliest stage of the formation of personality when environmental values and a positive attitude towards environment should be built. This study proposed that environment was largely man's making and the protection of it from humans injurious economic activities should therefore be his or her responsibility which was largely dependent on what could be learned through EE.

### 5.1.10 Pupils' Views on the Importance of EE

Findings from most FGDS showed that pupils viewed EE as a means through which they could know more about the environment and gain knowledge on how to prevent and protect it from bad activities. Pupils knew that they were stakeholders who needed to know what was going on in the environment and what role they needed to play in environmental management. The highest perceptions of the importance of EE was knowledge and awareness of the environment. In support of an early age Environmental Education, (Fien, 1996; Palmer, 1998) believed that "childhood was a critical period in the development of the self and in the individuals' relationship with the natural world because it gives opportunities to young people to explore the environment and identify their own sense of priorities and talk about their concerns, feelings and ideas on the causes and possible solutions to environmental problems. Wilson (1996) further argued that if a child does not develop a sense of responsibility, respect and positive attitude towards nature during his/her childhood, then such a child was liable not to form such attitudes in later life. One evangelist once said that it was easy to convert someone who had not subscribed to any form of faith than one who already believed. Strong (1998) maintained that catching them young was an effective way of developing eco-soldiers in their later lives. Indeed the importance of EE in the lives of young people cannot be over-emphasised, for lessons from the Holy Bible in Proverbs 22 verse 6 says and I quote " Train a child in the way he should go, and when he is old will not turn from it.

## 5.2 Integration of EE in the Primary School Curriculum

Integration involves making connections across different subjects. Teachers and pupils were asked to give their views on integration of EE and responses were presented in Table 7 and under section 4.2.2.

### 5.2.1 Teachers Views on Integration of EE

Findings revealed that there was no uniformity in the way EE was integrated as presented in Table 7. Majority 17 (56.7%) of teachers viewed EE as integrated in all the subjects that were taught at primary level while 7 (23.3%) said it was only integrated in just some or a few subjects. Other 5 (16.7%) were of the view that EE was integrated in the primary school curriculum through extra- curricular activities and 1 (3.3%) did not indicate.

#### (a) Integration of EE in All Subjects

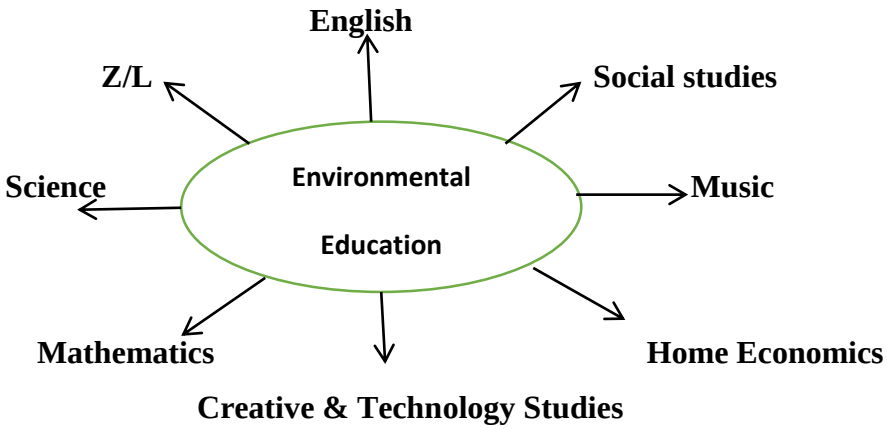
Findings revealed that EE was integrated in various ways. The most common view was that EE was integrated in all the subjects that were taught at primary level. Asked as to how they taught EE in all the subjects, most teachers could not clearly explain apart from saying that some topics in those subjects had EE related information. These findings were different from that of Kimaryo (2011) where respondents argued that EE was taught in all subjects through content, topics and teaching and learning aids. As content teachers could teach facts about things in the environment, or as topics slotted in different subjects. EE could also be taught by relating it to various things that could be used as teaching and learning aids in the classroom. For example, the topic on buying and selling in mathematics, items could be brought into the classroom from the environment as Teaching and learning aids.

