

**ENVIRONMENTAL KNOWLEDGE, ATTITUDES AND
PRACTICES OF HIGH SCHOOL TEACHERS IN ZAMBIA: A CASE
STUDY OF SELECTED SCHOOLS OF LUSAKA CITY**

AUTHOR'S DECLARATION

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THESIS
M.Ed
MWE
2008
C1

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

University of Zambia

Lusaka

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APPROVAL

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I Oakinah Mutinta Mweembe hereby declare that the dissertation hereby submitted is my own work and it has not previously been submitted for any degree, diploma or other qualification at the University of Zambia or any other university.

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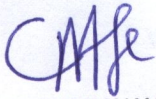
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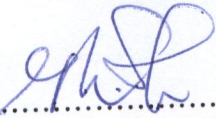
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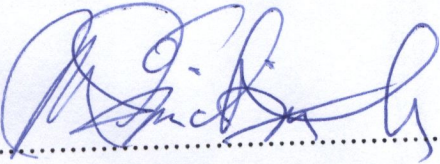
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DEDICATION

To my wonderful children: Steve, Mabvuto and Nchimunya, not forgetting my mother Martha Muleya Sikasukwe and my grandchildren Muumbe and Tawona whose love, laughter, kindness and joy light up my life. They are all God's greatest gift to me and their understanding, love and patience made my dreams come true.

With all my love to you

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ACKNOWLEDGEMENTS

This research would have been impossible without the patient help, support and encouragement of many people. I would like to thank all individuals who contributed to this effort. I acknowledge the loving support of my family who encouraged and helped me during my studies. I wish to express my thanks to all the lecturers who shaped my understanding of the course

My warmest thanks go to Dr C. M.Namale for his valuable advice, support and guidance in the research. Thanks for all the time he spent reading my endless drafts, his constructive criticism and patient editing. Thanks for guiding me and encouraging me to continue with my efforts.

I would like to thank the late Dr Tembo from the Zambia Electricity and Supply Company for his support, knowledge and attention during the choice of the research topics. Without him this dissertation research would have not been possible and successful. Without him, I would also have not been able to learn so much about environmental education.

I also acknowledge the great help I received from teachers and Managers of Libala High School and Lake Road PTA School, who provided me with the vital information that I was looking for, by completing the questionnaires.

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ABBREVIATIONS

CDC	Curriculum Development Centre
COSETCO	Copperbelt Secondary Teachers College
DEBS	District Education Board Secretary
EE	Environmental Education
EETAP	Environmental Education and Training Partnership
GRZ	Government of the Republic of Zambia
MDG	Millennium Development Goals
MOE	Ministry of Education
NACD	National Association of Conservation Districts
NISTCOL	National In-Service Teachers' College
PTA	Parents Teachers' Association
SEA	Swaziland Environmental Authority
SD	Sustainable Development
UNDES	United Nation Decade of Education for Sustainable Development

UNESCO	United Nations Educational Scientific and Cultural Organization
UNZA	University of Zambia
WWF	World Wide Fund for Nature

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ABSTRACT

Environmental education, considered to be a “blueprint for the future” (Ryan & Ray, 1991, p.7) emerged in the 1970s in recognition of the rapidly escalating deterioration of the environment. It is now a part of education around the world, as human damage to the environment has become a major international issue (Jacobs & Goatly, 2000). In the Zambian educational system, from the basic to high school levels, pupils are introduced to environmental issues through a range of learning areas and subjects.

The purpose of this study was to investigate the environmental knowledge of high school teachers in Zambia. It sought to find out attitudes of selected high school teachers towards the teaching of environmental education in high schools. In addition, the study was aimed at finding out if there were any practices or environmental education activities at high school level brought about by the teaching of environmental education. The sample for this study comprised 61 teachers and 3 administrators from two high schools in the City of Lusaka.

By using a case study approach a questionnaire survey was undertaken to collect the necessary data. This questionnaire was complemented with interviews of only three heads and observations of school surroundings only. The data collected was mainly qualitative in nature.

The main findings revealed that teachers exhibited a high level of basic environmental knowledge and positive attitudes towards the environment. Some of the teachers were also found to be assisting their schools to mount basic environmentally related activities such as clean-up campaigns and tree planting. This was noted as a benefit to environmental education in the country.

However, the sampled teachers exhibited lack of knowledge concerning some environmental concepts as they failed to define concepts such as sustainable development and environmental education both of which are fundamental to the field of environmental education. In conclusion, this research showed some correlation between level of implementation of environmental education and knowledge and attitudes of teachers of high schools. By this it meant that the more schools practically implemented environmental education activities within their curriculum, the more knowledgeable they became about the attitudes and practices of environmental education as a field of study. This study, therefore, emphasized the necessity of more in-depth studies of this issue than had been the case before in Zambia.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the Study

Like other developing countries, Zambia has found herself in a situation where human interaction with the environment has resulted in a number of environmental problems and opportunities, the former being the destruction of natural vegetation, desertification and threats to biodiversity among other things. Yet the biophysical environment is the human life support system which includes everything that people rely on during their lifetime, such as air; water, soils, rocks and other living organisms. In order to address the degradation of the environment, Zambia has, among several steps, recognised the declaration of the United Nations Decade of Education for Sustainable Development (2005 – 2014) as well as the need to attain the Millennium Development Goals.

In addition, the Ministry of Education (1996) National Policy on Education called ‘**Educating Our Future,**’ demands for the holistic development of individuals through the acquisition of knowledge, skills and competencies necessary for the development of the society and the economy. This includes the recognition of Environmental Education as a tool to acquire the needed knowledge, skills and competencies for sustainable development.

The implementation of Environmental Education in Zambia depends centrally on the teachers' level of understanding of environmental education. Therefore, it is important to be aware of the knowledge, attitudes and practices which in the case of this study, high school teachers have towards environmental education and how they relate such knowledge, attitudes and practices to the development of their learners in Lusaka. Such knowledge will also assist the Ministry of Education to know the needs of teachers in this area and how to meet them. Corney and Middleton (1996) also recognised the importance of environmental awareness in schools and communities. They said "environmental education aimed not merely at imparting knowledge and understanding of man's total environment but also at inculcating skills, attitudes and values necessary to understand and improve the biosphere and troposphere".

1 2 Statement of the Problem

In Zambia, the training of high school teachers is the responsibility of the University of Zambia which is expected to train such teachers in environmental education as well as other subjects like History. Nkrumah, Copperbelt Secondary Teachers' College (COSETCO), National In-Service Colleges of Education and other private secondary teacher training colleges prepare teachers for junior secondary education which has recently become part of the basic education. Graduates from these three colleges, including those from David Livingstone and Mufulira Colleges of Education have found they are teaching in high schools because of the shortage of teachers with degree qualifications. However, at the time of this study in 2008, Nkrumah and COSETCO were also being prepared to offer degree qualifications. Previously, environmental education

was not part of the curriculum at UNZA, even at the time of data collection for this study. This was also the case with Nkrumah and COSETCO. As a result, this had created a challenge for high school teachers to facilitate the teaching of environmental education in their schools. It should be noted that devising a policy on education without strategies for the institutions of teacher education to practically implement such a policy created a gap in the policy implementation. UNZA appeared to have noticed such a bottleneck and, therefore in 2008, the institution initiated the establishment of a minor degree programme in environmental education as well as a full fledged interdisciplinary degree programme within the Bachelor of Education (Environmental Education) programme in the School of Education. This was a step forward in promoting environmental literacy among high school graduating teachers who, in turn, would hence forth be expected to also promote the same literacy among high school learners so that they would make knowledge based, environmentally sound decisions that would actively involve learners to participate in the improvement of local, national and global environmental conditions.

With such an arrangement in place at UNZA beginning in April 2008, the problem of the study arose from the need to determine whether or not environmental education had actually been acquired by Lusaka high school teachers based on the various education policies established prior to April 2008 and also the sensitizations conducted by different stakeholders before the same date.

1.3 Purpose of the Study

The purpose of this study was to find out teachers' knowledge, attitudes and practices towards environmental education in selected high schools of Lusaka City before April 2008. This date, as already mentioned above, signifies a turning point in Zambia because that was the time when the first year students enrolled for the BEd (Environmental Education) degree programme started their studies. Upon graduation four years later, some of these students would be expected to join the teaching force at high school level. Before April 2008 when UNZA took the first step towards educating potential teachers in environmental education, the Ministry of Education, as already alluded to, had already integrated environmental education in 1996 in its National Policy Document. 'Educating Our Future'. It was deemed interesting, therefore, to know how high school teachers had integrated environmental education in their subject areas and how they had initiated environmental practices and activities at their schools based merely on policy promulgations. The revelation of capacities and competencies of teachers in handling environmental issues in selected high schools of Lusaka would assist the Ministry of Education to come up with measures to meet the needs of targeted teachers in environmental education. In the long run, this would facilitate the effective teaching of environmental sustainability in the high schools in City of Lusaka

1.4 Specific Objectives

The study sought to:-

- establish the level of knowledge on environmental education and sustainable development among selected high school teachers in the City of Lusaka, Zambia.

- assess selected high school teachers' attitudes towards the teaching of environmental education as an approach.
- establish environmental practices and activities initiated by teachers in selected high schools in the City of Lusaka.

1.5 Research Questions

The general research question guiding this study was, 'What is the state of knowledge of environmental education among selected high schools of Lusaka in Zambia?' In order to address this general question the following were the specific research questions of the study:-

- What level of knowledge regarding environmental education and sustainable development did high school teachers in the City of Lusaka have?
- What were the teachers' attitudes towards environmental education?
- What type of environmental education activities, if any, had high school teachers in the City of Lusaka initiated within their schools?

1.6 Significance of the Study

It was important that this study was undertaken since it would be the first of its kind to be conducted in high schools of Zambia. The study was significant primarily for its relevance to the current status of environmental education particularly in high schools of Zambia. The findings on the knowledge and attitudes of high school teachers might facilitate more effective environmental education in high schools of Zambia. The findings

might also add value to the existing knowledge and provoke other scholars to come up with more studies in this area.

My purpose in this study as the Chief Curriculum Specialist of the Curriculum Development Centre (CDC) of the Ministry of Education, the institution that is mandated to provide curriculum to schools in Zambia, was to come to some awareness regarding the level of understanding of high school teachers about environmental education and education for sustainability. The findings of the study would assist CDC and the Ministry of Education as a whole to redefine the policies on environmental education, integrate it in the high school curriculum as well as to shape future consultations with the training programmes of teacher training institutions such as UNZA, Nkrumah, COSETCO and NISTCOL, including the Provincial and District Resource Centres. Actions based on findings of this study could provide the high school learners with hands-on methodologies that would allow them to apply knowledge and skills to relevant, real world learning opportunities in their local communities.

1.7 Limitations of the Study

The study was limited to only 2 schools in Lusaka City due to financial and time constraints. This means that the findings may not be generalised to the entire country. Apart from this, the Focus Group Discussion was not used because the teachers were conducting Mock Examinations for Grades 9 and 12 and other end of term examinations at the time the data were being collected. Some specific recommendation for the future studies on this topic is made in the final pages of this dissertation, in chapter 7, arising from the failure to employ the Focus Group Discussion approach in the present study.

CHAPTER TWO

2.0 INSTITUTIONALIZATION OF ENVIRONMENTAL EDUCATION IN ZAMBIA'S TEACHER EDUCATION PROGRAMMES AT THE UNIVERSITY OF ZAMBIA

2.1 Teacher Training

The quality of a teacher has become a priority in both government and other educational institutions of Zambia. This demands for the reformation of the teacher education curriculum in order to equip the teacher trainees with appropriate methodologies and techniques that would help learners to acquire knowledge, attitudes and skills for lifelong education. High school is a very integral part of anyone's life. This is the time in which one begins to shape their friendships, relationships, goals and plans for their future. The individual experiences that shape the lives of learners are centrally dependent on the quality of the teachers.

In Zambia, the training of high school teachers is the responsibility of the University of Zambia, School of Education. Previously, programmes of the University did not have an environmental education component until recently when a minor degree programme in the BA Ed as well as a full fledged interdisciplinary major programme in environmental education was established as the Bachelor of Education (Environmental Education). The first year students of this programme reported for studies on 20th April, 2008. This means that all those who trained before the introduction of this EE programme do not have any

EE knowledge and skills to implement EE in high schools. This has, for a long time, denied the Zambian child in high school the potential benefits of environmental education. In a similar manner, a number of things had suffered in the process such as Zambia's development process, improvements to the state of the environment and the utilization of natural resources. In addition, health, nutrition, family planning, agriculture, forestry, tourism and industry may also have been negatively affected by lack of environmental education.

Insufficient training of high school teachers in environmental education remains the most critical constraint in the improvement of teaching methodologies. Lack of contemporary methodological approaches to environmental education which stress active learning across disciplines, and adaptation to local conditions, is a serious deficiency in Zambia's high schools and should be looked into urgently. Pre-service and In-service teacher training in environmental education should be a priority for the Ministry of Education. This calls for a strong guide on how to develop efficient and practical environmental education teaching modules using the local environment. Teachers must be confident and willing to incorporate environmental education programmes in their subjects. Therefore, teacher training in environmental education and problem solving methods are key to an improvement of environmental education in high schools of Zambia. This entails that Zambia's national policies on education should be strengthened in order for intervening institutions such as the Examinations Council of Zambia, the University of Zambia, the Curriculum Development Centre, Colleges of Education and the Department of Teacher Education to become accountable in the implementation of environmental education in

their institutions. These are key to the improvement of quality environmental education in high schools of Zambia.

2.2 Guiding Principles

This study on environmental knowledge, attitudes and practices of high school teachers is based on the underpinning UNESCO (1997) Thessaloniki Declaration and the United Nations (2005) Decade of Education for Sustainable Development 2005 - 2014 which have described environmental education not only as aiming at providing information about environmental issues but also enabling people to judge and choose environmentally responsible behaviours, environmental ethics concerned with the norm of such behaviour as well as perspectives and values that lie at the bottom of them. In this regard, environmental education is described in terms of education for sustainability. This idea establishes the framework that demonstrates that the goal of environmental education is that of improved quality of life for everyone through social, physical and economic impacts of development as well as ecological awareness. Education for sustainable development encourages a shift from viewing education as a delivery mechanism to a lifelong, holistic and inclusive process. It is believed that through education, human lifestyles can be achieved that support ecological integrity, economic and social justice, sustainable livelihoods and respect for all life. Through education human beings can learn to prevent and resolve conflicts, respect cultural diversity, create a caring society and live in peace. This entails that quality education becomes the centre of development and it demands for a teacher with quality. Therefore, the quality of a teacher becomes a priority that should be provided with appropriate environmental education methodologies and

techniques for high schools in order to increase academic achievements across subjects. As such the Zambian government should support environmental education and develop sound education for sustainable development policy frameworks and should demonstrate commitment to their implementation.

