

**THE IMPLEMENTATION OF ENVIRONMENTAL
EDUCATION IN THE UBOMBO CIRCUIT
SCHOOLS**

BY

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fulfillment of the requirements for the Masters of
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the University of Zululand

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November 2014

DECLARATION

I, Jinja Sevenias Mathenjwa, hereby declare that this dissertation: “*The Implementation of Environmental Education in the Ubombo Circuit Schools*” is my own original work. All the sources that I have used or quoted have been indicated and acknowledge by means of complete references. It is further declared that this dissertation has not previously been submitted to any institution for degree purposes.



November 2014

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Date

We hereby declare that this dissertation has been submitted for examination with our approval.



20 November 2014

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DEDICATION

I would like to dedicate this work to my late father, Mr Gobinyawo Mathenjwa and my mother, Mrs Nokuyamukelwa Mathenjwa (Uma Dlamini) and my brother Mr Edmund Mathenjwa for their superb support and their contribution in my studies as from Primary School, Secondary School and to the Tertiary Institutions.

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ABSTRACT

The main purpose of this study was to investigate the implementation of environmental education in schools in the senior phase across the curriculum in the Ubombo circuit.

The study targeted Senior Phase educators in General Education and Training because it is the last band in the senior phase where environmental education should be implemented.

The study used mixed approach, a combination of both qualitative and quantitative methods. Sampling of participants was random, owing to the vastness of the circuit and schools are far from each other. The first research instruments were administered to Senior Phase educators and subject advisors to solicit their understanding of environmental education and its implementation across the curriculum in the Senior Phase. The second instruments were interview and observation, the main purpose was to collect information from environmental officers and school governing body members about their role and understanding of environmental education as well as its implementation in schools.

The research results showed that environmental education was not formally implemented across the curriculum in schools in the senior phase. The research findings and existing literature shows that there are different challenges regarding the implementation of environmental education across the curriculum in schools. These challenges cut across the geographical divide. They include shortages of policy guidelines, resources, inadequate workshops, changing curriculum, attitude of educators towards the implementation of environmental education and shortage of specialist environmental educators.

The research findings further revealed that educators lack content knowledge about environmental education. The general understanding is that environmental education is about plants and animals. Even district managers, circuit managers and ward managers did not understand all the dynamics of environmental education. Ezemvelo KZN Wildlife and other non-governmental environmental organisations are still conducting workshops on environmental education for schools.

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ACRONYMS

COSAS	: Council of South African Students
EEASA	: Environmental Education Association of South Africa
EEIP	: Environmental Education Policy Initiative
IUCN	: International Union of Conservation of Nature
NB	: National Botanical Institute
NCS	: National Curriculum Statement
NECC	: National Education Co-ordinating Committee
NEEP	: National Environmental Education Programme
NGO	: Non-Governmental Organisation
OBE	: Outcomes Based Education
PAT	: Practical Assessment Task
PMG	: Parliament Monitoring Group
SADC	: Southern Africa Development Community
SGB	: School Governing Body
SMT	: School Management Team
SPSS	: Statistical Package for Social Science
UNESCO	: United Nation Education, Scientific and Cultural Organisation
WESSA	: Wildlife Environmental Society of Southern Africa
WWF	: World Wildlife Fund

CHAPTER ONE

ORIENTATION OF THE STUDY

1.1 INTRODUCTION

Historically, environmental education in South Africa was not directly taught in classrooms. It was taught outside them when educators organised excursions to nature conservation areas such as game reserves, nature reserves and national parks. School camping was exposed to the environment and use of resources outside the classroom for educational. The Wildlife Environmental Society of South Africa (WESSA) is one of the non-governmental environmental organisations embarked on environmental education. Environmental education was previously limited to conservation, wise management of natural resources, and basic ecology (Loubser, 2000).

The new curriculum, the National Curriculum Statement (NCS), has put more emphasis on the integration of environmental education in teaching and learning in the senior phase, when it would be taught as a cross-curricular theme in all learning areas from grades 1 to 9 (Harvely, 2013). The National Environmental Management Act (1998) commits the South African government to sustainable development, and emphasises the need for environmental education and capacity building in all sectors in South Africa (Strydom, Fouchie & Delpport, 2007).

Environmental education has been accepted globally and in virtually every country at various international conferences. However, the implementation of environmental education in schools is faced with a number of challenges, which include: shortage of environmental educators, a changing curriculum, and the attitude of educators, subject advisors and learners towards the implementation of environmental education, assessment strategies, and policy guidelines. Despite so many commitments to education made by political decision makers over the years,

little concrete action seems to have been taken with regard to the implementation of environmental education in the school curriculum (Charlard, 2009).

Teaching is still compartmentalised in specific subject fields, and does not integrate environmental themes. Environmental education is still carried out and institutionalised outside the classrooms (Charlard, 2009). The status and integration of environmental education in the school curriculum, as well as the implementation process, remain a huge challenge for policy makers (Le Roux & Maila, 2004).

The assumption is that the implementation of environmental education would bring about new challenges to educators, learners, school management teams (SMTs) and subject advisors, as well as to the existing order in schools. The National Environmental Education Programme (NEEP) came up with a good programme of developing policies, drawing up the curriculum and training educators in the implementation of environmental education in schools. It was a project which ended in 2003. Since the project ended, very little has been done to implement environmental education at the provincial, district, circuit and ward level in schools. This study investigates the implementation of environmental education in schools in the Ubombo Circuit. The main aim is to broaden environmental knowledge through education to all stakeholders about environmental issues that are prevalent locally, nationally and globally.

1.2 MOTIVATION FOR THE STUDY

The recent mandated focus on environmental education in the basic education curriculum of South Africa requires that all children in grades 1 to 9 introduced to environmental concepts and related content (Mokhele & Jita, 2008). The National Curriculum Statement (NCS) is emphasising that environmental education should be taught as across-curricular theme in schools.

In 1993, a conference held at Dikhololo, marking the beginning of the process to integrate environmental education into the formal curriculum in schools, proved to be a milestone (Loubser, 2000). Many committees, working groups and individuals have since worked very hard to contribute to the process of implementing environmental education in schools. The

present curriculum requires that environmental education shapes teaching and learning across all learning areas for all grades (5th World Environmental Education Congress, 2010).

A quick observation leads to the conclusion that environmental education is hardly implemented in schools. Actually, environmental education is taught at only 28% of schools in South Africa (Schudel, Le Roux & Sistka, 2008). It seems the Department of Education does not have properly trained environmental education specialists to implement it effectively in schools. Inadequate orientation, in-service training, teacher development and availability of learning support materials remain a challenge to the effective implementation of environmental education (Foulds, 2010).

The researcher's observation revealed that most educators hardly integrate environmental education in their preparations. Teaching and learning is textbook-bound, educators lack insight on how environmental education is related to teaching and learning (Le Roux, 2009). It seems that the KwaZulu-Natal Provincial Department of Education hardly supports educators in the implementation of environmental education. Only various environmental organisations commit themselves to conducting environmental awareness in schools. Such organisations include: the Wildlife Environmental Society of South Africa, Greenpeace, Ezemvelo KZN Wildlife, the World Wildlife Fund and the National Parks Board.

Despite various environmental conferences and seminars on the implementation of environmental education in schools, educators do not receive adequate training from the Provincial Department of Education (Schudel, et al., 2008). Another problem with regard to the implementation of environmental education is the lack of teaching resources, which are available in other government departments such as Environmental Affairs, Water Affairs, Tourism, and Agriculture (Roberts, 2010). Therefore, this is an issue worth pursuing.