This finding was reinforced by UNESCO (1979) which stipulates that from inception, EE was not to be achieved by a single subject approach. According to Bartosh (2003), curriculum integration was seen as a promising way for teachers and pupils to make connections between and among the key ideas of various academic disciplines. He further argued that integration created the opportunity to explore the relationships necessary to the development of deeper and fuller understanding of content whereas the traditional curriculum kept academic subjects apart from each other.

Kimaryo (2011) also reported that the integration approach was used in many countries such as Uganda (Ofwono-Orecho, 1998), in Nigeria (Adedayo & Olawepo, 1997)**,** New Zealand (Flaws & Meredith, 2007), in China (Hua, 2004) and in Jamaica (Ferguson, 2008). Tilbury (1995) in support of EE integration, said that EE does not attempt to replace any subject, but that its success depended upon the holistic treatment through all areas of understanding and experience, aesthetic and creative, human and social, linguistic and literacy, mathematical,

moral, physical, scientific, spiritual and technological. Thus, the emphasis in EE has been on integration as illustrated in figure 2.

**Fig 2: Integration of Environmental Education**




**Source: Field Data, 2016**

### (b) Integration of EE in Some subjects

Further findings revealed that 7 (23.3%) of teachers viewed EE as integrated only in a few subjects. The common reason for this perception was the fact that aspects of EE were more in only a few subjects such as Social Studies, Creative and Technology Studies, Cinyanja and Integrated Science. These findings were similar and in line with those of Hua (2004), Jekanyifa (2005) and Kimaryo (2011) who reported that aspects of EE appeared more in disciplines such as Biology, Social studies and Geography. This perception was probably due to the fact that these subjects have more environmental topics and content. Findings also revealed that where EE did not feature as a topic in other subjects, teachers did not teach it by integrating it. The study has observed that failure by teachers to incorporate EE in their teaching was due to lack of innovations and skills due to inadequate training in EE. This finding was contrary to results found in Scotland where teachers taught EE in different topics in outdoor education despite guidelines not stating what was to be taught or not.

### (c) Integration of EE through Extra-Curricular Activities

Extra- curricular activities under the umbrella of Preventive Maintenance Systems was another way in which EE was integrated in the primary school curriculum as reported by 5 (16.7 %) teachers. Teachers said that it was a policy of government for pupils to engage in Preventive Maintenance Systems. Activities involved included cleaning the school surrounding by picking

litter, sweeping, slashing, planting lawn grass, and watering flowers. These activities were aimed at developing environmental knowledge in learners while instilling a sense of aesthetic (beauty) of the surrounding. This finding was in line with the findings by Green Alliance (2004) which argued that children were a powerful symbol of the future who should not play a passive role in development and implementation of environmental policies, but encouraged to participate in environmental debates and decision making to ensure wider impact on environmental awareness and citizenship in longer term.

**(d) EE not Integrated in the Curriculum**

It was interesting to note that 1 teacher representing 3.3 % indicated that EE was not integrated in the primary school curriculum because it did not appear on the time table as an independent or separate subject. Despite this finding being least, it was similar to findings of Lindhe (1999) who found that primary and secondary school teachers in Tanzania were not aware of EE topics in subjects which they taught when in fact environmental components were included. Similarly, findings by Chatzfotiou, (2006) and Lindemann-Matthies, et al. (2009) showed that teachers in the study area were not aware of the existence of EE in the National Curriculum nor a policy that enhanced the teaching of biodiversity in primary and secondary schools respectively. On the contrary, Kimaryo (2011) and Jekayinfa (2005) found that there was heightened awareness of the incorporation of EE in the primary school curriculum by teachers. The reason for that was because primary school teachers were undergoing in-service training to update their knowledge on EE.