CHAPTER THREE

3.0 LITERATURE REVIEW

3.1 Understanding of Environmental Education and Sustainable Development

Many authors name the 1960s as the decade when environmental education (EE) started to develop in response to the world's growing awareness about environmental problems. Others believe that EE grew from movements that existed from the beginning of the last century, such as nature study, conservation and outdoor education. In general, the history of the development of the main terms and definitions of environmental education has been studied by different authors. According to Disinger (1983) the term, 'Environmental Education' appeared for the first time in 1948 at the meeting of the International Union for the Conservation of Nature and Natural Resources. Gough (1997), Palmer (1997, 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.

According to Stapp *et al.* (1969: 30), environmental education is “*a process aimed to produce a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems, and motivated to work toward their solution.*” It is noted that the definition as well as the main objectives of

environmental education were developed by Stapp and his graduate students at the Department of Resource Planning and Conservation, University of Michigan (MacGregor 2003). Among the goals of EE, according to Stapp *et al.* (1969) are, ‘ *the development of knowledge and understanding of biophysical environment, interrelations of all its components, awareness and concerns for environmental quality as well as the development of responsible behavior patterns*’.

On the other hand, one of the most widely accepted definitions of EE was given in the Tbilisi Declaration that was developed at the international conference of environmental educators, sponsored by UNESCO in 1977 (MacGregor 2003). There, environmental education was defined as “*a learning process that increases people's knowledge and awareness about the environment and associated challenges, develops the necessary skills and expertise to address the challenges, and fosters attitudes, motivations, and commitments to make informed decisions and take responsible action*” (UNESCO 1978).

According to the Declaration, environmental education was seen as a life-long process that was 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. However, MacGregor (2003) believed that the Tbilisi definition was based on the definition developed by Stapp *et al.* (1969) that has been given above, because of Stapp's influence in creating and shaping the Tbilisi EE conference.

Palmer (1997, 1998) gave another definition of environmental education that was slightly different from the other definitions. She defines EE as *“the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the interrelatedness among man, his culture and his biophysical surroundings.”* Like Stapp *et al.* (1969), Palmer stressed the importance of interconnections between man, his culture and nature. She said that EE should also include practice in decision-making processes, the development of self-cognition, the formation of environmental ethics and environmental behavior, and the development of skills for environmental assessment. In conclusion, Palmer said that the special feature of EE was that the knowledge of environmental laws and principles of functioning of the natural systems should be studied within the environment, which helped to develop practical skills and the ability to make an assessment of the state of the environment.

An analysis of the works of Klimov and Ukolov (1994), Palmer (1997, 1998), Stapp *et al.* (1969), Sterling and Cooper (1992), Volk and McBeth (1998), and others revealed that the goals, objectives, principles and content of environmental education had been clearly defined in many regional and international studies and official documents.

On the other hand, environmental education was a concept, although not widely used until the 1960s, which had been influenced by some of the great philosophers and educators of the 18th and 19th Century: Goethe, Rousseau, Humbolt, Haeckel, Froedel, Dewey and Montessori, to name a few (Palmer, 1998). Over time, the idea of

environmental education, as it could be explained, began to gain strength as the scientific methodologies became more refined. In doing so, the effects the human beings were having on the environment were discovered. Palmer (1998) points to the 1968 Biosphere Conference in Paris organized by the United Nations Educational, Scientific and Cultural Organization (UNESCO) as a critical point in the development of environmental education. The objectives of this conference were to define a meaning for environmental education as well as establishing curriculum materials for its instruction at all levels of education, the technical training of it, and promoting awareness of global and local environmental issues. The definition that was agreed upon as reported by the IUCN (1970) and now adopted as the classical definition is:

“Environmental education is the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among man, his culture, and his biophysical surroundings. Environmental education also entails practice in decision-making and self-formulation of a code of behaviour about issues concerning environmental quality.” (Palmer, 1998:7).

Another important date in the history of environmental education was that of the Earth Summit in June of 1992. The Earth Summit, as the United Nations Conference of Environment and Development was called, was held from June 3rd-14th in Rio de Janeiro, Brazil and it was here that environmental education and sustainability were brought to the forefront of global importance. This event in Rio generated a cornucopia of information as well as a number of major documents, the most important one being

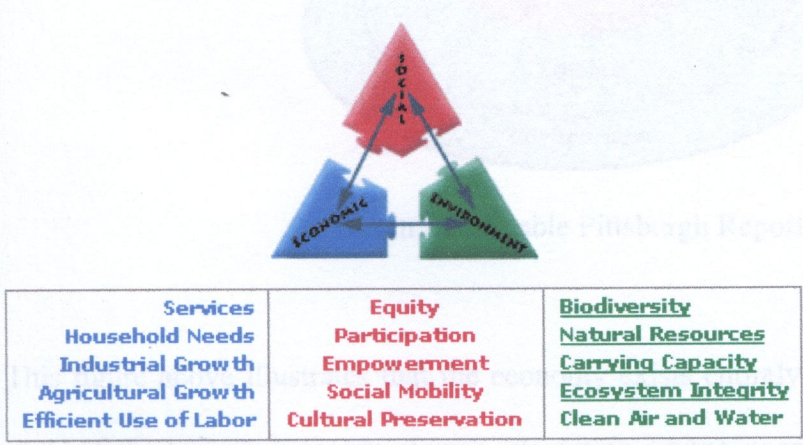
Agenda 21. This agreement outlined what nations should be doing in the 21st Century to achieve sustainable development (Palmer, 1998). Chapters in Agenda 21 that had implications for environmental education and sustainability were 25, on Children and Youth in Sustainable Development and 36, on Promoting Education, Public Awareness and Training.

Environmental Education has several definitions depending on the situation and context it is being used. We can then conclude that environmental education refers to organized efforts to teach about how natural environments function and, particularly, how human beings can manage their behavior and ecosystem in order to live sustainably. The term is often used to imply education within the school system, from primary to post-secondary. However, it is sometimes used more broadly to include all efforts to educate the public and other audiences, including print materials, websites, media campaigns, etc. Environmental Education enhances critical thinking, problem-solving, and effective decision-making skills, and teaches individuals to weigh various sides of an environmental issue to make informed and responsible decisions. This requires understanding of the need to achieve a balance between the environmental, social and economic development. Therefore teacher education is the key in meeting objectives for environmental education.

Apart from environmental education, there is also the concept of sustainable development that the teachers should understand in order to teach effectively. There are many definitions of sustainable development. However, there is one that became a landmark when it first appeared in report of the Brundtland Commission, 1987. This is,

“sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

Various people who are concerned about sustainable development suggest that meeting the needs of the future depends on how well present generation balance social, economic and environmental needs when making decisions. The diagram below is taken from the World Commission on Commission Environment and Development (The Brundtland Commission) report Our Common Future (Oxford: Oxford University Press, 1987), shows the relationships that are there among the three components of development and also the needs of each component:

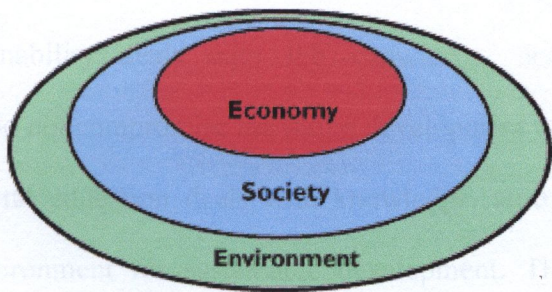


According to Wikipedia, “sustainable development is a socio-ecological process characterized by the fulfillment of human needs while maintaining the quality of the natural environment indefinitely.”

On the other hand the linkage between environment and development was globally recognized in 1980 when the International Union for the Conservation of Nature

published the World Conservation Strategy and the term sustainable development. The concept came into general use following publication of the 1987 report of the Brundtland Commission.

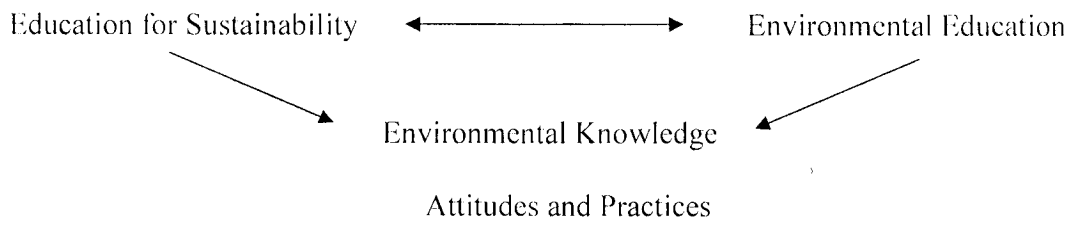
According to Kosar (2002) sustainable development as being “*rather than three partially connected circles, a better picture of a sustainable community is the circle within circles shown below:*



From Sustainable Pittsburgh Report

This figure above illustrates that the economy exists entirely within society because all parts of the human economy require interaction among people while the society exists entirely within the environment which provides the basic requirements such as water, air, and food that come from the environment as well as the energy and raw materials for other requirements. On the other hand, the environment surrounds society. Therefore, the society should never be larger than the environment.

As such, sustainability requires managing all households (individual, community national and global) in ways that ensure that the economy and society can continue to exist without destroying the natural environment on which all human beings depend.



The illustration above indicates that there are relationships among the three components. Education for sustainability deals with the knowledge, attitudes and skills on development that would not compromise the future development of the other generations, while the environmental education deals with knowledge, attitudes and skills on the protection of the environment for sustainable development. This means that human beings should be aware of the resources that they have around them and should use them for the fulfillment of their needs. However, their attitudes and the practices should be that of stewardship so that they continue to enjoy the fruits of their resources including the generations to come.

Environmental Education and Training Partnership (EETAP) with the help of Holsman of University of Wisconsin – Stevens Point of US conducted a focus group study during spring/summer of 2002. Focus groups were used to identify teachers’ perceptions about EE. The study was on the non science teacher perceptions of environmental education. The results indicated that no teachers articulated it as a process or associated it with educational goals. With a few exceptions, all of the teachers in the focus groups thought of EE more in terms of the first word ‘environmental’ than as the second word

'education'. This finding underscores the on-going need to build an identity for EE as an educational approach apart from environmental issues and environmentalism. This is necessary both to establish a clearer and more accurate understanding of what it is.

A similar study was carried out in selected Botswana secondary and high schools in 1992 in order to find out if teachers had environmental knowledge and they were asked to define the concept environmental education. The results showed that the teachers were able to discuss the environmental issues but could not define the term Environmental Education, making it very difficult to believe that they taught EE in the correct way. It was realized that the teachers needed in-service training programmes in environmental education while the pre-service lecturers needed training in order to integrate environmental education in their curriculum.

Another similar study was also conducted in Swaziland in 2005 by Mandla Mlipha and David Manyatsi to investigate the environmental knowledge of selected secondary and high school teachers. The results were similar to those in Botswana. The teachers were able to discuss environmental issues but could not define the term Environmental Education.

3.2 The Teaching of environmental education in High Schools

In an expanded definition, Le Grange (1999) adds an important qualifier to environmental education by introducing the concept of environmental education as a process, which allows for openness and inclusiveness which are omitted in the other definitions. Environmental education, as a process, leads to the consideration of qualitative dimension of environmental issues which involve things such as emotions, beliefs, aspirations, aesthetics and political issues. Collectively, these give rise to attitude where attitude is viewed as the mental or neural state of readiness, organised through experience exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related (Manyatsi, 1991).

Attitude is very important because it prepares one for a favourable response. Attitudes are shaped by, among other factors, experiences which, in turn, are activated in the presence of all objects and situations (Manyatsi 1991). Teachers, and even their students, may develop a particular attitude towards the environment which might have a bearing on the teaching/learning of environmental education in schools (attitude shaping behaviour). However, Wain *et al.* (1998) point out that there was very little predictive value for behaviour in the knowledge of environmental issues. They contended that an increase in environmental knowledge might not in itself influence behaviour. The building of knowledge, awareness and concern for the environment required a complex mechanism to bring about consequential changes in values, attitudes and behaviours. This was the dilemma the study encountered as it attempted to ascertain attitudes based on knowledge.

Nevertheless, knowledge appeared to have an influence on the attitudes of teachers towards the teaching of environmental issues. The problem was to develop an appropriate measure of not only the knowledge and attitudes but also the resultant behaviour. In the methodology they were compelled to rely on an instrument that required teachers to demonstrate their abilities to comprehend ecological facts as indicative of their levels of environmental knowledge, while Likert scales were used to give an indication of the teacher's attitudes towards teaching environmental issues. While socio-economic development was inevitable, it had to go with sustainability of the environmental resources. Therefore, the importance of teaching environmental education in schools becomes necessary because it is a vehicle for combating destruction of the environment.

3.3 Environmental Education Practices among High School Teachers

Environmental education practices are the outdoor activities which are for the development of knowledge through real-life experiences, and through active relationships. This implies the outdoor education which is defined by Knapp (1990) as *“the use of resources outside the formal school classroom to meet the educational goals and objectives”*. On the other hand, the Hammermans (1985) define such education as *“any educational experience which takes place in the outdoors”*.

Dewey insists that schools should reflect society, and education should be a continuous reconstruction of lived experiences, with the student as the central focus of teaching (Concise Columbia Encyclopedia 1991).

Environmental education practices have the following benefits:

- *Offer meaningful learning situations which should be an important part of every child's education.*
- *Provide an opportunity for direct learning experiences which can enrich the school curriculum in all subject areas.*
- *Stimulate students' curiosity and permit them to discover the excitement and satisfaction of learning out-of-doors.*
- *Enable pupils to develop new interests and skills which can provide a basis for a lifetime of creative living.*
- *Help them discover the important relationship that can and should exist between classroom instruction and outdoor learning.*
- *Give them a much broader knowledge of ecological principles and their relationship to our quality of life.*
- *Provide excellent opportunities to examine through personal experience many of our present social and cultural values.*
- *Help pupils to develop a better understanding of themselves, their teachers, and their total education,(Passmore 1972 p14).*

According to Resch (2002), an important benefit of using environmental education as a tool is that, *“it appeals to the students’ youthful sense of curiosity. With a vast number of budget cuts in most schools, using the outdoor classroom on campus can be an*

economical way to get students involved with a hands-on integrated outdoor learning experience they will not forget.”

CHAPTER FOUR

4.0 METHODOLOGY

4.1 Introduction

This chapter discusses the methodology used in the study. It gives the description of the research design, target population, sample size, sampling procedure, research instruments, data collection and methods of data analysis employed in the study. It also discusses the way data was interpreted.