1.3 BACKGROUND OF THE STUDY

The root of environmental education can be traced as far back as the 18th century, when Jean-Jacques Rousseau stressed the importance of education that focuses on the environment (UNESCO, 1997). The influence of this writer helped to lay the foundation for a concrete

environmental education programme known as 'Nature Study which took place in the late 19th and early 20th centuries (UNESCO, Tbilisi Declaration, 1978). Modern environmental education gained significant momentum in the late 1960s and early 1970s. It started as nature study and conservation education. Internationally, environmental education gained recognition when the United Nations Conference on the Human Environment held in Stockholm, Sweden in 1972 declared that environmental education must be used as a tool to address global environmental problems (UNESCO, 1997).

The first International Congress on Environmental Education in South Africa was held in Mooi River, KwaZulu-Natal in 1992. Subsequent discussions took place in different settings, whereby this issue gained currency. Several environmental education congresses are now held annually to discuss environmental problems and how to tackle them (Loubser, 2000). Initially, environmental education was limited to providing learners with knowledge about environmental protection (Tarabu & Fierrak, 2007).

The study and definition of environmental education begun over many decades as stated by Jean-Jacques Rousseau' and this has created a lot of excitement for environmental educators. Irwin (2012) noted that environmental education in South Africa had gained momentum over the past 20 years, and reached a level where individuals and organisations could play a significant role in the solution of environmental crises. The Wildlife Environmental Society of South Africa (WSSA) was the first organisation to design material to teach environmental education in South African schools. Conferences such as that held in Stockholm (1972), the Belgrade Charter conference (1975), the Tbilisi Declaration conference (1977), the World Conservation Strategy conference (1980), the Moscow conference (1987), and Agenda 21 or Earth Summit (1992) immensely contributed to the development of environmental education by laying down guidelines, designing strategies for curriculum development worldwide, developing principles and objectives of environmental education, and making a case for the importance of environmental education for sustainable development.

In Zimbabwe, environmental education is also taught through Shona folktale. Some students contend that they come across environmental education in geography and environmental science (Davis, 2008). Whereas in South Africa, the Department of Environmental Affairs and Tourism, and the Environmental Education Association of South Africa (EEASA) decided to start a

process to establish environmental education in the formal school curriculum (Loubser, 2000). As a result, various workshops on the implementation of environmental education in formal education were conducted countrywide – including agencies from different sectors and projects.

Loubser (2000) stated that at a workshop held at Dikhololo, near Brits, in August 1993 the idea of including environmental education in formal education was discussed by members of the education desks of various political parties and the National Education Coordinating Committee (NECC), the Council of South African Students (COSAS), university representatives and various stakeholders. Apart from all these conferences, meetings and workshops, most educators hardly integrate environmental education in their lessons. It seems the implementation of environmental education lacks political will from the authorities in the Department of Basic Education. Research conducted by Foulds (2010) reveals that workshops conducted on environmental education failed to equip educators with the necessary skills to implement the programme effectively. Educators still consider environmental education as a synonym for other concepts such as nature, ecology, the ecosystem, outdoor education and conservation.

Environmental commentators in the education sector have argued in support of goals such as the transfer of learning and teaching to students to enable them to think critically about environmental issues (Mason, 2014). Probably subjects such as geography, life sciences, tourism and life orientation do integrate environmental topics on a limited scale. Such topics include ecology, the ecosystem and environmental crises such as global warming, soil erosion, deforestation, pollution, poverty, diseases and drought. A similar trend has been observed at the elementary school level in the United States of America, where environmental education takes the form of science enrichment curriculum, natural field trips, history, community service projects and participating in outdoor school activities (Foulds, 2010). Educators are not competent in the content of environmental education due to inadequate workshops and in-service training in environmental education, as well as poor interpretation of the new curriculum.

There is still a need for the Department of Education to organise workshops which deal specifically with the implementation of environmental education in the senior phase in schools. In the United States of America, environmental education has been considered as an additional or elective subject in much of the traditional curriculum (UNESCO). Despite many commitments on education made by political decision makers over the years, little concrete action has been

taken with regard to the implementation of environmental education in South African schools. It seems environmental education is a talk show that ends in the conference rooms. It is not fully implemented in most schools in South Africa, and where it exists; it is largely carried out by non-governmental organisations, game reserves and other institutions outside the schools (Charlard, 2009).

The implementation of environmental education is further hindered by the shortage of subject specialists in schools, since most educators in South Africa are not well trained in methods and strategies on cross-curricular teaching. In South Africa, there are only a few institutions that offer environmental education courses to students during their academic training. These are the University of South Africa (UNISA), Stellenbosch University (SUN), and the University of Johannesburg (UJ), which have continued to champion environmental education in their B.Ed programmes (Loubser, 2000).

The University of Zululand, in collaboration with the University of South Africa, ran environmental education courses, but they were recently discontinued. It is evident that universities are not committed enough to produce educators who are specialists in environmental education for South African schools. As a measure of compensation for this lack of courses, one-week workshops were not enough to adequately equip educators with the methods, knowledge, skills and strategies necessary to implement environmental education effectively in schools. This is one of the key grey areas in any attempt to consciously bring environmental education into mainstream education in South African schools.

1.4 STATEMENT OF THE PROBLEM

Several survey studies conducted by Ferreira & Bopape (2009) and Le Roux & Maila (2004) in South Africa on environmental education have indicated that there are various challenges facing the implementation of environmental education in schools countrywide. Based on the recommendations from these studies, this study also investigates other challenges, which include basic knowledge about environmental education; specialist educators; workshops conducted on environmental education, policies; attitudes of educators, subject advisors and learners toward environmental education; available resources; and the definition of the term 'environmental

education'. This study intends to answer the following key questions: which challenges hinder the implementation of environmental education in schools in the Ubombo Circuit? The sub questions of this study are as follows:

- Is environmental education implemented in all learning areas in the senior phase in schools under Ubombo Circuit?
- Do schools have policy guidelines on the implementation of environmental education?
- Do there any workshops conducted on the implementation of environmental education? If so, how regular are those workshops?
- Does the ever changing curriculum affect the implementation of environmental education in schools?
- Do educators and subject advisors have negative or positive attitudes towards the implementation of environmental education in schools?

1.5 AIMS AND OBJECTIVES OF THE STUDY

The aim of this study is to investigate the implementation of environmental education in the senior phase curriculum in the Ubombo Circuit schools. The objectives of this study are:

- To establish if schools are implementing environmental education in all learning areas in the senior phase;
- To find out whether schools have policy guidelines on the implementation of environmental education;
- To find out whether schools have specialist educators in environmental education
- To found out the number of workshops attended on the implementation of environmental education;

- To establish whether the ever changing curriculum has any effect on the implementation of environmental education.
- To ascertain the attitude of educators and subject advisors towards the implementation of environmental education;

1.6 SIGNIFICANCE OF THE STUDY

The study is mainly intended to raise awareness about the significance of environmental education in the broader South Africa context, using Ubombo Circuit schools. Environmental education enhances the understanding of learners and educators as to the sustainable use of environmental resources. The interdependence between human beings and the environment needs to be appreciated, and awareness of conserving nature for future generations also needs to be raised. The study concentrates on drawing the attention of policy makers, decision makers and curriculum designers to the importance of environmental education so that all forms of education can play a vital role in enhancing environmental literacy among citizens and enabling them to sustain and appreciate nature.

It also underlines the need for education towards wise usage and protection of the environment, so as to maintain mutually beneficial relationship between people and the environment. The significance of this study is that it will make an immense contribution to educators and learners in understanding the importance of the environment in their own livelihood. In particular, the study seeks to:

- Unfolds the challenges on the implementation of environmental education in schools;
- Establish whether schools have trained educators and made resources available for the implementation of environmental education;
- Make all stakeholders in education aware that education is the key in sustaining a healthy environment;
- Share its results with stakeholders in education, including district officials, ward managers, principals and educators;

- Further inform the Department of Education whether or not environmental education is implemented in all learning areas in the senior phase.