Disparities in findings showed that integration of EE was a challenge to teachers and that made them fail to recognize and implement EE effectively. The study also noted that much more, failure to integrate EE in the subjects they taught was partly due to lack of policy guidelines which would have aided them how to do it. The New South Wales Study concluded that many primary school teachers in Australia were practicing some form of EE although they did not call it that. This was also true about teachers' views in this study.

### 5.2.2 Pupils' Views on Integration of EE

Pupils like teachers also showed varied views as regards integration of EE in the primary school curriculum. Section 4.2.2 showed some of the views. Findings from most FGDs revealed that EE was mainly integrated in some or in a few subjects such as Social studies, Creative and Technology Studies, Integrated Science and Cinyanja. The reason for such perceptions was

that these subjects had more environmental related topics which could easily be recognized. They further mentioned EE topics which they covered in other subjects to include; plants and animals, pollution, soil erosion, importance of trees and water, deforestation and weather.

Others said that EE was integrated through preventive maintenance systems (PMS). One pupil was even heard saying 'we practice EE when we sweep, slash, water and pick papers around the school surroundings. Pupils said that keeping the environment clean was important and so that they could avoid contracting diseases. Ferguson (2008) in support of extra- curricular work argued that although these activities may seem to be routine work, the involvement of pupils in these activities broadened their conceptions about the environment and its management. However, PMS was looked at in a negative way because most times teachers used it as a means of punishing erring pupils. Teachers should strengthen the teaching of EE by supporting the 'keep Zambia Clean campaign in schools. In Kenya for instance, a deliberate policy was passed whereby every child was required to plant a tree on his or her birthday as an environmental conservation measure. If pupils were to grow up with affection for nature and care of the environment, then teachers needed to do more in order to cultivate those skills, values and attitudes in the pupils.

As stated and emphasized in the social constructivist theory, individuals and groups of individuals construct ideas about how the world works through their interaction with others and the world around them. The more the pupils interact with the environment, the more they would construct environmental concepts and develop responsible behavior through personal experience in the environment and participation in environmental activities such as preventive maintenance system (PMS). But instead of using PMS to teach environmental concepts, most teachers used it as a means of punishment for offenders. In that way pupils did not appreciate PMS as means of integration of EE in the curriculum.

### 5.2.3 Teachers' Suggestions on How to Integrate EE in the Primary School Curriculum

Teachers were asked to make suggestions on how best EE could be integrated in the primary school curriculum so that it brings about the extensive social changes in addressing environmental problems. Table 8 presented the suggestions given by teachers.

Findings revealed that 96.7% of teachers suggested integrating EE as a separate or independent subject in the primary school curriculum while 1 (3.3%) said that EE could continue to be integrated in all the subjects. The majority of teachers argued for integrating EE as a separate

subject because they had observed that integrating it in some or all subjects made EE to be regarded lightly and not be recognised by many. Further results showed that including EE as an independent subject would put it in the right perspective and maintain the status quo. In addition to that, EE would have its own guidelines and text books which teachers and pupils would follow in teaching and learning thereby reduce the stress of looking for content to include into existing subjects. Also it would reduce on the challenge of finding time to teach it as it could be allocated its own time on the time table. These findings were in line with Mappin and Johnson (2005) who observed that teachers found it difficult to link EE content with subject content due to lack of guidelines. It was further argued that when EE was integrated into the content of other subjects, learners failed to develop a clear understanding of what different disciplines or forms of knowledge contributed to the understanding of an environmental topic. As a result, many teachers were not comfortable to teach EE through integration. Although integration was considered to facilitate holistic learning, it was assumed that it had resulted in subject content overload, which in turn contributed to a superficial treatment of EE components.