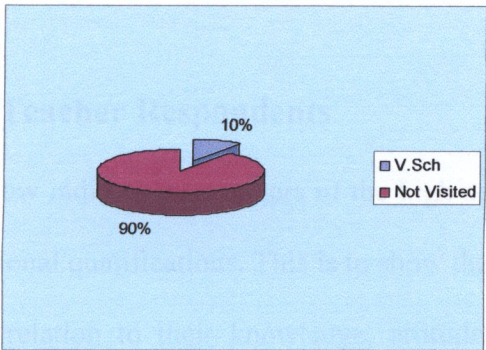
4.2 Design of Study

The study was a case study which employed a survey of the environmental knowledge, attitudes and practices of high school teachers, of 2 (10%) selected high schools out of 21 (90%) high schools in Lusaka City. The two schools were chosen because of their proximity to the researcher's operational station and that they had good representation of the required population. The study was conducted in the respondents' natural settings.

4.3 Target Population

The target population of this study comprised all the teaching and management staff in the 2 selected high schools in Lusaka City. Thus the administrators or head teachers and other teachers in these selected high schools formed the population. The representation of targeted schools is shown in figure 1 below:

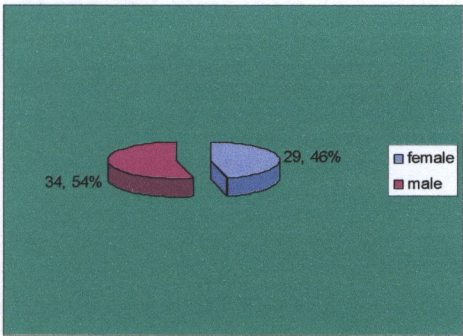
Fig 1 Target Population



4.4 Distribution of the Sample by Gender

The sample comprised 2 high schools, one of these was a government school while the other one was a PTA school in Lusaka City. The selection of schools was done purposively. Its distribution by Gender is as shown in figure 2 below:

Fig 2 Distribution of Sample by Gender



A total of 63 respondents (teachers and administrators), of which 54% male and 46% female, were available during this study and became the target population from the two selected high schools. The teachers filled in the questionnaires while the administrators were interviewed using interview schedules.

4.4 1 Distribution of Teacher Respondents

The distributions that follow indicate the teachers of the high school by gender, location and academic and professional qualifications. This is to show the type of teachers that the researcher dealt with in relation to their knowledge, attitudes and practices towards environmental education.

Table 1: Distribution of Teachers by Gender

Response	Frequency	Percentage
Females	27	45
Males	33	55
Total	60	100

The distribution in Table 1 shows that there were 27 female teachers representing 45% and 33 males representing 55% of the total number of teacher respondents who filled in the questionnaires.

Table 2: Distribution of Teachers by Location

Response	Frequency	Percentage
Government School	41	68
PTA School	19	32
Total	60	100

The table above shows that there were 41 teacher respondents representing 68% from the Government school and 19 teachers from PTA school representing a 32% of the total number of teacher respondents that filled in the questionnaires.

Table 3: Distribution of Teachers by Academic and Professional Qualification

Response	Frequency	Percentage
Degree	20	33
Diploma	40	67
Total	60	100

The table above shows that 20 teachers had degrees, representing 33% while 40 had only Diploma certificates, representing 67% of the total number of teacher respondents.

Table 4: Distribution of Teachers by Academic and Professional Qualification and Location

Qualifications	GRZ School		PTA School	
	Response	%	Response	%
Degree	8	20	10	53
Diploma	33	80	9	47
Total	41	100	19	100

The table above shows that the GRZ school had 8 teacher respondents with degrees, representing 20% while 33 representing 80% had only Diploma certificates. The situation

in the PTA school is different where 10 teacher respondents representing 53% had degrees while only 9 representing 47% had Diploma certificates (these are representation of the total number of teacher respondents for each location).

4.4.2. Distribution of Administrator Respondents

Distribution of Administrators by Gender, Location and Academic and Professional Qualifications

It was also important that the administrators too are given chance to provide information on environmental education since they supervised and advised their teachers on professional issues. Therefore, the distributions of administrators by gender, location academic and professional qualifications became cardinal to this research.

Table 5: Distribution of Administrators by Gender

Response	Frequency	Percentage
Female	2	67
Male	1	33
Total	3	100

The table above shows that there were three administrators of which 2 were females representing 67% and 1 were male representing 33% of the total number of administrator respondents.

Table 6: Distribution of Administrators by Location

Response	Frequency	Percentage
GRZ School	1	33
PTA School	2	67
Total	3	100

The table above shows that there was 1 head representing 33% from GRZ school and 2 heads from PTA school representing 67% of the total number of administrator respondents.

Table 7: Distribution of Administrators by Academic and Professional Qualifications

Response	Frequency	Percentage
Degree	3	100
Diploma	0	0
Total	3	100

The table above shows that all the 3 administrator respondents had degrees, representing 100% of the total number of respondents.

4.5 Sampling Procedure

Purposive sampling was used to select the high schools that were used in this study. Convenient sampling was also used in the selection of the high schools for the study. This

entails that all the teachers and heads that were available in the selected high schools at the time of data collection constituted the sample.

4.6 Research Instruments

A questionnaire was used to collect the necessary data from teachers. An Interview Schedule was also used to collect data from the heads. Observation sheet was also used to determine the practices that resulted from the teaching of environmental education. Secondary data were obtained from available records and other literature on similar studies.

4.7 Data Collection

The study was primarily a questionnaire survey involving only qualified high school teachers, possessing either diploma and/or degrees in their respective disciplines, as respondents. The questionnaire was complemented with interviews of school heads and observation. The data collected were mainly qualitative data. It was estimated that there were around 20 high schools in Lusaka. A sample of 2 schools was selected because of time and financial constraints. Both schools were urban.

The questionnaire survey: The questionnaire survey focussed on the acquisition of data from all subject teachers in the sampled schools. The questionnaire was completed by the teachers in the presence of and assisted by the researcher. The questionnaire was divided into five parts. The first part covered background information about the teachers,

including their gender, qualification and major subjects studied. The second part dealt with the teachers' understanding of the concept of environmental education. The third part dealt with the teachers' knowledge of environmental issues. The fourth part dealt with the teachers' attitude towards the teaching of environmental issues. This part of the questionnaire sought to ascertain the aspects of attitudes which involve primarily the feelings and emotions of persons. The last part dealt with environmental practices undertaken in the various high schools.

Interviews: The key informants were mainly the head teachers of the sampled schools. Head teachers are decision makers in the schools, especially where academic matters are concerned. Deputy Head-teachers were interviewed in the absence of head teachers. Key topics covered in the interviews included school policies on environmental education as well as the role and contribution of the school administration towards the undertaking of environmental activities.

Observations: Observations were guided by a check list which facilitated the collection of data pertaining to environmental activities undertaken in the schools. The activities observed included incidence of litter around school premises; maintenance of vegetation around school and other relevant activities.

The researcher got permission from the District Education Board Secretary (DEBS) before going to the selected schools. When authority was granted by the DEBS the researcher went to the selected schools. Questionnaires were distributed to all the teachers available and the teachers were given ample time to fill them in. The interviews were conducted according to the appointments made with the heads. The researcher also

went round the school premises to observe any activities related to environmental education.

4.8 Data Analysis

The data were analysed following qualitative data reduction procedures, processes and categorisation as propounded by Huberman (1984). The treatment of data involved the following procedures: selection and categorisation of data into various classes; thereafter the data were coded to allow for tallying of the responses and to establish frequencies of the responses presented. Frequency charts were produced to allow for the presentation of data as percentages using tables. Analysis of the data was conducted to make sense of it without imposing any expectations of the responses (Patton 1987). Categories were formulated from the raw data so that responses that were similar or were of the same underlying conceptual framework were put together. Quotations and or descriptions of the data that typify the same categories provided evidence of the developed conceptual framework. Frequency distributions of similar concepts were compiled to show the frequency of concepts that appeared in the responses of the respondents. To validate the data, a summary report of the findings was given to four of the original respondents to obtain feedback on whether the summary was an accurate version of the responses of the respondents.

4.9 Data Interpretation

Qualitative data was interpreted by use of categories and thematic areas.

4.10 Research Ethics

The respondents were assured that the information they gave out would be treated with confidentiality before the research activities were carried out. Therefore, they filled the questionnaires and also answered the question on the Interview Schedule with trust and confidence.

CHAPTER FIVE

5.0 PRESENTATION OF RESEARCH FINDINGS

This chapter presents the findings of the study. The findings from the teachers are presented first followed by those from the administrators or managers. The findings are qualitative and are presented in both figures and narrative form. These findings are then discussed in this chapter. Conclusions and recommendations are then presented in chapter six.

5.1 Definition of Concepts by Teachers

5.1 Distribution of Teachers by Definition of Concepts

The level of knowledge of environmental education was estimated with the help of a set of open ended questions requiring the teachers to define the concept of environmental education. The distributions are shown in Tables 8 and 9.

Table 8 Distribution of teachers by Environmental Education Concept

Teacher by EE Concept	Frequency	Percentage
Yes	49	82
No	11	18
Total	60	100

The teacher respondents were asked to indicate whether they had or had not head about environmental education and were asked to define it. The findings showed that 82% of the teacher respondents had heard about the concept environmental education while 18%

indicated that they had not heard about this concept. However, 90% of total number of those that had heard about it, were not able to define it when they were asked to do so while only 10% of the same group had just tried to talk about the characteristics of the concept.

Table 9 Distribution of Teachers by Sustainable Development Concept

Response	Frequency	Percentage
Yes	50	71
No	14	20
No Response	6	9
Total	60	100

The teacher respondents were asked to indicate whether they had head about sustainable development and were asked to define it. The findings revealed that 71% of teacher respondents indicated to have heard about sustainable development, 20% had not heard about it while 9% did not respond. However, when asked to define the concept of sustainable development, 87% of total number of the teacher respondents who had said they had heard about it, were not able to while 13% were able to give closer description of the concept.

5.2 The Teaching of Environmental Education in High Schools

5.2.1 Recognition Environmental Education in School

The respondents were asked to indicate whether Environmental Education was recognised at their schools by answering Yes or No. The findings revealed that this field was not recognised by teachers as evidenced by 67% of teacher respondents who marked

No, while 33% marked Yes. The common reason for not recognising it was that the curriculum was overloaded. The distribution in Table 10 shows this negativity:

Table 10 Distribution of teachers by recognition of EE

Response	Frequency	Percentage
Yes	20	33
No	40	67
No Response		
Total	60	100

5.2.2 The Importance of Teaching Environmental Education in High Schools

The respondents were asked to indicate whether it was necessary or not to teach environmental education in high schools. The findings revealed that 85% of teacher respondents said it was necessary that Environmental Education should be taught in schools, 12% did not see any importance of teaching it while 3% did not indicate. The common reason given for teaching environmental education was that the pupils should be made aware of their environment and their responsibility to it. The distribution of teachers by the importance of EE in high schools is shown in Table 11 below:

Table 11 Distribution of Teachers by Importance of EE in High Schools

Response	Frequency	Percentage
Yes	51	85
No	7	12
No Response	2	3
Total	60	100

5.2.3 Experience in the Teaching of Environmental Education

This question on the experience of the teachers teaching EE in high schools was aimed at finding out if these respondents had at one time taught environmental education. The findings revealed that only 33% had taught environmental education while 60% had never taught it and 7% did not indicate anything. The main reason advanced by those who had never taught environmental education was that it was not part of the curriculum. The distribution of teachers by experience is shown in Table 12 below:

Table 12 Distribution of teachers by Experience in Teaching of EE in High Schools

Response	Frequency	Percentage
Yes	20	33
No	36	60
No Response	4	7
Total	60	100

5.2.4 Integration of Environmental Education in Subject Areas

The teacher respondents were asked to indicate whether it was possible or not to integrate environmental education in their subject areas. The findings revealed that 85 % teacher respondents indicated that it was possible to integrate environmental education in their subject areas while 10% indicated that it was not possible and 5% did not even indicate. Most of the respondents said that it was possible to integrate environmental education in their subject areas through incorporating environmental issues in the syllabuses. Table 13 below shows the distribution of these findings:

Table 13 Distribution of Teachers by Integration of EE in High School Subjects

Response	Frequency	Percentage
Yes	51	85
No	6	10
No Response	3	5
Total	60	100

5.2.5 Identification of Environmental Issues in High School subjects

The respondents were asked to indicate if they would or not be able to identify environmental issues that could be integrated in their subjects. The findings indicated that 82% agreed that there were issues that could be integrated in their subject areas while 10% indicated that they could not integrate any issues and 8% did not indicate anything. The distribution of the findings is shown in Table 14 below:

Table 14 Distribution of teachers by Identification of EE Issues

Response	Frequency	Percentage
Yes	49	82
No	6	10
No Response	5	8
Total	60	100

5.2.6 Environmental Education as Part of the School Curriculum

The teacher respondents were asked to indicate their opinions on the importance of environmental education in the curriculum. Some of the opinions given were as follows:

- it is cardinal that pupils have knowledge about their environment
- it is vital to change the mindset of the learners to treasure the environment
- it is an integral part of the learning process
- it will enable learners to acquire relevant knowledge of the environment
- the need to protect the environment
- environmental education prepared the learners to understand their environment and its proper management.

5.2.7 Sensitization in Environmental Education

The teacher respondents were asked to indicate whether they had or had not received any form of sensitization in environmental education. The findings revealed that 80% of teacher respondents had received some sensitization, 14% did to receive any sensitization while 6% did not indicate anything. The findings also revealed that most of the respondents got the information about environmental education from the media and Chongololo Club. The distribution of the responses is as follows:

Table 15 Distribution of Teachers by Sensitization

Response	Frequency	Percentage
Yes	48	80
No	8	14
No Response	4	6
Total	60	100

5.2.8 Need for Training in Environmental Education

The teacher respondents were asked to indicate whether or not they needed training in environmental education. The findings revealed that 68% of the respondents indicated that they needed training and indicated the type of training they needed, such as diploma in environmental education, degree in environmental education, certificate in sustainable development and orientation on environmental issues. 22% indicated that they did not need any training while 10% did not indicate at all. Table 16 below shows the details of the distribution:

Table 16 Distribution of Teachers by Need for Training

Response	Frequency	Percentage
Yes	41	68
No	13	22
No Response	6	10
Total	60	100

5.3 Environmental Education Practices or Activities at School

The level of participation in environmental education for both the teachers and the learners was established through a set of open ended questions requiring the teacher respondents to indicate if there were any environmental activities in their schools and if they participated in these activities. The findings revealed that 56% of the teacher respondents indicated that there were no environmental activities that were taking place in their schools, 42% indicated that there were environmental activities while 2% did not

indicate anything. Furthermore, the findings revealed that 50% of the teacher respondents did not participate in the environmental activities, 40% indicated that they participated in these activities while 10% did not respond.