1.7. OPERATIONAL DEFINITION OF TERMS

Different researchers define terms in various ways; usually terms are defined contextually to avoid ambiguity (Mathenjwa, 2003). In this study, terms are contextually defined to ensure that readers of this research read and comprehend the document the same manner that the researcher understands them. Definition of terms assists not only in ensuring that the problem of ambiguity is avoided, but also that terms used are understood in the context of the research topic. It is necessary to provide a cursory explanation of the principal concepts that underpin the study (Le Roux & Bouazid, 2009). The following terms are therefore defined, and should be understood in the context of environmental education.

1.7.1 Implementation

Implementation is the act of providing practical means to accomplish the desired goals (Henning & van Runsborg, 2002). It means putting the plan of teaching and learning into action with regard to the implementation of environmental education. In the context of this study, implementation means the act of integrating environmental education across the curriculum in schools.

1.7.2 Environmental Education

Environmental education is a broad, interdisciplinary term that is integrated in the curriculum as cross-curricular theme. Environmental education encompasses all facets of environmental issues including awareness, sensitivity, values and attitude that reflect the feeling about environment (Tarabu & Fierrak, 2007). Environmental education involves the development of skills that are necessary to identify and solve environmental crises in order to promote a healthy environmental all levels, local, national and international (NEEP, 2000). According to the International Union for Conservation of Nature [IUCN] (1991), environmental education is the process of recognising values and clarifying concepts in order to develop skills and attitude necessary to understand and appreciate interrelatedness among people, their culture and biological

surroundings. Environmental education includes all facets of environmental issues, even human environment. Its main focus is on awareness and sensitivity about environmental challenges, knowledge and understanding about the environment, attitudes concerning the environment, assistance in maintaining environmental quality and skills to mitigate environmental problems and participate in existing knowledge and environmentally related programmes (UNESCO).

The Queensland Department of Education (1993) in Australia defines environmental education as a comprehensive concept in education because it is about people on healthy planet earth, about people and nature. As a cross-curricular theme, it is concerned about the environment–learning in an environment and learning through the environment (Agenda 21, Earth Summit on Sustainable Development, 1992).

Environmental education is a learning process that increases people’s knowledge and awareness about the environment and associated challenges, develops necessary skills and expertise to address the challenges, and fosters attitudes, motivations and commitments to make informed decisions and take responsible action (UNESCO, Tbilisi Declaration, 1977). According to the Environmental Education Policy Initiative (EEPI) (1996), environmental education seeks to develop the necessary skills and commitment to enable people to be proactive in securing a healthy and properly functioning environment that is sustainable and promotes social justice. Environmental education entails reform of the school system, the school policy, the curriculum, classroom activities, teacher education and the role of the community (Bornman, 2011). Environmental education is a set of practices that together help arm every individual and community with the tools they need, and makes them accountable for their actions (5th World Environmental Education Congress, 2010). In the context of this study, environmental education refers to the organised effort to teach learners about how natural environment functions, and how human beings can manage their behaviour and ecosystems in order to have a healthy and sustainable environment for the present and future generations.

1.8 ORGANISATION OF THE STUDY

The research study consists of five chapters.

1.8.1 Chapter One

This chapter is about the orientation of the study. It provides details about the procedures that were followed when the research was conducted. The purpose of this chapter is to inform the reader of the exact problem that was researched. It provides a comprehensive picture of the whole research study.

This chapter comprises the orientation of the study, an introduction, motivation and background, a problem statement, a discussion of the significance of the study, and its aims and objectives, an operational definition of terms and the organisation of the study.

1.8.2 Chapter Two

The main focus is on the literature review. Chapter Two provides a theoretical background of the study. It provides extensive knowledge of what other researchers have found on the same related topics (Bobbie& Mouton, 2007). It further focuses on the overall picture regarding the availability of environmental educators to teach environmental education, the attitude of educators and learners towards environmental education, the resources to teach it, environmental education in the new curriculum, and educators 'level of understanding of the project.

1.8.3 Chapter Three

Chapter Three explains the research methodology, which was used in carrying out the study. It provides details about the questionnaires and interviews which were used to collect data from educators and subject advisors, environmental officers and school governing body members, the instruments used to collect data, how that data was analysed and the ethical issues which guided the involvement of the participants in the study.

1.8.4 Chapter Four

Chapter Four provides information on data analysis and interpretation of research findings. Data analysis involves tables, graphs, figures, models, illustrations as well as statements and explanations of facts. A summary of results about the implementation of environmental education is presented as statements. It shows the understanding, perceptions, attitudes and views

of educators, subject advisors, environmental officers and school governing body members about the implementation of environmental education across the curriculum.

1.8.5 Chapter Five

Chapter Five details the conclusion drawn from the results obtained in the study. It focuses on the summary, conclusions and recommendations and makes recommendations on the way forward.

1.9. CONCLUSION

This chapter outlines the various procedures which were followed when the study was conducted. The challenges that have emerged with regard to the implementation of environmental education in schools were highlighted. It is believed that environmental education is the possible solution for addressing various environmental crises around the world. Therefore, it is vitally important to consider that any form of education should include environmental education for the benefit of the present and future generations.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

The aim of this chapter is to review relevant literature on the implementation of environmental education in schools. It has been a prime objective of all countries around the world to implement environmental education in schools as a cross-curricular theme. This is reflected from the resolutions of various international conferences which are held annually in different cities worldwide. Environmental education has been seen as an essential strategy for reducing the rampant environmental crisis around the world. The South African government, as a signatory to several international conventions on the environment, has committed itself to addressing the environmental crisis through education (Schudel, et al., 2008).

Environmental understanding and skills are, for the first time, prescribed as key outcomes in all eight learning areas in the South African school curriculum (Symmonds, 2008). Conferences, meetings and workshops are held in various parts of the world to develop strategies and methods to implement environmental education in schools, and South Africa is no exception in this regard. The status and integration of environmental education in the curriculum remains a challenge whereby the translation of policy into practice stands at the crossroads (Le Roux & Maila, 2004).

2.2 CONSTRUCTIVIST LEARNING THEORY IN ENVIRONMENTAL EDUCATION

Constructivist theory refers to the idea that learners construct meaning as they learn (Hein, 2013). According to Jia (2010), constructivism is a learning theory found in psychology which explains how people might acquire knowledge and learn to construct knowledge and meaning from their experiences. Activities in environmental education are mainly hands-on, such as picking up paper on the school premises, removal of alien plants, cleaning of streams and rehabilitation of eroded areas. A constructivist approach to teaching and learning will be good for

the implementation of environmental education as learners will construct meaningful resolutions to address various environmental issues in their areas.

Constructivists embrace concepts such as active learning, hands-on instruction and cooperative learning (Mills, 2006). Environmental education needs active learners who are prepared to get dirty when engaged in environmental activities. The constructivist teaching method requires high level of student activity, and corresponding method that reflects that level (Pagan, 2010). Environmental education promotes cooperative work. According to Bruner (2010), learning depends on cognitive activity, not just physical activity. According to constructivism, learning consists of individual construct meaning and then indicates how it influences education. Learning is a process in which the learners use sensory input, and construct meaning from it (Hein, 2013). Environmental education, like other disciplines involves the mind as well as hands; constructivist theory could be an ideal approach to the implementation of environmental education in schools because it emphasizes hands-on learning activities.