### 5.3 Methods Used in Teaching Environmental Education.

Several methods could be used to teach EE effectively. These methods demand that teachers got out of the confines of the classroom and provide instructions in real life settings where pupils could acquire skills of identifying, investigating and solving environmental problems either individually or collectively. Findings revealed that majority 12 (40%) of teachers used the question and answer method because it was effective and gave feedback immediately. Question and answer method if used correctly in guiding learners to arrive at answers where the teacher plays the role of a facilitator, could be effective unlike using it just to recall answers. Further findings revealed that 8 (26.7 %) of teachers used lecture method. Teachers said lecture method was convenient, quick and suitable for use in teaching large classes as one of them was heard saying “lecture method helps me to cover the work and finish the syllabus”. The study found that teachers were interested to cover the content and finish the syllabus and make pupils ready for examinations since the Zambian curriculum was examinations oriented. This method does not help pupils to construct knowledge and develop skills as stated by the constructivist theory which says that human beings generate knowledge and meaning about how the world works through their experiences and interactions with others in the world around them (Lave & Wenger, 1991). These findings were similar to findings from surveys done in Tanzania (Emsheimer & Mtana, 2004); Botwsana, Tabulawa, (2003) and Ghana (Hardman, et al. 2008)

where less participatory methods were used in teaching EE. This was opposed to Sterling (1992) who emphasised the use of learner-centred methods that engaged learners in higher order thinking skills, critical thinking and stimulated learning. Educators today generally agree that an increase in leaner achievement and cognitive development took place when learners are motived, interested and involved in what they are doing, they see connections between subjects, and have an opportunity to work with others in solving real-life problems.

Another finding revealed that teachers integrated EE in their teaching by using the environment as a resource for learning during preventive maintenance systems (PMS) where pupils maintained the school surrounding by sweeping, picking litter, watering lawns and flowers. This was one way of enhancing theories learned in the classroom on keeping the environment clean. The emphasis was that learners should relate what they learned in the classroom to real life setting or environments.

This finding was contrary to Kimaryo (2011) findings where teachers in her study used the environment as a source of raw materials which were used in music (drums, rattles), Art and other subjects. However, the researcher was strongly convinced that teachers in the study area also used various materials from the environment in their day-to-day teaching although they failed to say so. It was then concluded that teachers in the study area were not conversant with EE and had limited knowledge about it.

### 5.3.1 Methods that Teachers used in Teaching EE

It has been argued that there are no standardised methods for teaching EE. Findings have revealed that it was difficult for teachers to describe the methods which they specifically used in teaching EE because it was not offered as a separate s

Teacher centred methods are those methods where the teacher is the main actor and uses a whole class approach to transmit knowledge and learners are passive recipients of that knowledge. On the other hand, learner centred methods are those methods where learners are provided with the opportunity to participate in the learning process and construct their own knowledge as stated by the constructivist theory. The constructivist theory states that human beings generate knowledge and meaning about how the world works through their experiences and interaction with others in the world around them (Lave & Wenger, 1991).

Findings in this study revealed that teachers in primary schools in the study area mainly used teacher-centred methods in form of lecture and question and answer methods. The reason for such preferences was that they needed to cover the content in the syllabus and make pupils ready for examination since the Zambian curriculum was examination oriented. This finding was in line with the findings from surveys done in other countries like Tanzania (Emsheiner & Mtana, 2004); Botswana (Tabulawa, 2003) and Ghana (Hardman et al, 2008) where less participatory methods were used. Similar results were also found in a survey done in Hong Kong where science teachers were found to be using traditional methods like lecture and experiments and there was little use of field work and outdoor activities. This finding was opposed to Sterling (1992) who emphasised the use of learner-centred methods that engaged learners in higher order thinking skills, critical thinking and stimulated learning. Educators today generally agree that an increase in learner achievement and cognitive development takes place when students are motivated, interested and engaged in what they are doing, they see connections between subjects, and have an opportunity to work collaboratively on solving real-life problems (NAAEE, 2001).

Although it has been argued that there are no standardised methods for teaching EE, Lee and Williams (2001), proposed that critical approaches involving education *about*, education *in* and education *for* the environment make teaching more purposeful and inculcate a problem solving culture, which could be useful to link EE teaching to efforts of solving environmental problems. Teachers are said to have a crucial role to play in bringing about extensive social changes needed to address an environmental crisis therefore, it was important that they develop clear concepts of Environmental Education teaching methods because it may influence their practice. However, Palmer (1998) laments that what is actually in practice does not fulfil this pattern.