5.3.1 Environmental Education Activities Initiated at School

A question was asked as to whether or not there were any related environmental activities that were initiated at the school. The findings revealed that 56% of the teacher respondents indicated that there were no environmental activities initiated at their schools, 42% indicated that there were environmental activities and 2% did not indicate anything. The most common activities mentioned were tree planting and garbage collection.

Table 17 Distribution of the teachers by Initiated EE Activities

Response	Frequency	Percentage
Yes	25	42
No	34	56
No Response	1	2
Total	60	100

5.3.2 Benefits of EE Activities to School, Teachers, Pupils and Communities

The question was whether or not different categories of people in the school and around the school benefited from the environmental activities initiated by schools. The findings indicted that where there were environmental activities the school benefited by having a clean environment. The teachers were teaching in an environment that was conducive.

The learners were learning in an environment that was conducive and the communities had clean surroundings.

5.3.3 Participation of Teachers in EE Activities

The teacher respondents were asked to indicate whether or not they were involved in the environmental activities. The findings indicated that 50% of the respondents were not involved in the environmental activities, 40% were involved in these activities while 10% did not indicate anything. However, this negativity was more in the GRZ school while for the PTA school the results were positive. This representation is shown in Table 18 below:

Table 18 Distribution of Teachers by Participation in EE Activities

Response	Frequency	Percentage
Yes	24	40
No	30	50
No Response	6	10
Total	60	100

5.3.4 Improvements on Particular Environmental Education Activities

The question on possible improvements to environmental education activities attempted to find out if the respondents had other ideas that could help to improve the environmental activities for the benefit of different categories of people both in the schools and surrounding communities. The findings revealed that teacher respondents had an understanding of their environmental issues and brought out a lot of ideas of improving environmental activities, such as, recycling of plastic papers, and newspapers,

planting of more fruit trees than ordinary trees, involvement of associations from the local communities and holding seminars for both teachers and pupils.

5.3.5 Suggestions for Environmental Education at School Level

The question on suggestions on environmental education at school level was aimed at finding out if the respondents had any suggestions on the improvement of the delivery of Environmental Education at school level. The findings indicated that the respondents were aware of many things that could be done in order to improve the teaching of environmental education and some of the suggestions were as follows:

- Establishment of environmental education clubs.
- Organisation of workshops and seminars for staff and pupils.
- Giving each class an area to take care of.
- Incorporation of Environmental Education in subject areas.
- Recycling of products from manufacturers.

5.3.6 Suggestions to Curriculum Development Centre on Environmental Education

The question on suggestions to Curriculum Development Centre about environmental education was trying to find out if the teacher respondents could make any suggestions on the subject to the Centre on Environmental Education in order to improve its delivery. The findings on this were that:

- CDC should highlight specific areas of the subjects where EE can be integrated.

- CDC should include the subject in the school curriculum.
- EE should be a compulsory subject on its own to be taken by all pupils
- Introduction of projects for EE both at school and in the communities.
- EE to be made an examinable subject.

5.4 Definition of Concepts by Administrators

The level of knowledge on environmental education was estimated with the help of a set of open ended questions requiring the managers to define the concept of environmental education orally. It should be noted that there were three managers that were available during the interview period of whom one was from GRZ School while the other two were from PTA school (Head and Superintendent). The findings showed that 100 % had heard about the concepts environmental education and sustainable development. However, they failed to define the concepts correctly. They only brought out the environmental issues that they had heard about. The distribution of findings is shown in Table 19 below:

Table 19 Distribution of Administrators by Definition Concepts

Response	Frequency	Percentage
Yes	3	100
No	0	0
No Response	0	0
Total	3	100

5.5 The Teaching of Environmental Education in High Schools

5.5.1 The Teaching of Environmental Education in High Schools

This question on the teaching of environmental education in high schools aimed at finding out if the administrator respondents accepted the idea of teaching environmental education based on its importance. The findings revealed that 100% of administrator respondents knew the importance of teaching environmental education in schools and said it was necessary that it should be taught in schools. The distribution of the administrators is shown in Table 20 below:

Table 20 Distribution of Administrators by Importance of Teaching EE in High Schools

Response	Frequency	Percentage
Yes	3	100
No	0	0
No Response	0	0
Total	3	100

5.5.2 Experience in Teaching Environmental Education

This question on the experience in teaching environmental education aimed at finding out if these administrator respondents had at one time taught environmental education. The findings revealed that 100% of the respondents had not taught environmental education. The distribution is shown in Table 21 below:

Table 21 Distribution of Administrator by Experience in Teaching EE

Response	Frequency	Percentage
Yes	0	0
No	3	100
No Response	0	0
Total	3	100

5.5.3 Integration of Environmental Education in Subject Areas

This question on the integration of environmental education in subject areas aimed at finding out if it was possible for the respondents to integrate environmental education in their subject areas. The findings revealed that 100% appreciated the importance of environmental education and indicated that it was possible to integrate environmental education in various subject areas. Table 22 below shows this distribution:

Table 22 Distribution of Administrators by Integration of EE in Subject Areas

Response	Frequency	Percentage
Yes	3	100
No	0	0
No Response	0	0
Total	3	100

5.5.4 Identification of Environmental Issues in High School subjects

The idea behind this question on identification of environmental education was to find out if the administrator respondents would be able to identify environmental issues that could be integrated in their subjects of specialisation. The findings indicated that 100% of the respondents said that there were issues that could be integrated in their subjects of specialisation. They said that though they had stopped teaching, they would still manage to influence the integration of environmental education in their subjects of specialisation and other subjects at large. They mentioned a lot of issues that could be integrated, such as pollution, environmental degradation, garbage collection and disposal and looking after the environment generally. The distribution is shown in Table 23 below:

Table 23 Distribution of administrators by Identification of EE in High School Subjects

Response	Frequency	Percentage
Yes	3	100
No	0	0
No Response	0	0
Total	3	100

5.5.5 Environmental Education as Part of the School Curriculum

The question about environmental education in the school curriculum sought the opinion of the administrator respondents over the importance of environmental education in the curriculum. There were many reasons given in response to this question by the respondents, such as the following:

- it contributes to quality of life
- it hinges on development
- it promotes academic excellence and holistic education

5.5.6 Sensitization in Environmental Education

This question on whether administrators were or were not sensitized in environmental education, attempted to find out if the administrator respondents had received any form of sensitization in environmental education. The findings revealed that 67% indicated that they had received some sensitization from the media and Chongololo Club of the Air while 33% had not received any training. Table 24 below shows the distribution of administrators:

Table 24 Distribution of Administrators by Sensitization

Response	Frequency	Percentage
Yes	2	33
No	1	67
No Response	0	0
Total	3	100

5.5.7 Need for Training in Environmental Education

The question on the need for training in environmental education, attempted to find out whether the administrator respondents wanted training in environmental education. The findings revealed that (3) 100% indicated that they needed training in the management of environment. The distribution is shown in Table 25 below:

Table 25 Distribution of Administrators by Need of Training

Response	Frequency	Percentage
Yes	3	100
No	0	0
No Response	0	0
Total	3	100

5.6 Environmental Education Practices or Activities at School

The level of participation in environmental education for administrators was established through a set of open ended questions requiring them to answer orally if there were any environmental activities in their schools and if they participated in these activities. The findings showed that 100% of the 3 administrator respondents indicated that there were a lot of environmental activities that were taking place in their schools such as cleaning surroundings, tree planting, garbage collection and disposal. The respondents added that the activities were initiated by the administration to maintain the surroundings and to keep them clean all the time. Most of these activities were supervised by administrators though the other staff also had chances to supervise some activities, such as tree plating and classroom cleaning.

5.6.1 Environmental Education Activities Initiated at School

This question on environmental education activities initiated at school aimed at finding out if there were any related environmental activities that were initiated at the school. The findings revealed that 100% of the 3 administrator respondents indicated that there were

environmental activities initiated at their schools, such as tree-planting, keep Lusaka clean and garbage disposal. The distribution is shown in Table 26 below:

Table 26 Distribution of Administrators by Initiated EE Activities

Response	Frequency	Percentage
Yes	3	100
No	0	0
No Response	0	0
Total	3	100

5.6.2 Benefits of EE Activities to School, Teachers, Pupils and Communities

The question on the benefits of EE activities to various categories of people, aimed at finding out how different categories of people in the school and around the school benefited from the environmental education activities initiated by schools. The findings indicated that the school benefited by having a clean and better environment while the teachers and pupils had clean classrooms where teachers taught in an environment that was conducive. The communities also had clean surroundings.

5.6.3 Degree of Participation of Teachers in EE Activities

The question on the participation of teachers in EE activities was aimed at finding out from the administrators whether the teachers were involved in the environmental activities. According to the 3 administrators, representing 100% of the administrator respondents said that teachers were involved in the environmental activities, especially during special events like tree planting, keep Lusaka clean and many others. The representation is shown in Table 27 below:

Table 27 Distribution of Administrators by Participation of Teachers in EE Activities

Response	Frequency	Percentage
Yes	3	100
No	0	0
No Response		0
Total	3	100

5 6 4 Improvements on Particular Activities

The question on improvements to EE activities, attempted to find out if the administrator respondents had other ideas to improve the environmental activities for the benefits of different categories of people both in the school and those communities that surround the school. The findings revealed that different respondents had different ideas, such as, recycling of plastic papers, bottles and newspapers, planting of more trees involvement of associations from the local communities and holding sensitization workshops for both teachers and pupils.

5.6.5 Suggestions to the School on Environmental Education

The question on suggestions regarding improvements to environmental education at school level, was aimed at finding out if the administrator respondents had any suggestions on the improvement of the delivery of Environmental Education at school level. The findings were as follows:

- Establishment of environmental education clubs.
- Organisation of workshops for staff and pupils on environmental education.

- Incorporation of environmental Education in subject areas.
- Recycling of products from manufacturers.

5.3.6 Suggestions to Curriculum Development Centre on Environmental Education

The question on suggestions to CDC on EE was aimed at finding out if the administrator respondents could make any suggestions to the Curriculum Development Centre on Environmental Education in order to improve its delivery. The respondents felt that:

- CDC should include it in school curriculum as a study area.
- EE should be an examinable subject.
- CDC should look for scholarships for teachers to go to colleges and universities to study in this area.
- CDC should also conduct environmental education training sessions for high school teachers.
- CDC should develop materials in this area since it was a new area.

CHAPTER SIX

6.0 DISCUSSION OF THE FINDINGS

This chapter discusses the findings of the study in the sequence they have been presented in chapter 5. The study tried to provide answers to this general research question: ‘What is the state of knowledge of environmental education among teachers of selected high schools of Lusaka in Zambia?’ In order to address this general question, the study sought answers to the following specific questions:

- What level of knowledge regarding environmental education and sustainable development did high school teachers in the City of Lusaka have?
- What were the teachers’ attitudes towards environmental education?
- What type of environmental education activities had high school teachers in Lusaka City initiated within their schools

6.1 Definition of Concepts by Teachers

The level of knowledge of environmental education was estimated with the help of a set of open ended questions requiring the teachers to define the concept of environmental education. The findings showed that 82% had heard about the concept of environmental education while 18% had not heard about this concept.

On the other hand, 71% of teachers indicated to have heard about sustainable development, 20% had not heard about it while 9% did not respond.

However, the majority of the teachers that had indicated that they had heard about environmental education and sustainable development failed to define the two concepts instead they only talked about the environmental issues and did not know the relationship between them. This indicated that the majority of teachers demonstrated a high level of knowledge in environmental issues rather than the concepts of environmental education and sustainable development.

Few teachers that indicated that they had heard about the concepts and managed to provide closer definitions were those that taught subjects that had some topics of environmental issues, such as Geography, Science, Civic Education, Mathematics, Agriculture, Physics and Chemistry. It was noted that male teachers dominated the science subjects, including Maths and Geography at Lake Road PTA School while the situation was different at Libala GRZ School where more women taught the science subjects.

It should also be observed that the high level of environmental knowledge demonstrated by teachers raised some questions and doubts, particularly on its relevance pertaining to environmental education. This observation stemmed from the fact that the same teachers who demonstrated a high level of environmental knowledge failed to define environmental education, which indicated a sharp difference between mere knowledge of environmental issues and understanding of environmental education. It appeared that teachers knew a lot about the environment but less about environmental education. This implied that there is need to enhance the knowledge base among teachers on aspects of

environmental education because if it was taught in the traditional way, then it was not used as a tool to make learners develop the knowledge, skills and attitudes as expected.

Notably, the level of environmental knowledge was comparably the same between degree holders and non-degree holders. The data indicated that the level of environmental knowledge was quite high among high school teachers in Lusaka. This was an indication that there was potential for environmental education in the schools if environmental education were to be formalised.

However, the fact that there was still a good number of the teachers who did not have environmental knowledge indicated that teachers were not well equipped to deliver environmental lessons and activities in a meaningful way.

In comparing the level of environmental knowledge according to subject specialisation, the results indicated that science teachers were more knowledgeable than non-science teachers. The fact that science teachers did better in defining environmental education than non-science teachers was not surprising at all since environmental education involved a number of scientific concepts and methods of learning and enquiry. Moreover, teachers of subjects such as chemistry, biology, geography, and agriculture science were more exposed to environmental issues and concepts in their tertiary education than teachers of non-science subjects. Non-science teachers, except civic education, might not even identify themes that could carry environmental issues in their subject areas since they were not exposed during their training at the college or university.

6.2 The Teaching of Environmental Education in High Schools

85% of teacher respondents were found to have positive attitude towards the environmental teaching in schools. Moreover, teachers of science-based subjects demonstrated a more positive attitude towards the teaching of environmental issues compared to teachers of non-science subjects. However, 12% of the respondents were found to be negative while 3% did not indicate anything. Reasons for the positive attitudes might be attributed to national environmental campaigns by environmentalists.

6.2.1 Recognition of Environmental Education in High Schools

The respondents were asked to indicate whether Environmental Education was recognised at their schools by a Yes or No answer. The findings revealed that this field was not recognised by teachers as evidenced by 67% of teacher respondents who marked No while 33 marked Yes. The common reason for not recognising it was that the curriculum was overloaded. This showed lack of knowledge and skills among high school teachers. That was why they did not teach it. They felt that since it was not part of the curriculum it was not important. The other assumption could be that EE was not recognised on the basis that it was not examined. It should be noted that the present curriculum was examination oriented and anything that was not examined was not important. There were also no strategies put in place to reinforce the education policy on teaching of environmental education in high schools.

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6.2.2 The Importance of Teaching Environmental Education

The respondents were asked if it was necessary to teach environmental education in schools. This was to find out if they understood the importance of teaching Environmental Education in schools. The findings revealed that 85% respondents said it was necessary, 12% did not see any importance of teaching it while 3% did not indicate their view.