Dewey (2013) stressed that learners need to do something: learning is not passive acceptance of knowledge, but involves the learners' engaging in different hands-on learning activities. Learning consists of both constructing the meaning and constructing the system of learning (Hein, 2013). Constructivist theory holds that learning involves language – learners need to talk to themselves as they learn. Environmental education requires active and creative teachers as well as learners who will be able to construct strategies to address different environmental challenges. Teachers are the designers for teaching activities, creators for conducive teaching and learning environments, guiders for learners learning and the academic consultants for learners (Jia, 2010).

Teachers are to inspire and guide learners to learn effectively. Environmental education needs learners to be active and participate in different environmental learning programmes. All hands-on learning activities must also pass the test of being minds-on; it must provide something to think about as well as something to touch (Hein, 2013). Learners are the main body of learning activity, and they construct knowledge on their own initiative. Teachers are the helpers and drivers for learners constructing knowledge. In cooperative and communicative environment, learners can enlarge their views instead of receiving knowledge passively. The environment can help them to build up their own knowledge, and cultivate their innovative spirit and problem solving ability (Jia, 2010).

A major theme in Bruner's constructivist theory is that learning is an active process whereby learners learn by constructing new ideas and building new schemas, based on current and past knowledge (Pagan, 2010). Learners learn skills which are needed to solve environmental challenges in real life. Environmental education addresses environmental issues, whereby learners need to think and craft the solution to the particular environmental problem. The crucial action of constructing meaning is mental (Hein, 2013).

Learners enter the classrooms with their rich previous knowledge, which is linked with new knowledge as it is introduced in classes, which challenges their thinking and creative ability. Modern cognitive psychology shows that learning is an interactive process of old and new knowledge (Jia, 2010). It happens in the mind, and the physical actions which involve hands follows, especially in the tasks involving projects. New learning is built from prior knowledge, and is further enhanced by social interaction through authentic tasks which move from experience to action (Cooperstein and Kocevar-Weidinger, 2003). Learners need to be provided with activities which engage the mind as well as the hands for effective learning. Constructivist learning theory suits the implementation of environmental education because most of its activities are practical, and it promotes independent thinking and construction of meaning to address different social challenges. A constructivist approach to the implementation of environmental education will provide learners with the opportunity to practice and perfect their creative skills to identify and address environmental issues.

2.3 IMPLEMENTATION OF ENVIRONMENTAL EDUCATION IN THE SENIOR PHASE

2.3.1 International perspectives on the implementation of environmental education

Research conducted in China by Chen (2012) indicated that most school educators frequently associated environmental education with science and social science. Environmental education has been introduced in primary schools in Zimbabwe where most environmental activities are taking place (Sibanda, 2009). In Brazil, the implementation of environmental education is faced with various challenges, such as lack of training, funds, resources and policy (De Carvalho, 2011).

In Nigeria, environmental education is taught as part of other school subjects such as social studies and integrated science (Olusanya, 2006).

The research conducted in the Southern Africa Development Community (SADC) Region (2004) revealed that it was clear that the concept of environmental education is still evolving; the SADC Region is affected by HIV/AIDS, pollution, waste management, poverty, drought, deforestation, erosion and floods. Environmental education includes a variety of learning processes that provide opportunities for people to develop knowledge, skills and attitude, which enable them to act in an environmentally responsible way within their communities (Nyota & Mampara, 2008). Environmental education is grounded in the objectives and principles established in the Tbilisi Declaration (1997) which help learners to acquire an awareness and sensitivity to the environment and its problems. They help learners to acquire basic knowledge and understanding of how the environment functions, and how people interact with it.

2.3.2 The implementation of environmental education in the senior phase in South Africa

Initially, environmental education was going to be implemented from the foundation phase and then to the senior phase in schools. The implementation of Curriculum 2005 took place in an environment that was characterised by enormous infrastructural backlogs, resource limitations, and inadequate supply of quality learning materials (Ferreira & Bopape, 2009). Environmental topics were already included in some learning areas such as geography, biology, tourism, physical science and agricultural science (Ferreira & Bopape, 2009). This indicates that environmental education is still compartmentalised into specific learning areas and specific departments in schools. Implementation of environmental education would assist both educators and learners to understand how the natural world relates to human beings, and how it functions.

As has been stated above, Schudel, et al., (2008) argue that only 28% of South African schools implement environmental education. Ezemvelo KZN Wildlife and the Wildlife and Environmental Society of South Africa (WESSA) are equipping both educators and learners with various skills and knowledge to identify and resolve environmental problems. The activities these two organisations are conducting for learners are not integrated into the curriculum, and are basically about environmental awareness. Before WESSA started with environmental education,

instruction was limited to conservation and wise management of natural resources, and basic ecology (Loubser, 2000).

Environmental education has been defined differently by different scholars, which makes it difficult for educators and learners to clearly understand what it means. The White Paper (1995) on Education and Training defines environmental education as involving an interdisciplinary, integrated and active approach to learning. Initially, environmental education was limited to providing learners with knowledge about environmental protection and conservation (Tarabu & Fierrak, 2007).

As a result, educators and learners have misconceptions about environmental education; some understand that it is only about nature around us, or about plants and animals (Tarabu & Fierrak, 2007). Educators were organising educational excursions to conservation areas such as game reserves, nature reserves and game parks to learn about nature. The knowledge acquired from various excursions emphasised the protection of plants and animals. In the fact-based tradition, teachers treat environmental issues as a knowledge problem (Ohman, 2009).

Environmental education should holistically incorporate many aspects of the environment, technological, natural, cultural, social, economic, political, man-made, and aesthetic and also disease is referred to as a cross-curricular theme. To some educators and learners, these two terms could mean different things but they mean the same thing, with the same approach for teaching and learning. Environmental education focuses on preparing individuals to be responsive to a rapidly changing technological world, to understand contemporary world problems, and to provide skills that are needed to play an effective role in the improvement and maintenance of the environment (Ohman, 2009). Environmental education is a vital programme of education and training, which creates environmental literate and active involvement in order to enjoy a descent quality of life through sustainable use of resources (Modise, 2011). Environmental education is a response to risk issues, crises and opportunity arising from the biophysical, social, economic and political components.

The implementation of environmental education will empower educators and learners to develop skills which are necessary to identify and contribute to the resolution of environmental problems.

It will assist in using acquired skills and knowledge in taking thoughtful and positive action. The implementation could impart environmental understanding in both educators and learners.

2.4 POLICY GUIDELINES AND WORKSHOP ON ENVIRONMENTAL EDUCATION

Environmental education was an informal sub-discipline since it was not included in the curriculum, and it did not have sufficient policy guidelines to be integrated into the school curriculum as a cross-curricular theme (Kyridis, 2005). A survey conducted in South Africa by Le Roux (2009) indicates that almost a third of the schools have an environmental education policy, but only one fifth use national guidelines for the implementation of environmental education.

Botswana has suggested the development of a multidisciplinary environmental education programme for formal education at all levels in the education system, in which policies and legislation will form part of the curriculum (Modise, 2011). There is a lack of policy to implement environmental education in schools, so educators have a task of developing policy that will raise awareness of environmental education in schools and within the community at large. In Myanmar (formerly Burma), environmental education is taught as a co-curricular activity at the middle and high school levels but it is in the primary schools where most environmental education initiatives have taken place (Win, 2001). Myanmar policy guidelines suit the integration of environmental education across all levels in schools. The implementation of environmental education in schools across the curriculum faces huge challenge if schools do not have policy guidelines.

2.5 SPECIALIST EDUCATORS IN ENVIRONMENTAL EDUCATION

A recent change in the government policy in South Africa has emphasized the importance of cross-curricular teaching and learning in schools that integrate environmental education (Jonathan, 2010). This requires subject specialists, with whom educators and learners would work in the new curriculum. Existing literature show that challenges regarding the implementation of this idea cuts across geographical divides. For example, in Michigan (USA)

the lack of state funding is an ominous cloud for public education, especially for teacher training in environmental education (Balaskovitz, 2009). Balaskovitz (2009) says that there is no direct plan for environmental education in the Department of Education in Michigan.