### 5.3.3 Pupils' Perceptions of How EE was Practices

Both international declarations and research in EE view children as the main target audience for EE (Hart, 1997; Palmer, 1998; Tilbury, 1995). When asked how EE was practiced in primary schools, findings in most FGDs revealed that pupils had mixed perceptions. However, some pupils explained that they learned most of the things within the classroom. Others revealed that they got involved in group work, discussion, and through giving answers to questions when teachers asked them. Education for the environment and education for sustainability consider real EE to occur when students are actively involved in solving

environmental problems. The study findings showed that the concept of learning practices was not well understood by learners in the study area because they mixed practice with methods.

### 5.4 Challenges Faced by Teachers and Pupils in EE

Literature has revealed that many teachers in various parts of the world were faced with a lot of challenges in teaching EE in primary schools. Challenges are things which create problems for teachers and pupils, making them unable to teach and learn EE effectively as outlined (UNESCO, 1977).

#### 5.4.1 Challenges that Teachers faced in Teaching EE

The major challenges that teachers faced included; lack of knowledge and training in EE, lack of guidelines and lack of teaching and learning materials, large class size and lack of funding. The other challenges were ineffective monitoring of school programmes and negative attitude towards teaching by some teachers.

**(a) Lack of knowledge and inadequate training in EE**

Findings in this study revealed that some teachers lacked knowledge in EE. Teachers associated their lack of knowledge to inadequate training in EE both at pre-service and in-service training. It was revealed that some teachers had not upgraded their qualifications since they left college more than twenty-five years ago and did not engage in any form of in-service training and yet so many changes had taken place in the curriculum. It was important that teachers took a step forward in upgrading their professional qualification through in-service training in order to match with the changing times. This finding was in agreement with Lindhe (1999) and Kimaryo (2011) who found in their studies that, the kind of barriers perceived by teachers in primary schools in teaching Environmental Education were lack of environmental knowledge and inadequate training in EE methodologies. Teachers should not only possess knowledge of subject matter that they teach but possess appropriate methods and strategies to transform it for the purpose of instruction that could help develop positive attitudes in learners and help them change their behaviour and take responsible action towards solving environmental problems and achieving a sustainable lifestyle. In a study performed in Queensland, Australia findings revealed that primary school teachers' knowledge of facts, principles and concepts about EE was weak (Tilbury, 1995).

When emphasising the importance of teachers in the implementation of EE, Robottom et al, (2000) suggests that teachers should be committed and also need good knowledge base in EE. The challenge of lack of knowledge of EE was common in most countries of the world and Lukonde (2012) found that this problem stem from teacher training colleges where teacher educators lack knowledge and skills to teach EE effectively.

**(b) Lack of guidelines**

Findings have also revealed that teachers lacked guidelines which they could follow when teaching EE as an integrated component. Experience has shown that teachers were used to follow detailed syllabus when teaching. If things were not included into the syllabus it was unlikely that teachers would make any effort to add what does not show in the syllabus. The findings were in line with Jekayinfa & Yusuf (2005), who observed that in many countries, Environmental Education had been offered as an integrated component into the existing subjects and that its implementation made teachers encounter various challenges due to lack of guidelines for them to follow when teaching.

This has implications for teaching EE because if teachers were not guided on how to integrate aspects of EE into the existing subjects, they would not teach it. This finding was in line with studies done by Cutter (2000) who found that teachers planned their teaching but totally depended on curriculum specification and text books provided by M.O.E. It could be concluded that lack of guidelines makes teachers in the study area not to teach EE effectively.