On the overall, teachers demonstrated a strong positive attitude towards the teaching of environmental issues. This augured well with environmental education, particularly since the positive attitudes were complemented by high levels of environmental knowledge among the teachers.

The comparison of attitudes according to subject specialisation also portrayed differences in attitudes towards the teaching of environmental issues between teachers of science-based disciplines and non-science disciplines. It might be observed again that teachers of science-based disciplines interact more with environmental issues in their academic life than teachers of non-science disciplines. Therefore, the interactions with environmental issues throughout their academic lives had shaped their attitudes and led them to appreciate the environment as a significant entity supporting life.

Some of the reasons advanced by the respondents on the need to teach environmental education in schools were as follows:

- the pupils should be made aware of their environment and their responsibility to it.
- the pupils should be taught how to appreciate their environment.
- the pupils should learn to protect their environment for sustainable development.
- the pupils should understand the environmental issues and the significance of biodiversity.
- the pupils should learn the relationships among organisms and their dependence on the resources and learn how to use the available resources.
- pupils should understand that the resources are not only for one generation.

Once again there were no gender disparities in the attitudes towards the teaching of environmental education.

6.2.3 Experience in Teaching of Environmental Education at High School

The respondents were asked to indicate if they had at one time taught environmental education. The findings revealed that only few (33%) had taught environmental education while the majority (60%) had never taught it and 7% did not indicate anything. Those who indicated that they taught environmental education said that they had been teaching it from engagement because the topics were found in their subject areas. These were mostly those who teach science subjects. On the other hand, those who indicated that they had never taught EE said that it was not part of the syllabuses in their subject areas. Mostly these respondents were those that were teaching non-science subjects. This

implied that these teachers lacked knowledge and skills to teach environmental education since they did not do it at college level when they were training.

6.2.4 Integration of Environmental Education in Subject Areas

Teacher respondents were asked to indicate if there was a possibility of integrating environmental education in their subject areas. The findings revealed that the majority of the respondents (85%) indicated that it was possible to integrate environmental education in their subject areas. On the other hand, few (10%) indicated that it was not possible while 5% did not even indicate anything. Most of these who said it was not possible to integrate in their subjects, These were those who did not even understand environmental education. Therefore, training was necessary for high school teachers to enhance their teaching skills and techniques.

6.2.5 Identification of Environmental Issues for Integration in Subjects

The study revealed that respondents were able to identify environmental issues that could be integrated in their subjects. The findings indicated that 82% agreed that there were issues that could be integrated in their subject areas. Most of the issues that were brought out by the respondents were as follows: disposal of non-degradable equipment, deforestation, pollution, degradation of land, radiation, global warming, garbage collection and disposal, reforestation, planting of trees, sanitation and disposal of domestic and industrial waste. 10% of the respondents indicated that they could not integrate any issues maybe because the syllabuses for these areas did not bring out environmental issues or maybe they were not aware that they were supposed to integrate

environmental education in their subject areas. 8% of the respondents did not indicate anything implying that maybe they did not know what to do. As already alluded to, those that were negative were those that taught non-science subjects who could have not been exposed to environmental education at the training institutions

6.2.6 Environmental Education as Part of the School Curriculum

The study revealed many reasons for environmental education to be part of the school curriculum. The reasons given by the respondents about the environmental education as part of school curriculum were as follows:

- Environmental education prepared the learners to understand their environment and its proper management.
- It had more positive contributions to quality life.
- It evolved around our lives and hinges on development.
- It promoted entrepreneurship in the learners.
- It helped both the learners and teachers to be aware of the environment as the basis of all human activity and life.
- It educated the learner holistically.
- It nurtured learners to see value in the environment.
- It enabled the learners to acquire relevant knowledge, skills and attitudes about the environment.
- It was an integral part of the learning process.

The reasons given above were in line with the purposes of environmental education. Therefore, most teachers were knowledgeable of the environmental education, though they still needed to be given more skills of handling environmental education lessons.

6.2.7 Sensitization in Environmental Education

The study revealed that the majority of the respondents (80%) had received some form of sensitization. On the other hand, few (14%) did not receive any sensitization while 6% did not indicate anything. For those who had received some form of training, the institutions that trained them included, the media, Chongololo Club of the Air, WWF, colleges of education and the University of Zambia. Although the results for both the schools (PTA and GRZ) looked good when they were added together, those for the latter were not so good. There was a disparity between the PTA School and the GRZ School in that the majority of the teachers at the PTA School were trained in environmental education while the majority in the GRZ School, did not receive any kind of training. This means that there was still a lot to be done for GRZ schools in terms of training in environmental education.

6.2.8 Need for Training in Environmental Education

The majority of respondents (68%) indicated that they needed training in environmental education. This was an indication that teachers acknowledged the fact that they still lacked the knowledge and skills of environmental education even though they knew a lot about environmental issues that affected them. This meant that despite the knowledge that teachers had about environmental education they could still not teach environmental education as expected. This could be attributed to the preparation of these teachers at the college where traditional methodology and techniques were still being used. On the other hand, 22% indicated that they did not need any training and most of these were those that were teaching non-science subjects and did not see any need to have the knowledge and

skills in this area. 10% did not indicate at all, indicating that either they did not know the value of environmental education or they thought that it did not affect them. Hence, the need for training programmes for teachers in order to enhance their knowledge and skills and also to develop positive attitudes towards environmental education.

6.3 Environmental Education Practices or Activities at School

A large proportion of data on environmental practices and activities was acquired through a check list of the activities, while the last section of the questionnaires also solicited data on environmental practices in the sampled schools. Quite a number of environmental practices were identified in the schools. However, the most popular practices identified included clean-up campaigns, picking up of litter and tree planting. The most popular activity mentioned and observed in the two sampled schools was the cleaning of school premises, involving mainly collection of litter and other refuse materials. This activity, however, did not carry much environmental significance to teachers and pupils. The environmental agenda was, however, demonstrated in the planting of vegetation in school premises.

The level of participation in environmental activities by the teachers was established through a set of open ended questions requiring the teachers to indicate if there were any environmental activities in their schools and if they participated in those activities.

6.3.1 Environmental Education Activities Initiated at School

There was a great divergence in responses of the teachers from the two sampled schools. While 95% of those of the PTA school indicated that there were environmental education activities at their school, the majority of the GRZ ones (66) said there were no such activities at their school.

The reason could be that the teachers in the government school did not actually initiate any environmental activities since the majority were not teaching environmental education and the few that were teaching some topics taught it in the traditional way and, therefore, there were no such activities at their school. There were only routine activities that were taking place at the school, such as cleaning of the surroundings of the school and picking litter, which were done mostly by workers. This indicated that the 34% who indicated that there were environmental activities meant the routine activities which they sometimes supervised when the pupils were involved in cleaning up the area. As for, the PTA school teachers, almost all of them indicated that there were environmental activities and yet they meant routine activities except for the tree planting which the school had initiated because of the sensitization teachers had received from the media and WWF. However, the potential for the teaching of environmental education was there since most of the teachers were aware of it. This points to the fact that the knowledge, skills and positive attitudes towards environmental education were essential for our schools, hence the need for in-service and pre-service training of teachers in environmental education so that both teachers and pupils appreciate their environment in order to solve some of the environmental issues at their school and in their communities.

6.3.2 Benefits of EE Activities to School, Teachers, Pupils and Communities

The study aimed at finding out how different categories of people in the school and around the school benefited from the environmental activities initiated by schools. The findings indicated that at the PTA school, where there were one or two environmental education activities, the school benefited by having a good image, an attractive and clean environment, the teachers were healthy and who taught in a clean environment and healthy the pupils who learnt in clean environment. The communities also had clean surroundings, hence healthy people. Passmore (1972:14) said that the environmental activities had a lot of benefits for learners. Some of them were as follows:

- *“Offer meaningful learning situations which should be an important part of every child's education.*
- *Provide an opportunity for direct learning experiences which can enrich the school curriculum in all subject areas.*
- *Stimulate students' curiosity and permit them to discover the excitement and satisfaction of learning out-of-doors.*
- *Enable pupils to develop new interests and skills which can provide a basis for a lifetime of creative living.*
- *Help them discover the important relationship that can and should exist between classroom instruction and outdoor learning.*
- *Give them a much broader knowledge of ecological principles and their relationship to our quality of life.*
- *Provide excellent opportunities to examine through personal experience many of our present social and cultural values.*

- *Help pupils to develop a better understanding of themselves, their teachers, and their total education”*

However, the majority (75%) of the respondents at the GRZ school did not indicate anything. As already alluded to, the teachers in a GRZ school showed their inactivity and ignorance of environmental education as a tool for teaching and learning.

6.3.3 The Degree of Teachers’ Participation in EE Activities

The study revealed that 50% of the respondents were not involved in the environmental activities while 40% were involved in these activities and 10% did not indicate anything. However this negativity was in the GRZ school while for the PTA school the results were positive.

Once again, we saw the disparity between the sampled schools. This means that although the PTA teachers were not teaching environmental education, they were involved in all the activities that took place in the school, including the supervision of cleaning up of the school surroundings, litter picking and tree planting while most of teachers at the GRZ school were not involved in any activities at their school.

6.3.4 Improvements on Particular Environmental Education Activities

The study revealed that most of the respondents had an understanding of their environmental issues and brought out a lot of ideas of improving environmental activities, such as, recycling of plastic papers and bottles, newspapers, planting of more

fruit trees than ordinary trees, involvement of associations from the local communities and holding seminars for both teachers and pupils. This meant that teacher respondents were aware of the environmental problems that schools and communities were encountering and made meaningful suggestions as possible activities that could be carried out in form of projects and programmes at school and in communities. However, some of these suggested activities would need a lot of resources. This means that schools would need support not only from the government but from other stakeholders.

6.3.5 Suggestions for Environmental Education at School Level

The study tried to find out if the respondents had any suggestions on the improvement of the delivery of Environmental Education at school level. The findings indicated that the respondents were aware of many things that could be done in order to improve the teaching of environmental education and some of the suggestions were as follows:

- Establishment of environmental education clubs
- Organisation of workshops and seminars for staff and pupils
- Giving each class an area to take care of
- Incorporating environmental Education in subject areas

This meant that the teachers knew what to do in order to solve their environmental problems. They were also very positive towards the teaching of environmental education. This was a potential ground for the teaching of environmental education in high schools.

However, they still needed more knowledge and skills in order to do what they have suggested.

6.3.6 Suggestions to the Curriculum Development Centre on Environmental Education

The study revealed that the teacher respondents had many suggestions for the Curriculum Development Centre on Environmental Education in order to improve its delivery. These suggestions were as follows:

- CDC should highlight specific areas of subjects which could embrace EE.
- CDC should include EE in the school curriculum.
- EE should be a compulsory subject on its own to be taken by all pupils.
- Introduction of projects for EE both at school and in the communities.
- EE should be an examinable subject.
- CDC should conduct training workshops for teachers in environmental education.
- CDC should develop materials on environmental education for both teachers and pupils.

The majority of the teachers made good suggestions for the Curriculum Development Centre. This meant that they understood the role of CDC in curriculum change and they trusted that if environmental education was an integral part of the curriculum, then teachers would have no problem in teaching it. However, they still appreciated the fact that they needed training in environmental education for it to be implemented at school level, hence the request for training workshops in this area. They also thought that if EE became an examinable subject, then it would force all the teachers to teach it. The other suggestion of making it stand alone and compulsory for every learner in high schools meant that for EE to make an impact on the learners it should be taught as a subject,

instead of integrating it in other subjects. This meant that most of the teachers appreciated the benefits of environmental education.

6.4. Definition of Concepts by Administrators

The level of knowledge of environmental education was estimated with the help of a set of open ended questions requiring the administrators to define the concept of environmental education orally. It should be noted that there were three administrators that were available during the interview period of which one was from the GRZ school while the other two were from the PTA school (Head and Superintendent). The study showed that 100 % had heard about the concepts environmental education and sustainable development. However, they failed to define the concepts correctly. They only brought out the environmental issues that they had heard about. This confirmed why environmental education was not taught in schools because the supervisors were not able to guide their teachers on how to teach it since they also did not have adequate knowledge and skills in this area. However, the potential was there for introducing EE in high schools since the supervisors were aware of environmental issues, though they needed a lot of training in order to guide their teachers on how to use EE as a tool.

6.5 The Teaching of Environmental Education

The attitudes of the 3 administrators towards the teaching of environmental education were positive, indicating that they recognised its importance. This indicated that there was a possibility of teaching environmental education in high schools, though at that time

it was not encouraged in the high schools. The fact that the administrators recognised the challenges of the environmental issues was evidence enough to have the EE introduced in schools.

6, 5.1 Recognition of Environmental Education in High School

The study revealed that environmental education was recognised at the two schools as evidenced by the answers given by all the administrators of these schools. However, the administrators pointed out that although much was talked about environmental education, they had never encouraged their teachers to integrate it in the subject areas. It seemed that they did not know that it was supposed to be taught in schools. They thought that it was only used as a tool for campaign to clean up the surroundings and keep them clean all the time. The administrators were the pillars of the implementation of programmes in high schools. Therefore, it became a challenge to have environmental education implemented in high schools if they did not understand it themselves. As such, training in environmental education for administrators is extremely vital.

6.5.2 The Importance of Teaching Environmental Education in High School

The study revealed that 3, a representation of 100% of the administrator respondents, recognised the importance of environmental education in high schools. They appreciated environment education although their teachers were not teaching it. The fact was that they did not have enough knowledge and skills to guide their teachers on how to teach environmental education in high schools. They also blamed the government for not

providing schools with strategies of implementing environmental education in high schools. However, there was still the potential for the facilitation of environmental education in high schools.

6.5.3 Experience in Teaching Environmental Education at High School

The study revealed that 3, a representation of 100% of the administrator respondents, had never taught environmental education. The assumption was that they could not have taught environmental education at the time they were still teaching because all the respondents had trained in humanities where environmental education was never discussed. They trained at the time environmental education was never heard of, going by their age, because two were retired officers while the third one was retiring from the civil service. However, there was still need to orient them on environmental education in order for them to be able to guide the teachers.

6.5.4 Integration of Environmental Education in Subject Areas

The respondents said that it was possible for the 3 administrator respondents to integrate environmental education in their subject areas. The findings revealed that 100% of the administrator respondents appreciated the importance of environmental education. This showed how positive these administrators were towards the teaching of environmental education in high schools. The assumption was that they understood the concept of integration and were very positive that their teachers had the ability to integrate EE in their subject areas with their guidance. However, the respondents still needed to be

trained in the methods and techniques of facilitating environmental education in high schools.