All schools need to be teaching environmental education, but there is a lack of understanding of its nature and content. Most educators are not trained in outdoor teaching methods; some do not understand how to assess experiential or outdoor activity (Kyridis & Mavrikaki, 2005). The government of Zimbabwe and UNESCO tried to include environmental education in the curriculum, but the shortage of trained personnel hampered the initiative (Okoro, 2010). In South Africa, there are only a few institutions that offer environmental education courses to teachers during their training. These are the Universities of South Africa, Stellenbosch, Johannesburg, Zululand, and Rhodes University. It is evident that these universities are not enough to produce educators who are specialists in environmental education for all South African schools. In contrast, the government has exacerbated the problem by closing down all teacher training colleges in South Africa. It is not surprising that educators' understanding of the dynamics of environmental education as a cross-curricular theme is low, and their lack of knowledge about learner-centred pedagogy, as well as continuous assessment, so evident (Foulds, 2010).

Many educators in South Africa have little exposure to environmental education, yet the National Curriculum Statement (NCS) advocates the infusion of environmental education into all learning areas in the senior phase (Ferreira & Bopape, 2009). Environmental education is an alternative solution for addressing environmental issues that prevail globally. Serious environmental problems are experienced worldwide, and environmental education is seen to be the key to this problem. Although the South African government has good policies on environmental issues, very little is done at school level to promote or implement environmental education. The White Paper (2002) on Education and Training states that through environmental education, environmentally literate and active citizens should be created, and the National Environmental Management Act (1998) stresses that the well-being and empowerment of communities should be promoted by environmental education, and raising environmental awareness.

The general feeling of educators is that the emphasis on environmental issues should be taken to the classrooms where the policies would be put into action with detailed information to spread to the communities. Le Roux (2009) states that the South African government is committed to

addressing environmental crisis locally through education, but these commitments will not materialize if there are no subject specialists in schools. The full introduction of environmental education in schools will contribute to the resolving of the environmental crisis which the country is currently experiencing. Le Roux (2009) contends that the nature of environmental issues becomes evident in the fact that education that benefits the environment should take on a multi-curricular and cross-curricular character. In most schools, teaching and learning is still textbook-based and does not integrate environmental education. Emily (2013) writes that environmental education should be integrated across the curriculum in all grades in schools.

South Africa graduates between 6000 to 10000 new educators a year, but the teaching profession is losing about 8000 educators a year. A considerable number is lost owing to the AIDS pandemic; some leave the profession for greener pastures, and others resign (Teacher Training, 2010). Educators in schools are struggling with outcomes-based education, which is an approach to the National Curriculum Statement (NCS). It promises to introduce environmental education as a cross-curricular theme, but it has not yet been implemented: the policies have been developed, but putting them into practice improving insurmountable.

One-week workshops conducted by the Department of Education on the implementation of environmental education it seems, did not equip educators with the necessary skills to integrate environmental education as a cross-curricular theme. The implementation of environmental education in all learning areas needs teachers to be skilled in the approaches, methodologies, concepts, content theory and classroom practice (Ferreira & Bopape, 2009). Educators lack a range of competences, skills and knowledge about environmental education. The Department of Education has not done a follow-up to ensure that environmental education is implemented in all schools, and there is also lack of support in terms of school visits by subject advisors (Schudel, et al., 2008). The lesson-planning phase was complicated by the fact that only a small number of educators attended the workshops (Symmonds, 2008). The new curriculum found educators already in schools, and workshops conducted failed to equip them with the necessary skills and knowledge to implement environmental education. According to Le Roux (2009), educators should have specific practical, foundational, reflexive and applied competences for being subject specialists. Environmental education qualifications are directed primarily towards the teaching

profession, but many who register for the certificates are in environmental conservation and in other environmental fields, not necessarily in education (Le Roux, 2009).

Since clarity on the nature of the new curriculum and the status of environmental education has not yet been provided, it is difficult to outline the criteria that will have to be met. In response to the shortage of educators, the South African government is considering re-creating the teacher training colleges which were closed down a decade ago, between 1994 and 1998, after which, in 2001, the remaining colleges were placed under university education faculties (Le Roux, 2009). Research conducted by Ferreira & Bopape (2009) in Tshwane District indicates that the majority of teachers have no pre-service training in environmental education. Currently, most teacher-training in South Africa is offered at universities and affiliated teacher training colleges. The University of South Africa is regarded as the biggest teacher training university in South Africa (Teacher Training, 2010).

Integration of environmental education in schools remains a huge challenge. The government and independent bodies have developed policies on the integration of environmental education in all learning areas in schools, but educators and subject advisors in the districts lack skills and knowledge about cross-curricular teaching. Educators still perceive lack of knowledge about environmental education as their most important challenge (Emily, 2013).

Many provincial department officials do not have the expertise to develop programmes to support educators and learners with environmental education (Symmonds, 2008). Even the Department of Education is not putting more emphasis on implementation of environmental education as a cross-curricular theme, despite having some policies on environmental education formulated by independent bodies and government. Gabriel (2014), states that 'higher education is not a player in current environmental education'. Historically, higher education has not been an active participant in developing programmes to incorporate environmental education into the teaching of our current and future teachers in schools (Gabriel, 2014).

Less experienced educators have indicated that they need workshops in environmental education (Cheng & Martha, 2010). In some cases, environmental education is indirectly taught in some tasks such as projects, and educators are not aware that such tasks should be done in all learning areas in the senior phase in schools as a cross-curricular theme. It seems that educators

lack knowledge and skills to identify environmental problems or issues in their local areas, and develop their own resources to teach environmental education (Cheng & Martha, 2010).

The survey conducted by Ferreira and Bopape (2009) in Tshwane District indicated that an overwhelming majority of teachers do not have qualifications in environmental education. The South African government and the Department of Education are putting more emphasis on the shortage of mathematics and physical science educators, neglecting the shortage of environmental educators who could also play a vital role in addressing the environmental crisis through education (Harold, 2006). Research conducted by Emily (2013) on the attitudes of pedagogical students towards environmental education in Gauteng shows that an attempt should be made to develop environmental education in the universities through an interdisciplinary approach. Some educators with environmental education background have moved over to nature conservation services, some to the Departments of Environmental Affairs, Tourism, Agriculture, Water Affairs and Forestry and Fisheries and this account for the shortage of teachers in the discipline.

2.6 THE ATTITUDE OF EDUCATORS AND SUBJECT ADVISORS TOWARDS ENVIRONMENTAL EDUCATION

Change always brings challenges to the existing order. The introduction of environmental education as a new cross-curricular theme in the new curriculum, the National Curriculum Statement (NCS), poses different challenges to educators, subject advisors and learners. It challenges their competence. Educators are required to develop and apply competence involving the combination and integration of practical skills, content knowledge and methods of integrating environmental education (Schudel, et al., 2008). It seems most educators are not competent in the content of environmental education. The introduction of environmental educationist seen as the addition of workload such as lesson preparation, setting tests, and filing, marking, and planning excursions, work schedules and projects. Teachers have a problem with infusing environmental education into all learning areas, and prefer it to be a separate learning area (Ferreira & Bopape, 2009).

The Deputy Minister of Basic Education, in her speech during the debate on the State of the Nation Address in 2010, confirmed that teachers are overloaded with unnecessary administrative burdens which reduce time for teaching and learning in the classrooms (DoE, 2009). Educators are expected to change from the subject-based method of teaching and learning to new methods that would integrate environmental education as a cross-curricular theme. If school teachers do not have positive attitude towards the implementation of environmental education, little knowledge about the subject will be acquired in their classrooms (Harold, 2006). Some educators and learners are uncomfortable about getting deeply involved in the informal activities of environmental education which make them dirty, since these activities are mainly hands-on. Both educators and learners are used to formal teaching and learning which takes place inside the classroom.