**(c) Lack of teaching /learning resources**

Findings revealed that lack of teaching and learning resources pose a big challenge in teaching and implementation of EE Programmes in primary schools in the study area. Findings showed that teachers were constrained in their teaching because schools lacked teaching and learning resources in terms of text books and teachers' guides. Furthermore, teaching of EE require that teachers and pupils get out of the confines of the classroom and get to real life settings where learners could be exposed to solving real life problems but due to inadequate funding, teachers found it difficult. This was true as revealed through literature that non implementation of EE in most countries was as a result of lack of vision and funding. In Zambia for example, government has been struggling to provide resources to meet the growing numbers of school going children country wide. This was made worse by the declaration of free education policy for grades 1 to 7 learners who do not contribute anything towards their education. Secondly,

due to limited funding, teachers complained of lack of support from administrators who usually emphasise on spending the mega resources on things like chalk and other inessential commodities unlike taking learning on tours.

In a study done in Hong Kong by Chi-chung Ko & Chi-kin Lee (2003) results were a bit different in that, apart from lack of lesson time and lack of teaching and learning materials, the issue of safety of learners when the teacher wants to take them out to provide them with field experience, especially when there are many children in the class hindered them from taking learners from for out- door learning activities

**(d) Large class size**

The declaration of Free Education Policy by government has seen the escalating numbers of pupils in the classes in most government primary schools especially in urban areas. Findings revealed that the high pupil- teacher ratio made organisation of pupil participation in most areas of teaching and learning very challenging. This is in line with a study done in Hong Kong by Chi-chung Ko & Chi-kin Lee (2003) where it was found that teachers worried about the safety of learners when the class was too big and a teacher wanted to take them out to provide them with field experience and out- door learning activities.

**(e) Lack of time**

The study findings have also revealed that lack of time was a limiting factor in the implementation of EE. Teachers showed that time allocated (40 minutes for upper and 30 minutes for lower section) to teach EE as fused content or topics was not enough. In addition to that, teachers tend to rush through the content in order to cover the syllabus and make pupils pass examinations because the Zambian curriculum is Examinations orientation. This jeopardises the teaching of aspects of EE which require a lot of time to teach skills, values, and behavioural change. Lack of time was also reported by (Bartosh, 2003 & Kimaryo, 2011) where they found that lack of time was a challenge in implementing effective EE.

**(f) Ineffective monitoring and evaluation mechanism**

In addition, findings revealed that monitoring and evaluation of teaching and learning have been limited and even where they have been done, they were limited. There is need for inspectors of schools to once in a while visit schools to monitor the implementation of programmes. This might encourage teachers to put in more effort in their work.

Although only a few studies have been referred to here, these barriers seem to be common among teachers in different parts of the world. A review of literature has shown that the implementation of EE was problematic and has had limited success in various schools in many parts of the world. If teachers were to teach EE and pupils learn effectively, they need to get out of the confines of the classroom and into real-life settings. Robottom et al (2000) concluded that behind every successful Environmental Education programme was a committed teacher.

### 5.4.2 Challenges Pupils Faced in Learning EE

Findings from most FGDs revealed that schools lacked text books in EE. Pupils revealed that lack of text books made it difficult for them to access information on EE at individual level. They said that it was difficulty for them to acquire information because there were no books to read on EE. This finding was different from findings in other studies as most of those were reported on teachers not pupils. Further findings revealed that most pupils lacked reading skills. This hindered them from accessing information on EE from print media (newspapers and magazines). This forced them to always wait upon the teacher to share the information he/she had on EE. In this regard, pupils suggested that it would be helpful and beneficial if a radio programme would be designed to teach EE.

## 5.5 Measures Put in Place to Address Challenges Faced in Teaching and Learning of EE

The measures included; encouraging teachers to study EE at UNZA or any University, enhance TGMs and workshops, purchase or improvise teaching and learning materials through locally available resources, Lobby government to build more schools, produce guidelines for EE and increase funding to primary schools. Teachers to develop positive attitudes towards teaching of EE and inspectors of schools to regularly monitor programmes in schools. Teachers to endeavour teach reading to pupils from grade one.

## 5.6 Summary

This chapter discussed findings of the study that explored teachers' and pupils' perceptions of Environmental Education in selected primary schools of Chipata district. The findings were that: Environmental Education was perceived as a means of acquiring knowledge of the environment. Teachers and pupils viewed environment from the biophysical perspective.