6.5.5 Identification of Environmental Issues for Integration in High School Subjects

The study was to find out if the administrator respondents would be able to identify environmental issues that could be integrated in their subjects. The findings indicated that 3, a representation of 100% of the administrator respondents, said that there were issues that could be integrated in their subject areas. They said that though they had stopped teaching, they would still manage to influence the integration of environmental education in their subjects and other subjects at large. They mentioned a lot of issues that could be integrated, such as, pollution, environmental degradation, garbage collection and disposal and looking after the environment generally. This was also a positive indication of a possibility of establishing environmental education in high schools since the administrators would take up its facilitation in high schools.

6.5.6 Environmental Education as Part of the School Curriculum

The study revealed that 3, a representation of 100% of the administrator respondents, understood the importance of environmental education in the curriculum. The most common reason given was that environmental education prepared the learners to understand their environment and its proper management. They also said that EE should be part of the curriculum in order to force the teachers to teach it for the benefit of the learners. The assumption was that teachers did not consider any new issues that were not prescribed in the curriculum no matter how important they were. They were only

interested in preparing the learners to pass the examinations so that any other issue that had nothing to do with examinations would not be considered. This also gave hope for EE to be established in high schools if only it could be integrated in the curriculum at national level.

6.5.7 Sensitization in Environmental Education

The study revealed that, 2, a representation of 67% of the administrator respondents, had received some form of sensitization in environmental education from the media and Chongololo Club of the Air while 1, a representation of 33%, of the administrators had not received any training. Although the results were positive, the fact was that there were still other administrators who had not been exposed to environmental education. Furthermore, even if some did receive some information on environmental education, they did not seem to know the concepts as they failed to define them. Therefore, there was need to orient the managers on environmental education so that they would be able to guide their teachers.

6.5.8 Need for Training in Environmental Education

The study revealed that a representation of 100%, of the 3 administrator respondents, said that they needed training in environmental education. This was an indication that administrators were also not very sure of the concepts of environmental education and sustainable development. Therefore, they needed training in environmental education so that they would guide their teachers in the teaching of this subject area.

6.6 Environmental Education Practices or Activities at School

The findings revealed that 3, a representation of 100%, of the administrator respondents, said that teachers initiated and supervised the environmental activities. Further interviews with school heads revealed that these activities were routine, intended mainly to enhance the cleanliness of the school but not to carry out any environmental agenda. All the identified activities and practices were found to be encouraged by teachers and supported by school heads through provision of ideas, time and finance. The fact that the administrators were not sure of environmentally related activities called for some kind of training in order to be able supervise their teachers in the implementation of environmental education in high schools.

6.6.2 Benefits of EE Activities to Schools Teachers, Pupils and Communities

The study revealed that the schools benefited from environmental activities by having a clean environment while the teachers were healthy and had clean classrooms where they taught. The pupils were healthy and were learning in a better environment and the communities had clean surroundings and healthy people. However, it should be noted that the administrators did not fully understand what was meant by environmental activities because environmental education went beyond the factors that they brought out. This showed the degree of ignorance among the administrators and this called for more orientation sessions in environmental education and sustainable development for them.

6.6.3 Degree of Teachers Participation in EE Activities

The study revealed that teachers participated in the environmental activities, though most of the activities were done by the employed workers in both schools. The administrator respondents explained that teachers concentrated on the actual teaching of the lessons in subject areas except in some events where both teachers and learners were involved in the cleaning of their surroundings and tree planting such as On Youth Day, Environmental Day, and during Keep Lusaka Clean campaigns. This was evidence enough to show that there was no teaching of environmental education in high schools and that where some topics were taught they were done in the traditional way, which is preparing the learners for merely passing examinations.

6. 6 4 Improvements on Particular Activity

The study revealed that respondents had different ideas, such as, recycling of plastic papers, bottles and newspapers, planting of more fruit trees than ordinary trees, involvement of associations from the local communities and holding seminars for both teachers and pupils in environmental education. At least, the managers were able to bring out activities that would solve some of their environmental issues. These were at least linked to environmental education if they became on going projects for the school. There was potential of establishing environmental projects in high school once environmental education was facilitated in these schools.

6.6.5 Suggestions for Environmental Education at School Level

The study revealed that there were ways of improving the delivery of environmental education in high schools. Some of the suggestions were as follows:

- Establishment of environmental education clubs
- Organisation of workshops and seminars for staff and learners
- Giving each class an area to take care of
- Incorporation of environmental Education in subject areas
- Recycling of products from manufacturers.

These issues brought out by respondents were paramount to the facilitation of environmental education in high schools. This indicated that the learners would be given opportunities to participate in environmental education activities, thus giving chance to the learners to acquire knowledge that improve their academic performance and their wellbeing as individuals and as schools

6.6.6 Suggestions to the Curriculum Development Centre on Environmental Education

The suggestions that respondents said could be made to the Curriculum Development Centre in order to improve EE delivery were as follows:

- CDC should include the subject in the school curriculum. .
- EE should be made an examinable subject.
- CDC should conduct environmental education training sessions for high school teachers.

- CDC should develop materials such as guidelines, syllabuses and supplementary readers for use in this area since it is a new one.
- CDC should facilitate the orientation of the head teachers for high schools so that they would be able to encourage and supervise their teachers in the teaching of environmental education.

These issues brought out by respondents were paramount to the facilitation of environmental education in high schools. It should be noted that the administrators indicated that there were gaps in the curriculum which the Ministry of Education should address for the implementation of environmental education in high schools. This showed that the head teachers would play a major role in supervising their teachers once the ground was prepared for them in terms of providing the curriculum, training and materials. In other words, that the administrators were ready to support the implementation of environmental education in high schools if they were equipped with the knowledge and provided with the curriculum and the materials. The assumption was that once the administrators became positive about environmental education then the implementation of it was assured.

CHAPTER SEVEN

7.0 CONCLUSIONS AND RECOMMENDATIONS

This chapter presents conclusions and recommendations drawn from findings of the study. From this analysis of the data, a number of issues were raised. The issues would be raised in order to provide attempts to facilitate environmental education in high schools. In presenting these issues there was a deliberate effort to avoid getting entangled in the philosophical debates of formalisation of environmental education within the school system in Zambia.

7.1 Conclusions

The national environmental awareness campaigns appeared to have borne positive results among teachers in the sampled schools. The level of environmental knowledge was found to be high while teachers' attitudes towards the teaching of environmental issues were found to be positive. But the failure to define environmental education by both teachers and administrators posed a gap between knowledge, attitudes and environmental education. What emerged was the absence of a translation of environmental knowledge and attitudes into the idea and practice of environmental education. The knowledge and attitudes, as observed among teachers, was a product of environmental campaigns which were focussed on environmental issues and concerns, not particularly on environmental education.

Although most teachers' and administrators' attitudes appeared to be very positive towards the teaching of environmental education, their non recognition of this subject in high school raised a serious concern. The majority of the teachers faced a challenge of integrating environmental education in their teaching subjects. This showed that the teachers and their managers lacked knowledge in environmental education especially those of the non-science subjects, hence the lack of integration skills. This problem could be attributed to training institutions of most of the teachers that did not provide any knowledge and skills in environmental education. This also had been evidenced by the majority of teachers who indicated that they would like to be trained in environmental education.

The disparity in knowledge and attitudes between the sampled schools also showed a serious gap that needed to be looked into. The sampled GRZ school seemed not to be proactive on acquiring information about environmental education from stakeholders such as the media, WWF, Environmental Council of Zambia, UNZA and Environmental NGOs. This showed lack of seriousness among most of the teachers in GRZ schools who did not bother to look for information not only to teach their learners in high schools but also about their well-being. On the other hand, the PTA school teachers and administrators seemed to be more proactive in getting information about environmental education though their attitudes still had not changed as they failed to recognise and integrate it in their high school curriculum.

The majority of the environmental activities and practices identified were mainly reactive to environmental challenges. They did not show any relationship to environmental education. This showed that there was no consolidation between the teaching of environmental education in the classroom and the environmental activities and practices outside the classroom. This was a serious gap which had made environmental education not different from other subjects. The actual experience that the learners were supposed to gain from these activities had been denied to the learners by the teachers who seemed not to know what kind of environmental activities were supposed to be initiated and their purposes.

The suggestions that teachers and administrators made over the improvement of environmental education delivery showed serious gaps in the school curriculum that had not paved a way for the teaching of environmental education in high schools. The curriculum was supposed to be the pivot for the teaching and learning in schools, which should have been holistic, but the subjects had been compartmentalised and had not left any room for innovations and creativity.

The teaching to pass examinations had also contributed to this type of teaching where the crossing cutting issues had been neglected.

7.2 Recommendations

The failure by respondents to define environmental education may indicate the need for a shift towards campaigns focussing more on environmental education and training, where

teachers would be assisted to identify and teach topics related to the environment within their disciplines. It has been mentioned elsewhere that all disciplines have substantial environmental topics and implications but some teachers ignore, or fail to identify, them for teaching purposes. I, therefore, recommend that the Provincial Resource Centres should be strengthened by the Ministry of Education in terms of training in order for the coordinators to orient the serving high school teachers on environmental education

In view of the finding that teachers of non-science disciplines are less knowledgeable than teachers of science-based disciplines and also that they exhibited less positive attitudes towards the environment compared to teachers of science-based disciplines, what emerged was the need for possible interventions focussing on enhancing the knowledge base and attitudes of teachers of non-science disciplines. Deliberate efforts need to be made to improve the knowledge and attitudes of non-science teachers. I, therefore, recommend that institutions offering degree qualifications for teachers of the high schools and those that are yet to offer these qualifications such as the University of Zambia, Nkrumah and Copperbelt Colleges of Education have to introduce and improve the environmental education content and orientation in the academic programmes. Otherwise, the environmental education agenda in non-science disciplines will continue to suffer.

The disparity in knowledge and attitudes between the two sampled schools and level of experience, need urgent attention. Orientation of teachers at GRZ schools to enhance knowledge and attitudes seemed to be inevitable in this era of sustainable development for quality life. This may be a starting point to facilitate environmental education in high

schools. On the other hand, the PTA school teachers still need the training in environmental education because they failed to define concepts provided, indicating that they did not understand these concepts fully. The other fact is that they did not integrate the environmental education in their curriculum, which was an indication that they did not know what to do with it. Therefore, training is the key to the facilitation of environmental education in high schools in Lusaka so that all the teachers are able to integrate it in their subject areas and use it as a tool in teaching their subject areas. I recommend that the Ministry of Education, with help of the Curriculum Development Centre, The University of Zambia, Mufulira and David Livingstone Colleges of Education and of course the Directorate of Teacher Education should draw up in-service training programmes for high school teachers in environmental education. This entails that Provincial Resource Centre Coordinators should be trained as facilitators for the programme.

The majority of the environment activities and practices identified were mainly reactive to environmental challenges. Quite a few were proactive, such as tree planting; yet environmental activities were expected to be more proactive, that is, attending to environmental matters before they became a source of concern. What emerged was the need for a shift from the common reactive measures of attending to environmental challenges to more proactive ones. Based on this finding, I recommend that training sessions of learners and staff on environmental education approaches should be organised by the School In-Service Coordinators within the schools and neighbouring communities. Of course, training of the coordinator in the same field was also inevitable and the Provincial Resource Centre Coordinators should provide orientation programmes for this

staff on environmental education so that they could be equipped with knowledge and skills that should enhance best practices in high schools. I also recommend that outdoor activities should be established in high schools in order to consolidate what is taught in the classroom so that learners can meet the real experiences. This calls for concerted efforts by the teachers to work in partnership with the surrounding communities.

The suggestions made by the respondents to schools and the Curriculum Development Centre in order to improve the delivery of environmental education in high schools should be taken seriously. This calls for concerted efforts by the Ministry of Education, NGOs and other relevant stakeholders to facilitate the environmental education in high schools. I, therefore, recommend that MOE and other partners should strengthen the government policies on environmental education so that the implementing partners such as schools, universities, colleges of education and others could be compelled to integrate the subject matter in their programmes. I also recommend that MOE and donors should provide resources in order to facilitate the inclusion of the environmental education into the curriculum, orientation of the teachers in environmental education and the development of environmental education materials.

One suggestion is hereby made for future studies. In Chapter one, it was stated under “Limitation of the Study”, that this study could not use Focus Group Discussion. It is, therefore, recommended that the future studies tackling this topic should use Focus Group Discussion which would facilitate detailed explanations of the “why” questions. Such an explanatory study would hopefully inform us of reasons behind high school

teachers' attitudes towards the teaching of environmental education as a cross cutting curricular issue than the present study which was more of a descriptive type.

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APPENDICES

Appendix 1	Questionnaire
Appendix 2	Interview Schedule
Appendix 3	Bachelor of Education (EE) Degree Programme, UNZA

QUESTIONNAIRE

This questionnaire is aimed at getting your opinion on the status of Environmental Education in High Schools in Lusaka. You are, therefore, requested to be as objective as possible in view of what you know about the status of Environmental Education at your school.

The questionnaire is divided into four sections (A, B, C, D). Please answer all the questions in each section.

SECTION A (Background Information)

Name of School

Subject Trained for.....

Subject you are teaching at the moment

Qualifications: Master's Degree ☐ Year

Post Graduate Diploma ☐ Year.....

Bachelor's Degree ☐ Year.....

Diploma ☐ Year.....

Certificate ☐ Year.....

Gender: Male ☐ Female ☐

SECTION B (General knowledge of Environmental Education)

Answer the questions below.

Have you ever heard about Environmental Education? Yes ☐ No ☐

If yes, what do you understand by the term Environmental Education?

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Do you have Environmental Education as a recognized field in your school?

Yes ☐ No ☐

If No, what do you think are the reasons for Environmental Education not recognized at your school?

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If Yes, how did Environmental Education start at your school?

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Have you heard about 'sustainable development? Yes ☐ No ☐

What is your understanding of sustainable development?
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Does your school teach topics related to sustainable development? Yes ☐ No ☐

In your opinion how is environmental education related to sustainable development?
.....
.....
.....

SECTION C (The Teaching of Environmental Education at your School)

Answer the questions below.

In your view, is it necessary to teach Environmental Education at your school?

Yes ☐ No ☐

Give reasons for your response
.....
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.....

Have you ever taught Environmental Education at you present school?

If Yes, When?
.....

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If No, Why?

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Is it possible to integrate Environmental Education in your subject area?

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If Yes, How?

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If No, Why?

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Are there any Environmental Issues that you can integrate in your subject area?

.....

Mention at least five

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In your opinion, why should Environmental Education be part of the curriculum in our schools?

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Have you been sensitized in Environmental Education?

.....

If Yes, When and by Whom?

.....

Do you need any training in Environmental Education?

.....

What kind of training would you need in this area?

.....

SECTION D (Environmental Education Activities at you School)

Answer the questions below.

Are there any Environmental Education activities that have been initiated at your school?