As it is a new cross-curricular theme, educators and learners would struggle to understand the subject of environmental education, and its introduction would interfere with the normal functioning of school's timetable (Cheng & Martha, 2010). Teaching periods would also need to be increased per learning area to accommodate environmental education activities, and schools would dismiss late in the afternoon than the normal time. The school management teams (SMTs) would be concerned about results since they would see environmental education as a learning theme that would increase the failure rate; for they hardly understand all the dynamics of environmental education (Chen, 2012).

The school management teams are concerned about educators who will leave schools and attend a one week workshops on the implementation of environmental education (Kyridis, 2005). Kyridis (2005) further discovered that the teams are also concerned that the introduction of environmental education will stretch the limited budget of the schools. School management teams are expected to fund excursions or trips on environmental education, and buy teacher-learner support materials or textbooks. Learners will be left without educators, and the operational plan of the schools will be affected, they will run behind the scheduled time, since no effective teaching and learning will take place (Kyridis, 2005). If a school has one environmental educator, such educator will be expected to lead the whole school on the integration of environmental education across the curriculum in all senior phase classes. Such educators might not get support from some senior educators, since the latter might not be prepared to be led by a

newcomer, especially educators who have been in the field of education for a long time. Ingrid (2003) stated that the key challenge defaces the need to ensure that policy implementation of environmental education is simple, so that educators will be able to implement it with limited intervention from subject specialists. Less experienced educators on environmental education have indicated that they need more support and instructional aids to implement the programme (Judith, 2010).

Other important logistical barriers to the implementation of environmental education include the lack of teaching and preparation time as well as lack of funding (Emily, 2013). Both learners and educators will be so exhausted by teaching and learning for long hours before classes end (Cheng & Martha, 2010) in the afternoon that they may not have enough energy to prepare for the following day.

2.7 TEACHING RESOURCES FOR ENVIRONMENTAL EDUCATION

The Parliamentary Monitoring Group (2010) reported that the textbooks provided for learners were often of poor standard, and contained information which was not specific enough to aptly assist learners with their studies. The committee further indicated that the outcomes-based education (OBE) system is one of the primary causes of the textbook poor quality (Cheng & Martha, 2010) as textbook writers struggled to correlate OBE material and concise learning tools to assist learners.

South Africa is facing huge disparities in access to curriculum resources, teacher qualification, class sizes and learning support materials (Foulds, 2010). Mark (2009) pointed out the lack of pedagogically sound environmental education materials suitable for learners and educators. Inadequate teaching resources are one of the problems in schools, especially in rural schools. It has been mentioned earlier that human resources for teaching environmental education is one of the challenges that hinder its implementation in schools. One of the bigger challenges is the transformation of education in South Africa and the scarcity of teaching resources which threatens the education system of the country (Foulds, 2010).

Chen & Martha (2010) are of the opinion that most resources for environmental education have been developed according to an infusion model which has a close relationship with physical and social science. This indicates that there is a need to further develop teaching resources for environmental education in South Africa. Environmental education resources are not fairly distributed to schools, where they are mostly needed. They are mainly found in other departments such as Environmental Affairs and Tourism, Agriculture and Water and Forestry and also in various non-governmental organisation offices such as Greenpeace, the Wildlife Environmental Society of South Africa (WESSA) and the World Wildlife Fund (WWF).

Most policy documents on environmental education are not found in many schools nor in the Department of Education. The survey conducted by Ferreira and Bopape (2009) in Tshwane District indicated that the majority of schools did not have policy guidelines and teaching materials on environmental education. WESSA develops excellent environmental education resources packs which are found in their offices near Howick in KwaZulu-Natal (Judith, 2010). The National Botanical Institute (NBI) is one of many parastatal and NGOs with an interest in environmental education to provide resources for teachers and learners to use for teaching and learning on environmental issues (Symmonds, 2008).

This means that educators need to leave classes and travel to various departments and NGO offices to access resources. Some schools with environmental clubs have access to environmental education resources since they join environmental organisations such as WESSA, which provide them with enviro-kids, and encourage them to participate in different environmental activities and competitions. Environmental education challenges the creativity of educators to develop resources for the effective teaching and learning of environmental education. Most schools have textbooks, which do not include environmental topics or themes. Most textbooks, especially in developing countries, provide lists of facts for learners to learn, and achievement is measured by the degree of command of the content (Chen & Martha, 2010).

Schools in rural areas do not have access to computers, to internet cafés where some environmental education resources could be downloaded. Computer literacy to most educators and learners remains a challenge to accessing information from the internet. Schools do not have libraries with relevant materials on environmental education. Educators do not have sufficient knowledge and skills to identify and develop resources to teach environmental education. They

are unable to identify environmental issues in their surroundings which could be used as a teaching resource.

In poorly resourced schools, especially in rural areas, teachers are unable to translate pedagogy into an appropriate classroom practice (Foulds, 2010). Most schools in rural areas do not have water as the main resource which learners and educators can use to conduct projects on planting grass and plants in the school premises. Policy guidelines on the implementation of environmental education are not available in most schools. The curricular materials that are available in schools do not cover the implementation of environmental education across the curriculum.

2.8 ENVIRONMENTAL EDUCATION IN THE NATIONAL CURRICULUM STATEMENT (NCS)

South Africa, after the 1994 democratic elections, replaced the traditional curriculum (NATTED550) with the NCS's OBE as an approach for curriculum delivery in the classrooms, which promised to integrate environmental education across all learning areas in the senior phase. The curriculum has brought a huge challenge to educators, learners and district officials. Education in South Africa is facing a major crisis that needs immediate attention. The country is using an OBE system similar to that which was unsuccessfully tried in both the United Kingdom and the United States of America (Roberts, 2010). The OBE system came with obscure language, the environment being referred to, for example, as a 'phase organiser' (McCafferty, 2005). The system was forced on the entire state schools system without any evidence that it had been tried anywhere and found effective.

The implementation of OBE in schools has been confounded with a range of factors such as a skewed curriculum structure, a lack of alignment between curriculum and assessment policy, and a shortage of personnel and resources to implement the curriculum (Foulds, 2010). Educators were not adequately informed of the concepts that underpin OBE. It came with terminologies that tested the competence of educators, learners and subject advisors, such as 'range statement', 'critical outcomes', 'specific outcomes', 'learning outcomes', 'assessment standard', 'assessment grid', 'cross-curricular and phase organiser'. Educators were expected to cope with challenge

exposed by the new curriculum and the integration of environmental education. Educators needed to plan their lessons around these concepts. OBE involved them in immense administrative work, and reduced their time for teaching and learning. Studies conducted by Roberts (2010) in South Africa showed that many educators are spending less than 50% of their working days in the classrooms, and another 50% is spent on lesson preparation.

Under OBE, the curriculum includes parents in decision making for the learning of their children. The problem is that parents find themselves doing all the tasks given to their children by educators. Many projects are done by parents or friends, and learners are graded based on these projects, thereby obtaining grades that they in many cases did not earn themselves (Roberts, 2010). This scenario makes the implementation of environmental education difficult. Many educators are still confused as to the methods that must be employed to teach the content of environmental education, and how to assess learners based on the various outcomes that are required to be achieved at the end of the learning programme. They did not receive adequate training in the curriculum, which would enable them to teach with confidence. There is still a debate whether the country should continue with or abandon the system. Roberts (2010) states that OBE is a good system of education on papers, it addresses all industries' major concerns. But most educators are still not confident about the content of environmental education. Learners are getting fancy certificates, and have no clue as to the practical application of knowledge gained (Roberts, 2010).