Both the teachers and pupils had mixed perceptions about integration of Environmental Education in the curriculum. The highest perception was that EE was integrated in all primary school subjects, while others said that it was integrated only in subjects such as CTS, Social studies, Cinyanja and Integrated science. Further findings showed that EE was integrated through Preventive Maintenance Systems (PMS) and extra - curricular activities. A smaller number of pupils did not know how EE was integrated. Methods that were used in teaching EE included; question and answer, Lecture and Field work. The most commonly used method was question and answer. The major challenges that teachers and pupils faced in teaching and learning EE included; lack of training, guidelines, teaching and learning materials and funding. Others challenges were large class size, lack of time, lack of monitoring of programmes by inspectors and negative attitude of some teachers towards teaching EE

# CONCLUSIONS AND RECOMMENDATIONS: CHAPTER SIX

## 6.0 Introduction

This study was set to establish teachers' and pupils' perceptions of Environmental Education in selected primary schools of Chipata District of Eastern Zambia. This chapter concludes the study and also presents the recommendations based on the findings and discussions.

## 6.1 Conclusions

Based on the responses given by both teachers and pupils it was concluded that teachers and pupils perceived EE as an important subject and defined it as a process of acquiring knowledge about the environment. Environment was defined as 'place or surrounding'. Research findings showed that teachers and pupils perceived environment as biophysical and did not consider it to comprise the social, economic and political dimensions. Findings further revealed that Environmental Education was perceived as education *about* the environment and scarcely did they refer to it as education *in* and *for* the environment. This perception was attributed to the way in which teaching and learning of Environmental Education was conducted. As opposed to learner- centred methods which encourages pupil participation in real life settings, EE was mainly taught through teacher-centred methods which encourages the transfer of knowledge by the teacher to the learner who passively receive that knowledge.

Further findings revealed that teachers and pupils had mixed perceptions about integration of Environmental Education in the primary school curriculum. While majority of teachers showed that EE was integrated in all the subjects others revealed that it was incorporated into a few subjects such as Science, Social studies, Creative and Technology studies and as extra-curricular activities in form of preventive maintenance systems. On the other hand, some pupils showed that EE was not taught and expressed lack of knowledge about how it was integrated. In view of the findings, teachers and pupils strongly suggested that the best approach for integrating Environmental Education in the curriculum was by including it as an independent or single subject. The reason for a single subject approach was that it would have its own guidelines, text books and time allocated to it on the time table thereby making it known by everyone and regarded seriously by the teachers and pupils.

Further findings revealed that EE was practiced as content which appeared as specific topics infused in subjects such as Creative and Technology studies, Science and Social studies. It was also found that where EE did not feature as a topic in other subjects, teachers did not teach it by integrating it. Methods used in implementing EE included teacher-centred and learner centred methods. Teacher- centred methods such as lecture method, encourage transmission of information by the teacher in which the learners play were a passive role while learner- centred methods encourages learner participation and construction of knowledge. Examples of which included; question and answer, discussion, demonstration, role play and field work. From the methods used in implementing EE, it was concluded that EE was practiced as education *about* the environment as opposed to education *in* and *for* the environment.

Among the challenges that teachers and pupils were faced with in the study area included; lack of knowledge of EE among most teachers due to inadequate training in EE, lack of guidelines, an unclear syllabi, lack of teaching and learning materials, large class size and ineffective monitoring and evaluation mechanisms by inspectors of schools to ensure that policies and programmes were running in schools. It was also revealed that pupils lacked reading skills and that hindered them from accessing information on EE.