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If Yes, Mention these activities

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Who initiated these activities?

.....

What benefits have these activities been to the school, teachers as well as the local community and pupils?

Benefits to the School.....

Benefits to the Teachers

Benefits to the Pupils

Benefits to the Local Community

Who are involved in these activities?

.....

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.....

Have you ever participated in any of these activities?

.....

What role did you play?

.....

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If you were asked to participate again, what improvements would you make to that particular activity so that it is more beneficial to the above categories of people than before?

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What general suggestions do you make in order to improve the delivery of Environmental Education at your school?

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What specific suggestions do you make to the Curriculum Development Centre in order to improve the delivery of Environmental Education ay your school?

THANK YOU FOR YOUR PARTICIPATION

INTERVIEW SCHEDULE

This Interview Schedule is aimed at getting your opinion on the status of Environmental Education in High Schools in Lusaka, You are, therefore, requested to be as objective as possible in view of what you know about the status of Environmental Education at your school

The questionnaire is divided into four sections (A, B, C, D). Please answer all the questions in each section.

SECTION A (Background Information)

Name of School

Subject Trained for.....

Qualifications: Master's Degree Year

Post Graduate Diploma Year.....

Bachelor's Degree Year.....

Diploma Year.....

Certificate Year.....

Gender: Male Female

SECTION B (General knowledge of Environmental Education)

Answer the questions below.

Have you ever heard about Environmental Education? Yes ☐ No ☐

If yes, what do you understand by the term Environmental Education?

.....

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.....

.....

Do you have Environmental Education as a recognized field in your school?

Yes ☐ No ☐

If No, what do you think are the reasons for Environmental Education not recognized at your school?

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If Yes, how did Environmental Education start at your school?

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Have you heard about ‘sustainable development? Yes ☐ No ☐

What is your understanding of sustainable development?
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Does your school teach topics related to sustainable development? Yes ☐ No ☐

In your opinion how is environmental education related to sustainable development?
.....
.....
.....

SECTION C (The Teaching of Environmental Education at your School)

Answer the questions below.

In your view, is it necessary to teach Environmental Education at your school?

Yes ☐ No ☐

Give reasons for your response
.....
.....
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.....

Have you ever taught Environmental Education?

If Yes, When?
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If No, Why?

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Is it possible to integrate Environmental Education in subject areas?

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If Yes, How?

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If No, Why?

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Are there any Environmental Issues that you can integrate in subject areas

.....

Mention at least five

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In your opinion, why should Environmental Education be part of the curriculum in our schools?

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Have you been sensitized in Environmental Education?

.....

If Yes, When and by Whom?

.....

Do you need any training in Environmental Education?

.....

What kind of training would you need in this area?

.....

SECTION D (Environmental Education Activities at you School)

Answer the questions below.

Are there any Environmental Education activities that have been initiated at your school?

.....

If Yes, Mention these activities

.....

.....

.....

Who initiated these activities?

.....

What benefits have these activities been to the school, teachers as well as the local community and pupils?

Benefits to the School.....

Benefits to the Teachers

Benefits to the Pupils

Benefits to the Local Community

Who are involved in these activities?

.....

.....

.....

Have you ever participated in any of these activities?

.....

What role did you play?

.....

.....

If you were asked to participate again, what improvements would you make to that particular activity so that it is more beneficial to the above categories of people than before?

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.....

What general suggestions do you make in order to improve the delivery of Environmental Education at your school?

.....

.....

.....

.....

What specific suggestions do you make to the Curriculum Development Centre in order to improve the delivery of Environmental Education at your school?

THANK YOU FOR YOUR PARTICIPATION

NATURE OF THE BACHELOR OF EDUCATION (ENVIRONMENTAL EDUCATION) DEGREE PROGRAMME AT THE UNIVERSITY OF ZAMBIA.

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Paper presented on the Occasion of Orienting selected UNZA Lecturers to the BEd (Environmental Education) Programme, Commonwealth Africa Youth Centre, Lusaka, 11th April, 2008.

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1. Introduction

The University of Zambia (UNZA) was established in 1966 and, in this regard, will for some time remain relatively younger than other older universities in the Southern African region and elsewhere. Academic programmes at UNZA will concomitantly be in a similar situation as compared with similar programmes in other parts of the world. This point applies to the field of Environmental Education (EE) at UNZA. At the time of writing this paper in the year 2008, environmental education at UNZA could generously be described as "emerging" in relation to more established universities in other parts of the world.

In view of the remarks made above, this paper presentation aims to address the following related objectives:-

- (a) to outline events constituting the emerging status of EE at UNZA and
- (b) to provide an account of the processes, structure and function of the Bachelor of Education degree programme at UNZA. In short, to describe the nature of the programme at the institution.

The above objectives are to be tackled in order to address the general aim of orienting selected UNZA lecturers to the said degree programme of the University of Zambia. The next part presents a contextual history of EE at UNZA in form of constitutive events giving rise to the emergence of the field at UNZA.

2. Contextual History of Environmental Education at UNZA

A premise needs to be established at the outset, namely, that the description provided here specifically refers to EE as configured and conceived from the School of Education and not in its generalized form to be found in other faculties of UNZA if any.

In his forthcoming paper, Chileshe (2008) states that five years ago, the need to introduce the programme became very obvious. Zambia faces a myriad of

environmental problems which include deforestation, land and water degradation, unsustainable use of human and natural resources as well as loss of biodiversity and cultural diversity. According to Chileshe (2008) environmental education is seen as the chief response to all of these and more problems than mentioned here.

In addition to the above points, the following set of parameters singly and jointly provide some historical bedrock to the BEd (Environmental Education) programme at UNZA.

2.1 Responding to International Imperatives

A number of interlocking events, processes and challenges too numerous to itemize here have conspired to give impetus to the emergence of EE at UNZA. Global summits, publications and exhortations have over the past decades been generated in an attempt to use education, in general, and environmental education, in particular, to address various challenges as well as to promote sustainable development. For instance, in 1992 the government of Brazil hosted the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro where global governments agreed to a blueprint for action for the world – in a non binding document called Agenda 21. The Rio principles were also agreed to guide humanity on the path to sustainable development (Hamu 2002).

Nearer us, the World Summit on Sustainable Development held in Johannesburg in August 2002 was meant to be an occasion for tens of thousands from all walks of life to gather and confirm commitments to continue to work for sustainable development. An essential part of those commitments was to be in public education and capacity building.

In order not to be outdone, the University of Zambia through the effort of this writer has, since October 2000, been an active member of a UNITWIN/UNESCO

Chair on Reorienting Teacher Education to Address Sustainability. An important outcome of the work of this international network of teacher education institutions has been to produce the UNESCO (2005) **Guidelines and Recommendations for Reorienting Teacher Education to Address Sustainability** aimed at contributing to the implementation worldwide of the United Nations Decade of Education for Sustainable Development (2005-2014).

2.2 Addressing Zambian Challenges at a National Level

The University of Zambia is a national institution for all the nine provinces of the country. As a national institution, UNZA needed to plan and implement measures aimed at addressing various national policies, guidelines and statutes aimed at putting Zambia on the road to sustainable development. One particular promulgation made in the context of the National Policy on Education popularly called "Educating Our Future" (Ministry of Education, 1996) is very categorical. This is, amongst other related goals, the need by the Zambian Ministry of Education to produce a learner capable of "participating in the preservation of the ecosystem in one's immediate and distant environments" (Ministry of Education, 1996, p.5). In short, all Zambian Basic and High Schools are, by implication, expected to produce a learner with the above stated competences, skills and attitudes. However, it is common knowledge that in reality, many of the formal educational institutions in Zambia do not actively implement this policy promulgation. A not too insignificant reason has been a lack of some professionally trained cadre of personnel to spearhead the visioning, planning and establishment of environmentally – oriented curricula such as EE and Education for Sustainable Development (ESD). Somehow and somewhere, a start needed to be made towards addressing such a situation and, hence, the leadership being taken at UNZA through the BEd (Environmental Education) degree offering. Additionally, the Ministry of Education produced other documents which sought to bring education to the doorstep of Zambian communities. These documents include the **Teacher's Curriculum Manual** (MOE 2001) where links between school and the community are expected, as

well as *Guidelines for the Development of the Localised Curriculum* in Zambia (WCE, 2005). This is the picture as seen from the angle of the Zambian Ministry of Education (MOE). Of course, a number of other challenges and expectations of an environmental nature are to be found from other policy initiatives beyond the MOE. Environmental problems abound in almost all of Zambia's private and public institutions for which a cohort of appropriately educated and trained personnel is a requirement. For instance, the energy sector, agriculture, national security as well as transport, wildlife conservation and rural development all require expertly-trained educationists to use education as a central means of addressing crises inherent in those sectors.

2.3 My Personal Input and Role in All This

The BEd (Environmental Education) as well as the MEd (Environmental Education) degree programmes at UNZA are both a brainchild of this presenter. In my undergraduate training, I took the Bachelor of Science with Education degree in which I combined the double major of Biology and Geography – both within the milieu of education. Of course, biology is a fundamental component of environmental education.

At postgraduate level, I pursued Geographical Education wherein I researched in the area of environmental education at both the Masters and doctoral levels. In this sense, I have been within the field of environmental education since my undergraduate days. I obtained my MEd in Geographical/Environmental Education at McGill University in Canada and my doctorate in the same field (and on the same research topic of flooding) from the University of London, Institute of Education.

2.4 Filling an Existing Gap

The University of Zambia has, since the year 2000, been running a postgraduate degree in EE but without a concomitant undergraduate degree in the same field. Experiences of running the MEd (Environmental Education) degree have proved

...in order to provide the requisite competences ...
...the degree programme fills ...
...the gap ...

But there are many gaps which the programme is meant to fill across the Zambian job market. Many institutions of the 21st century and beyond are required to have environmental education officers and, currently in Zambia, many such officers lack a first degree in the field. This includes all learning institutions from basic schools, colleges to universities, as well as all private and public institutions such as ZAMTEL, CELTEL, ZESCO and line ministries. Future institutions without appropriately qualified environmental educators are likely to be frowned upon by both local and international observers.

These are some of the contextual factors explaining the establishment of the BEd (Environmental Education) degree programme at UNZA. They are, by far, not exhaustive. In the next section, I outline the nature of the said programme by way of processes, structure and function of the programme.

3. Nature of the BEd (Environmental Education) Degree at UNZA

In this section, I attempt to clarify in as simple and clear terms as I can, the nature of the degree programme under discussion. The idea here is to help clarify for readers the exact nature of the degree so that its niche within UNZA is understood and, hopefully, appreciated. I start by outlining general features of the programme which would, to some extent, be expected to be similar all over the world wherever EE is offered.

3.1.1 Operating Through Human Agency

Part of the inherent mission of EE is to bring about positive change in favour of sustainability among world institutions – be they learning institutions, social institutions like traditional authorities or religious and political institutions. In short, EE often engenders some change among institutional structures, many of

which prefer to operate within rigid, highly regulated and sometimes oppressive configurations. Red tape and bureaucracies often characterize such structures. In order to bring about alternative change in such structures, EE tends to operate on the basis of human agency. The term 'human agency' is a highly complex sociological process whereby committed, skilled and visionary change agents authoritatively scheme to bring about positive change within established institutional structures with all their set norms, rules, taboos or regulations. The change brought about by EE is not, however, synonymous with anarchism but it is often in favour of sustainability.

In this regard, there are two ways by which EE may be initiated within an institution, that is, either through top-down or bottom-up initiatives. One example of the former process in Zambia is the establishment of the Ministry of Environment and Natural Resource as well as the Environmental Council of Zambia both of which were established by Acts of Parliament, notably, the Environmental Protection and Pollution Control Act (EPPCA) in July 1990. Environmental education established in such forms often sails plainly with assured and total institutional support. On its part, the bottom-up approach to establishing EE often tends to face numerous institutional obstacles along its path, in addition to the paucity of sustainable institutional support. At UNZA, environmental education was initiated largely through a bottom-up approach and, fortunately for it, there is a lot of inspirational support for it especially from the office of the Dean (Education). Another cornerstone of EE is examined next.

3.1.2 Interdisciplinarity

Worldwide, universities tend to offer three main types of programmes, namely, majors, major/minor and interdisciplinary (or multidisciplinary) programmes. The commonest offerings around are majors as well as major/minors and, since its establishment in 1966, our university has predominantly been offering major as well as major/minor degrees. Interdisciplinary degree programmes have historically been rare and quite involving to mount. Apart from the degree in

gender studies, our university now has the BEd (Environmental Education) and another one in Civic Education as fully-fledged interdisciplinary programmes.

The thrust of interdisciplinarity is to draw on the concepts, methods and approaches of various academic disciplines in a coordinated manner so that a bigger and holistic picture than that generated by single subject offerings is woven. Such a holistic configuration which is much wider and deeper than major/minor subject offerings is the essence of environmental education. Enlisting the support of various academic disciplines for such a cause has, however, not been plain sailing in the past, both for the BEd (Environmental Education) and the MEd (Environmental Education) programmes. Having said this, however, and in an attempt to diffuse EE and ESD more widely than before, UNZA also offers a ten (10) course minor programme which is shown in Appendix 1.

3.1.3 Education as a Means to an End

Environment in its widest sense is for everyone and, in turn, everyone should be for the environment. In EE, however, the role of coordinating other subject disciplines is usually expected from education. In this regard, the School of Education, in general, and the Department of Language and Social Sciences Education (LSSE), in particular, have jointly been spearheading the initiation of environmental education at UNZA. This role is purely that of coordination and not of ownership, as it is almost impossible to find the owner of environmental education anywhere in the world.

In EE, education is taken to be the key means by which to address various environmental problems and challenges, as well as that of brokering opportunities and quality change towards sustainability. This point is crucial in appreciating the point that, regrettably, some institutions have previously failed to designate environmental and sustainability education programmes as flagship programmes, with all that such a designation implies.

3.1.4 Sustainability Development

The world as we know it is conceptually categorized into the developed, developed, and developing countries the truth of the matter is that all these are large-scale, continuously (un) developing, one form or the other. The (Ecological or Environmental) programme, in this regard, provides for some critical perspectives of the development discourse. In other words, one of the most potent agents of achieving such a process of development is environmental education. There are a host of attributes which EE possesses for it to qualify to perform such a role, such as the point that it calls for critical reflection, action orientation and a futuristic perspective.

All the above noted factors do impact on specific features of the programme as outlined in the next lines.