The content of the curriculum has been radically adjusted, causing more confusion to educators and learners. Educators are learning the content of the subject they are teaching together with the learners they are supposed to be teaching. Learners are failing left and right while educators are trying to come to grips with the new system, which is continually being adjusted, creating more confusion to educators and learners (Roberts, 2010).

Schudel, et al., (2008) state that one of the most pressing challenges identified during contextual profiling at the provincial level was a serious shortage of experienced curriculum support staff. Many curriculum support staff has spent several years in other government departments, and consequently lack experience of the new curriculum, and educational processes in general (Raven, 2003). The implementation of OBE was a rushed process, which overlooked the availability of teaching resources and the training of educators. The result is that thousands of

children are suffering as a result of the system that has been too hastily implemented without feasibility studies to test its workability (Roberts, 2010). Research conducted by Mokhele and Jita (2008) in Mpumalanga indicates that not many schools and teachers have the necessary knowledge and experience to make the major shift in the curriculum that OBE requires. In particular, the provincial Departments of Education did not adequately train educators and district officials on the implementation of environmental education in the new curriculum. The provincial Departments of Education trained educators to train other educators in the new curriculum not in the integration of environmental education.

Educators who were facilitators also attended a one-week workshop which was not enough to equip them with all the necessary skills and knowledge to train other educators. Roberts (2010) mentions that the major issue with the National Curriculum Statement (NCS) in South Africa is the lack of training and resources for educators and district officials. Research conducted by Broussard & Jones (2000) indicates that some educators stated that the lack of background knowledge was a barrier to incorporating environmental education in the curriculum. The main debate is about the continuity of the ever-changing OBE system. There is widespread consensus that the outcomes implemented hitherto have been insufficient and ineffective (Foulds, 2010).

South Africa needs an investigation by researchers, policy makers and education practitioners into affordable, effective alternative models of curriculum and teacher development (Foulds, 2010). In America, thousands of parents gathered in Pennsylvania, Oklahoma and Ohio to raise objections against OBE (Schlafly, 2006). Similarly, in 2007 the Western Australian government abandoned most of its OBE in response to the massive opposition from parents and teachers (Nebula, 2009). It would be difficult to implement environmental education in a curriculum, which is unstable. This study assumes that an unstable curriculum is one of the challenges to the implementation of environmental education in South African schools.

2.9 PROFESSIONAL SUPPORT FROM SUBJECT ADVISORS, WARD MANAGERS AND CIRCUIT MANAGERS

As mentioned earlier, change always challenges the existing order. Most educators, district officials and ward managers have been comfortable with traditional methods of teaching and

learning. The integration of environmental education is challenging their competence. They have to learn new methods of teaching and learning, new methods of assessment, and new strategies of monitoring and evaluation and what to expect when conducting school visits. Despite the emphasis on the integration of environmental education, many provincial Departments of Education do not support the programme (Symmonds, 2008). Environmental education lacks support from senior management (Schudel, et al., 2008). It seems subject advisors and ward managers lack an understanding of environmental education since Departments of Education are not regularly organizing workshops and in-service training for them.

Subject advisors and ward managers will see the introduction of environmental education as additional work in the form of monitoring, moderation of portfolios and evaluation. At its inception, their fear was that it would further lower the pass rate as educators would leave schools to attend workshops and the provincial Departments of Education would blame them for the poor results. Lack of content knowledge among principals and district officials, and lack of support from district officials and provincial officials weaken the implementation of environmental education in schools (Creamer Media Report, 2010). There is also an evident lack of training of teachers to integrate environmental education effectively in the schools' curriculum (Charlard, 2009).

District officials need policy guidelines for monitoring, assessment and evaluation which are scarcely available in the Department of Education offices. School Management Teams and district officials, circuit managers and ward managers lack basic knowledge to support the introduction of environmental education, and they struggle to get educators who are specialists in the subject. According to Chen (2012), teachers are overloaded because they are responsible for teaching almost every subject in a diverse curriculum, and teaching and learning periods have been increased to one hour, but do not cater for environmental education. The challenges faced by both curriculum implementations are support and educators became evident during previous research. It was indicated that educators lack training in basic teaching, learning and facilitation skills on environmental education (Schudel, et al., 2008).

The introduction of environmental education will interfere with subject-based timetables by increasing teaching hours to accommodate its activities. One-week workshops were not enough, as has been said earlier, to equip educators and subject advisors with the necessary skills to cope

with all the dynamics of integrating environmental education in all learning areas in schools. Therefore, they are pessimistic about the outcome of the integrated approach system of teaching and learning. In rural areas, most schools are no-fee schools, so their budgets are limited. The introduction of environmental education would further stretch school budgets to the limit. Schools would be expected to include environmental education in their budgets to buy teaching resources and fund educational excursions on environmental education. This appears to be a daunting challenge.

2.10 THE INVOLVEMENT OF SCHOOL GOVERNING BODIES (SGBs)

The new system of education encourages parents to be involved in the education of their children and to be part of decision-making. The role of SGBs in the implementation phase is important, and cannot be ignored (Creamer Media Report, 2010). The SGBs would hardly support the introduction of environmental education as a cross-curricular theme in schools if been excluded in the initial phase of the whole process. They would see it as a top-down approach by the Department of Education. The Department has not organised workshops for SGBs on the implementation of environmental education across the curriculum (Schudel, et al., 2008). Parents who are serving on School Governing Bodies are often illiterate, especially in rural areas; they require capacity building to enhance their ability to provide support (Schudel, et al., 2008). They do not understand the purpose of integrating environmental education in teaching and learning. Their general understanding is that environmental education is about plants and animals (Charlard, 2009). The assumption is that if the School Governing Bodies do not support the integration of environmental education, they will influence parents and their children to resist the subject. It seems the SGBs do not understand the importance of integrating environmental education in the school curriculum.

2.11 THE ROLE OF THE COMMUNITY

The community has the traditional view that environmental education is about the pure physical environment (Symmonds, 2008). As has been stated earlier, environmental education is an

alternative solution to address environmental issues or crises that are prevalent in the local communities. Environmental education must be reconceived in order to be seen as fundamental to the community by all social classes. Communities are hostile to the introduction of environmental education; some of them were forced off their land to make way for game reserves, protected areas and heritage sites (Magi, 2010). They would think that the introduction of environmental education would not allow them a chance to interact with nature freely, as they normally do, cutting plants, or collecting firewood in forests, especially in rural areas.

Land for subsistence farming and for grazing would also be reduced or taken to make way for environmental education. It would further stop the inhabitants from interacting with nature to sustain their way of life through harvesting natural resources such as wild fruit, peeling trees, hunting animals, collecting insects to make medicine, and cutting poles, grass and twigs to build their houses.

Some communities cut branches off to make hedges for their fields and homes (Mathenjwa, 2003). The communities feared that they would be restricted in performing rituals by slaughtering goats or cows, and conducting baptism in the rivers, pans, swamps and sea. They feared that they would be forced to build their houses in small, designated areas where they could not even breed goats, cattle, sheep, pigs, donkeys and horses, just as in urban areas communities are removed or restricted from building in particular places, which could result to the poor participation of the community in the programme of implementing environmental education in schools (King, 2013).