### 6.2 Recommendations

The following recommendations were made to the study:

- **Training** - teachers, to take advantage of opportunities available at UNZA and other universities to study by distance learning at UNZA and other colleges to opportunities upgrade are implementers of any curriculum should be given opportunities to undergo refresher courses, seminars and workshops that would help them gain knowledge in EE and expose them to new innovations in the curriculum.
- **Include EE as an independent subject** - EE has continued to be integrated in all subject disciplines. Although integration makes connections between and among the key ideas of various academic disciplines, there is need for EE to be integrated as an independent subject. This would help in broadening the content and scope of EE because then it would have its own guidelines, text books and time allocated on the time table and make it recognised in the syllabus.
- **Government to increase funding in Schools -** It is recommended that government increase funding in primary schools to enable them conduct field work and promote

outdoor learning. Field work and outdoor learning activities do help learners with concretisation of issues, experiences and construction of knowledge as they interact with the world around them.

- **Teaching and learning EE through the mass media** – Environmental Education specialists and other concerned partners should design radio and television talk shows which could be aired regularly on environmental issues throughout the country.
- **Monitoring and Evaluation** - There is need for regular monitoring and evaluation of school programmes by inspectors in order to enhance teaching and learning.

### 6.3 Suggestions for future research

In line with the findings of this study, the following areas of future research were suggested;

- Further research could focus on establishing the perceptions of other stakeholders such as high school pupils, parents, NGOs, and related government departments on EE

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## APPENDIX 1

## STRUCTURED QUESTIONNAIRES FOR TEACHERS

My name is **Zulu Naomi Mwanza**, a post graduate student conducting a research on teachers' and pupils' perceptions of Environmental Education in selected primary schools of Chipata District of Eastern Zambia. This is purely an academic research for the partial fulfilment of a master's degree in Environmental Education. You are humbly requested to answer all the questions. Pleases be as objective as possible in view of what you know and understand about EE at your school.

The questionnaire is divided into five (5) sections (ABCDE). Please kindly answer all the questions in each section and tick where appropriate.

### SECTION A: Background information

**Instruction**: please answer by ticking and filling in the spaces.

Date: .....

1. Gender: Male [ ] Female [ ]
2. What is your highest professional qualification and year obtained (tick what is appropriate)

Bachelor's degree ☐ year: .....

Diploma ☐ year: .....

Certificate ☐ year: .....

### SECTION B: Perceptions of Environmental Education?

3. What do you understand by the term environment?

……

……

4. What is your perception of the physical environment?
   a) It has greatly changed
   b) It has slightly changed
   c) It has always been the same

d) It is likely to change in years to come.

5. What do you understand by Environmental Education EE?

……..…....

.....

6. Do you think EE is taught in primary school?

   Yes [ ] No [ ]

7. Why do you think it is important to teach Environmental Education in Zambian primary schools?

……

……

……....

**SECTION C: Perceptions on Integrating EE into Primary curriculum?**

8. How do you think EE is integrated in the primary school curriculum?

a) Integrated in all subjects [ ]
b) Integrated in some subjects [ ]
c) As a separate subject [ ]
d) As part of extracurricular activities [ ]

9. What do teachers think could be the best way of incorporating EE in the curriculum?

.....

.....

**SECTION D: Methods used by teachers in teaching EE.**

10. How do teachers teach aspects of EE in existing subjects?

……

……....

11. What methods do teachers use in teaching aspects of EE in existing subjects?

.....

.....

**SECTION E: Challenges Teachers and Pupils Face in Teaching and Learning EE.**

12. What challenges do teachers face in teaching EE?

.....

.....

13. What measures would you put in place to overcome these challenges?

.....

.....

14. Is there any other information you would like to share concerning EE?

.....

.....

**END**

**Thank you for your participation**

# APPENDIX 2

## FOCUS GROUP DISCUSSION GUIDE FOR PUPILS

1. What do you understand by the term environment?
2. How do you view the physical environment in your local area?
3. What do you understand by EE?
4. Is EE taught in primary schools?
5. Why do you think it is important to learn EE in primary school?
6. How do you think EE is currently taught in primary school?
7. What could be the best way to learn EE in primary schools?
8. What do you think could be the best way to include EE into the curriculum?
9. What methods do teachers use in teaching EE?
10. What problems do you face in learning EE?
11. What changes do you think can be made to improve the learning of EE?
12. Would you like to suggest something that could have be left out?

**End of interview**

**Thank you for your participation**