3.2 Specific Characteristics of the Programme

An assemblage of specific features of the BEd (Environmental Education) degree programme at UNZA partly arising from the general features outlined above is presented below. A closer scrutiny of the interdisciplinary programme as shown in Appendix 2 will reveal that the programme at UNZA:-

- is indeed interdisciplinary as it draws upon more than fifty (50) different academic disciplines to create a coherent whole.
- is driven by the pursuance of development, in general, and sustainable development, in particular.
- is educationally focussed in the sense that the majority of courses are drawn from the field of education, curriculum studies, adult education as well as education for sustainable development (ESD). This is partly why it is termed as 'Bachelor of Education'.
- is rigid to some significant extent by offering compulsory courses, while being flexible too through course alternatives or electives.

- is holistic in opening up students' minds to diverse ideas, methods and approaches from various subjects. The aim is to generate an all-rounded student who will be versatile in support of sustainability.
- deals with cases of vulnerability, notably, rural environments and women affairs for which affirmative action is required.
- is rigorous in intent, especially through courses emanating from philosophy, such as environmental ethics.
- deals with both ecological and economic issues to some extent.
- addresses issues to do with skills (techniques), knowledge and understanding as well as competences and values/attitudes.
- provides a thorough period of student project work partly through the long community/school experience period or short duration study visits to environmental sites.
- introduces students to educational research.
- critically revives centerpieces of our cultural heritage and, hence, a deliberate focus on indigenous African religions.
- puts issues of sustainability at the core of student work.
- will need a lot of coordination, consultation and good will from contributing disciplines and departments across UNZA.
- will require to negotiate for course waivers in some cases.
- gives opportunity for the Ministry of Education to seriously consider offering EE as a school subject in view of the decision by UNZA to flexibly offer EE through the ten (10) course minor mode. This means that EE could, henceforth, be a teachable subject alongside other existing traditional subjects like history, English, Geography, Religious Education, Biology, Chemistry and so on.

4. Conclusion

The above remarks show that EE is emerging at UNZA. Like all such cases, one implication of this situation is its vulnerability. A show of support to the programme from whatever source translates into our strength. The programme

is for everyone in Zambia and beyond. The School of Education and the Department of ESSE at UNZA are merely custodians of the programme charged with the responsibility of coordinating it on behalf of us all as Zambians and other people. We trust that you will be counted on to help move the programme to even higher and loftier horizons as is the case at the moment.

One important point to conclude with here is that the nature of the BEd (Environmental Education) programme being offered at UNZA, namely, that of a fully-fledged interdisciplinary programme and a minor programme simultaneously, is the only one of its kind in the whole world. Many countries offer EE as **either** an interdisciplinary or a major/minor programme and not as **both** of these modes at the same time. In addition, the particular set of courses which have been selectively mobilized to create the configuration appearing in Appendices 1 and 2 arguably exists in Zambia only. No other country apart from Zambia offers EE in exactly the same form and nature as has been outlined in this paper. This niche and uniqueness is a potential source of competitive advantage which relevant authorities at UNZA and beyond are strongly advised to explore to the fullest for the betterment of UNZA, Zambia and the ideal of sustainability in our world.

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Ten (10) Course Minor Programme in Environmental Education

FIRST YEAR

SEMESTER I	EAP 111	EED 111	SCC	SCC
SEMESTER II	EAP 112	EED 112	SCC	SCC

SECOND YEAR

SEMESTER I	EPS 231	EED 211	EED 221	EED 231	SCC
SEMESTER II	EPS 212	SCC	SCC	SCC	SCC

THIRD YEAR

SEMESTER I	EPS 999	EED 351	EPC	EPS 901	SCC
SEMESTER II	EED 362	EPC	LSE 909	EPS 332	SCC

FOURTH YEAR

SEMESTER I	SCHOOL OR COMMUNITY EXPERIENCE			
SEMESTER II	EED 472	EED 475	EAP 912	SCC

KEY TO COURSES FROM OPTION A (BEd-ENVIRONMENTAL EDUCATION)

FIRST YEAR COURSES

DS 101	-	Introduction to Development Studies (1)
DS 102	-	Introduction to Development Studies (II)
S 112 SIII	-	Introduction to Sociology (II) ←
PH 102	-	Introduction to Philosophy II
H 111	-	Introduction to the Study of History
E/LAL 111	-	Communication and Study Skills
EAP 111	-	The Origins and Development of Education in Zambia
EAP 112	-	The Role of Education in Development
EED 111	-	Introduction to Environmental Education

SECOND YEAR COURSES

EPS 231	-	Sociology of Education
RS 201	-	Indigenous Religions in Central Africa (1)
AED 241	-	Non-formal Education
AED 232	-	Instructional Techniques in Adult Education
AED 252	-	Designing, Marketing and Managing Seminars, Workshops, Conferences and Short Courses.
EPS 212	-	Educational Psychology
EED 211	-	Trends in Environmental Education
EED 221	-	Introduction to Environmental Management
EED 231	-	Environmental Health
EED 242	-	Environmental Journalism

COURSES FROM SET 1

AED 222	-	Planned Change
MC 222	-	Media and Society
PH 202	-	Philosophy of Social Science

THIRD YEAR SOURCES

DS 945	-	The Global Environment and Sustainable Development
PH 995	-	Environmental Ethics
EPS 901	-	Introduction to Educational Research
AED 311	-	Participatory Approaches to Development
EED 351	-	Introduction to Education for Sustainable Development
EED 362	-	Teaching and Learning Techniques in Environmental Education
LSE 909	-	Curriculum Studies
EPS 332	-	Learning Processes: A Sociological Perspective
S 962	-	Sociology and Rural Development
DS 912	-	Women and Development: Policies and Strategies

COURSES FROM SET 3

EC 055	-	Health Economics
PS 011	-	Social Psychology
PA 955	-	Strategic Management
PA 521	-	Principles of Local Government Administration
S 005	-	Disaster Preparedness and Management
S 011	-	Urban Sociology
C 011	-	Introduction to Social Problems
SI 01	-	Industrial Sociology
SW 311	-	Analysis of Theories of Social Welfare
AED 341	-	Emerging Issues in Adult Education
S 001	-	Rural Sociology

FOURTH YEAR COURSES

ED 901	-	School/Community Experience
EED 472	-	Environment Law
EED 475	-	Environment Sustainability in Zambian Institutions
EAP 912	-	Educational Administration and Management
EED 482	-	Contemporary Issues in Environmental Education with Reference to Zambia.

COURSES FROM SET 6

DS 935	-	Industrial Policy and Development in Developing Countries
DS 975	-	Economic Globalisation and Developing Economies
EC 422	-	Issues in Development
EC 435	-	Natural Resources Economics
DS 402	-	Technology Development (II)
MC 902	-	Advertising Practice
AED 432	-	Human Resource Development
PA 421	-	Principles of Public Policy Analysis
SW 475	-	Community Change and Development
DS 925	-	Project Appraisal and Implementation in Developing Countries.

BED (ENVIRONMENTAL EDUCATION) - OPTION B

FIRST YEAR
TEMPLATE TO RE-PACKAGING OF COURSES

S III

SEMESTER I	DS 101	EED 111	EAP 111	EITHER H11 OR E/LAL 111
SEMESTER II	DS 102	PH 102	EED 112	EAP 112

SECOND YEAR

SEMESTER I	EED 211	EED 221	EED 231*	EPS 231	EITHER RS 201 OR AED 241
SEMESTER II	EED 242	EPS 212	AED 232	ONE COURSE FROM SET 2	AED 252

THIRD YEAR

SEMESTER I	EED 351	DS 945	S 901	ONE COURSE FROM SET 4	AED 311
SEMESTER II	EED 352	LSE 909	EPS 332	PH 995	Either S 962 OR DS 912

FOURTH YEAR

SEMESTER I	EED 901	SCHOOL/COMMUNITY EXPERIENCE			
SEMESTER II	ONE COURSE FROM SET 6	EED 482	EED 475	EED 472	EAP 912

COURSES FROM OPTION B (ENVIRONMENTAL EDUCATION)

S III

ED 111	-	Introduction to Environmental Studies (I)	Introduction to Environmental Studies (I)
ED 112	-	Introduction to Environmental Studies (II)	Introduction to Environmental Studies (II)
ED 113	-	Introduction to Environmental Studies (III)	Introduction to Environmental Studies (III)
ED 114	-	Introduction to Environmental Studies (IV)	Introduction to Environmental Studies (IV)
ED 115	-	Introduction to Environmental Studies (V)	Introduction to Environmental Studies (V)
ED 116	-	Introduction to Environmental Studies (VI)	Introduction to Environmental Studies (VI)
ED 117	-	Introduction to Environmental Studies (VII)	Introduction to Environmental Studies (VII)
ED 118	-	Introduction to Environmental Studies (VIII)	Introduction to Environmental Studies (VIII)
ED 119	-	Introduction to Environmental Studies (IX)	Introduction to Environmental Studies (IX)
ED 120	-	Introduction to Environmental Studies (X)	Introduction to Environmental Studies (X)

SECOND YEAR COURSES

RS 201	-	Indigenous Religions in Central Africa (I)	Indigenous Religions in Central Africa (I)
AED 241	-	Non-Formal Education	Non-Formal Education
EPS 231	-	Sociology of Education	Sociology of Education
EPS 212	-	Educational Psychology	Educational Psychology
AED 232	-	Instructional Techniques in Adult Education	Instructional Techniques in Adult Education
AED 252	-	Designing, Marketing and Managing Seminars, Workshops, Conferences and Short Courses.	Designing, Marketing and Managing Seminars, Workshops, Conferences and Short Courses.
EED 211	-	Trends in Environmental Education	Trends in Environmental Education
EED 221	-	Introduction to Environmental Management	Introduction to Environmental Management
EED 231	-	Environmental Health	Environmental Health
EED 242	-	Environmental Journalism	Environmental Journalism

COURSES FROM SET 2

AED 222	-	Planned Change	Planned Change
PH 202	-	Philosophy of Social Science	Philosophy of Social Science

THIRD YEAR COURSES

DS 945	-	The Global Environment and Sustainable Development	The Global Environment and Sustainable Development
S 961	-	Rural Sociology	Rural Sociology
PH 995	-	Environmental Ethics	Environmental Ethics
EPS 901	-	Introduction to Educational Research	Introduction to Educational Research
LSE 909	-	Curriculum Studies	Curriculum Studies
EED 351	-	Introduction to Education for Sustainable Development	Introduction to Education for Sustainable Development
EED 362	-	Teaching and Learning Techniques in Environmental Education.	Teaching and Learning Techniques in Environmental Education.
AED 311	-	Participatory Approaches to Development	Participatory Approaches to Development
EPS 332	-	Learning Processes: A Sociological Perspective	Learning Processes: A Sociological Perspective
S 962	-	Sociology and Rural Development	Sociology and Rural Development
DS 912	-	Women and Development: Policies and Strategies	Women and Development: Policies and Strategies

COURSES FROM SET 4

DS 955	-	Health Economics	EC 901
DS 311	-	Social Psychology	PS 311
DS 955	-	Strategic Management	MA 955
DS 321	-	Principles of Local Government Administration	
DS 955	-	Master Preparation and Management	
DS 311	-	Urban Sociology	SO 111
DS 311	-	Introduction to Social Problems	
DS 901	-	Industrial Sociology	SO 901
DS 311	-	Analysis of Theories of Social Welfare	
DS 341	-	Emerging Issues in Adult Education	

FOURTH YEAR COURSES

DS 901	-	School/Community Experience	
DS 925	-	Project Appraisal and Implementation in Developing Countries.	
EED 472	-	Environmental Law	
EED 475	-	Environmental Sustainability in Zambian Institutions	
EED 482	-	Contemporary Issues in Environmental Education with Reference to Zambia.	
EAP 912	-	Educational Administration and Management	

COURSES FROM SET 6

DS 935	-	Industrial Policy and Development in Developing Countries	
DS 975	-	Economic Globalisation and Developing Economies	
EC 422	-	Issues in Development	
EC 435	-	Natural Resource Economics	
DS 402	-	Technology Development (II)	
MC 902	-	Advertising Practice	
AED 432	-	Human Resource Development	
PA 421	-	Principles of Public Policy Analysis	
SW 475	-	Community Change and Development	
DS 925	-	Project Appraisal and Implementation in Developing Countries.	

KEY TO COURSES

KEY TO COURSES

SCC	-Subject Content Course	SCC	-Subject Content Course
EPC	-Education Professional Course	EPC	-Education Professional Course
EAP 111	-The Origins and Development of Education in Zambia	EAP 111	-The Origins and Development of Education in Zambia
EAP 112	-The Role of Education in Development	EAP 112	-The Role of Education in Development
EED 111	-Introduction to Environmental Education	EED 111	-Introduction to Environmental Education
EED 112	-Introductory Ecology for Environmental Education	EED 112	-Introductory Ecology for Environmental Education
EED 211	-Trends in Environmental Education	EED 211	-Trends in Environmental Education
EED 231	-Environmental Health	EED 231	-Environmental Health
EED 221	-Introduction to Environmental Management	EED 221	-Introduction to Environmental Management
EPS 212	-Educational Psychology	EPS 212	-Educational Psychology
EPS 231	-Sociology of Education	EPS 231	-Sociology of Education
EPS 332	-Learning Processes: A Sociological Perspective	EPS 332	-Learning Processes: A Sociological Perspective
EED 351	-Introduction to Education for Sustainable Development	EED 351	-Introduction to Education for Sustainable Development
EED 362	-Teaching and Learning Techniques in Environmental Education	EED 362	-Teaching and Learning Techniques in Environmental Education
EED 472	-Environmental Law	EED 472	-Environmental Law
EED 475	-Environmental Sustainability in Zambian Institutions	EED 475	-Environmental Sustainability in Zambian Institutions
EAP 912	-Educational Administration and Management	EAP 912	-Educational Administration and Management
EPS 901	-Introduction to Educational Research	EPS 901	-Introduction to Educational Research
PH 995	-Environmental Ethics	PH 995	-Environmental Ethics
LSE 909	-Curriculum Studies	LSE 909	-Curriculum Studies

NB: Units are free to juggle around the SCC and EPC in order to fit their respective minor offerings.

TEMPLATE TO RE-PACKAGING OF COURSES

FIRST YEAR

SEMESTER I	DS 101	EED 111	EAP 111	EITHER H 111 OR ELAL 111
SEMESTER II	DS 102	S 112	EAP 112	PH 102

SECOND YEAR

SEMESTER I	EED 211	EED 221	EED 231	EPS 231	EITHER RS 201 OR AED 241
SEMESTER II	EED 242	AED 232	ONE COURSE FROM SET 4	EPS 212	AED 252

THIRD YEAR

SEMESTER I	EED 351	DS 945	S 961	ONE COURSE FROM SET 3	AED 311
SEMESTER II	EED 362	LSE 909	EAP 912	PH 995	EPS 909

FOURTH YEAR

SEMESTER I	ED 501	SCHOOL/COMMUNITY EXPERIENCE			
SEMESTER II	EED 475	EED 482	EED 472	ONE COURSE FROM SET 6	DS 925