2.12 CONCLUSION

The literature discussed in this chapter shows that the implementation of environmental education is encountering various challenges worldwide, not only in South Africa: challenges such as shortage of specialist educators in environmental education; lack of content knowledge on the part of educators, subject advisors and learners changing curricula and the attitude of educators and learners towards environmental education. Moreover, various definitions of the term “environmental education” remain a challenge, as do various perceptions about the implementation of environmental education. What we can learn from this literature is that

although the present study focuses on South Africa, using the Ubombo Circuit as a case study, the nature and extent of the problems associated with the implementation of environmental education cut across geographical divides and should thus be understood in that context.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter deals with the research methodology and research design, which serve as an exposition of how the study was conducted. This chapter begins by stating the qualitative and quantitative research design and methodology. It includes details of the selected population for the study, a description of participants, and sampling procedures and the data collection methods that were employed. This section also describes instruments that were used to collect data and described how data were analysed. It also incorporates ethical issues concerning the participants and problems the researcher encountered while conducting research in the study area.

3.2 DELIMITATION OF RESEARCH STUDY (FIELD SURVEY)

This research was conducted in twenty schools in the Ubombo Circuit, which has eighty-five schools, both primary and secondary. The circuit is located in the Umkhanyakude District in the northern part of the province of KwaZulu-Natal in South Africa. The circuit is extensive, and is deeply rural, with scattered schools. It is bordered by Hluhluwe town in the south, Mbazwana town and Sodwana Bay in the east, the Phongola River and Jozini town in the north, and Mkuze town and N2 Road in the west.

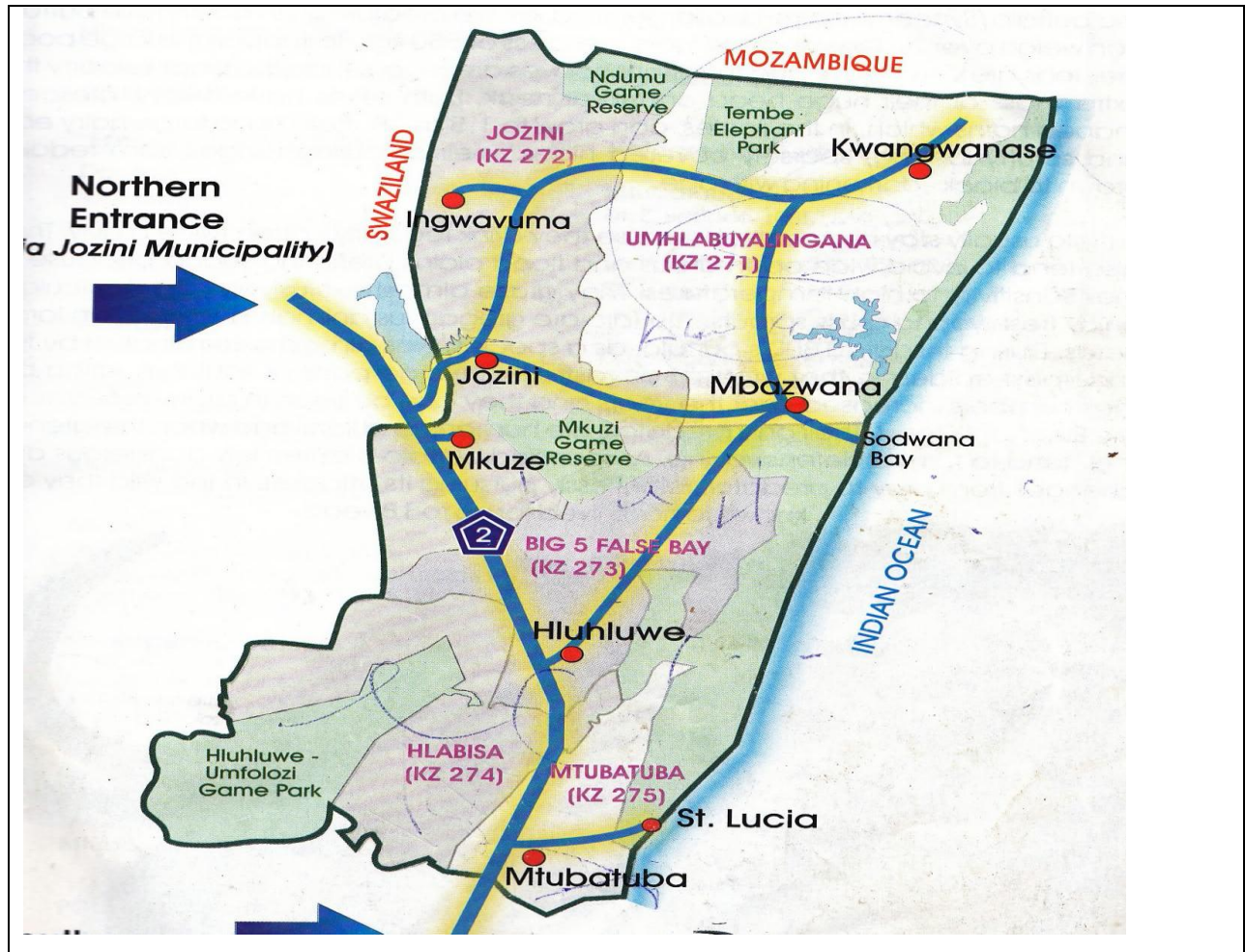


Figure: 3.1 Map of the Study Area

3.3 RESEARCH DESIGN

Research design refers to the plan and structure of the investigation used to obtain evidence (McMillan & Schumacher, 1997). The study used both qualitative and quantitative techniques to collect data from the study area. This decision was prompted by the belief that both qualitative and quantitative methods could make a valuable contribution to social research, and could be used to complement each other (Neuman, 2005). The research design as a whole included the following techniques: research instruments, sampling procedure and method of data collection, interview techniques, method of data presentation and method of data analysis and interpretation.

3.3.1 Qualitative Research

The qualitative research method is defined as a method that involves an in-depth understanding of human behaviour and the reasoning that governs human behaviour (Magi, 2010). The researcher used this method to ensure that most participants were involved in the process of data collection. The aim was to gain the perception of the participants toward the implementation of environmental education. Qualitative research collects data in the form of words that reflect the thinking of the participants concerning a particular issue. Participants were able to express their opinions on the implementation of environmental education in schools. The qualitative method is known for its focus on authenticity, meaning attribution based on the participants' social reality, cultural meaning and content analysis (Huysmans, 2011). This method provides an insight into the feelings, attitudes, perceptions and beliefs of participants about the research topic. It is recommended in studying people's wider perception of everyday behaviour, and it is also used to explain how people conceptualise the world and construct meaning from it (Babbie, 2009).

Qualitative research makes use of data collected through observation, consisting of detailed description of the participant's behaviour. Observation was one of the techniques used by the researcher to collect data in the study field. It allowed him to observe educators' activities in their classes in accordance with the implementation of environmental education. His observation of the implementation of environmental education prompted him to ask questions about the methods and learning activities educators were engaging learners in. His observation found that educators did not integrate environmental themes in their lessons. Qualitative research analysis was used as a prelude to the quantitative research method.

3.3.2 Quantitative Research

The quantitative analysis technique is best suited for hypothesis testing, objectivity, and a systematic process which includes using numerical data to obtain information (Burns & Groves, 2013). Deductiveness, generalisability and numbers are the features often associated with quantitative research (Babbie, 2009). The data of the sample are large enough to be generalised and structured in a form that can be immediately transposed into numbers. Quantitative data were used to generalise the age and gender of respondents, as well their education level, teaching experience and the subjects the respondents were teaching. Such data was collected in the form of numbers. The quantitative method provides a better understanding of the problem to be

researched. It focuses on the phenomena that occur in their natural setting (Leedy & Ormrod, 2002). This method allows researchers to study selected issues in depth, openly and in a detailed manner as they identify and attempt to understand the categories of information which emerge from the data.

3.3.3 Descriptive Design

Descriptive design describes the behaviour of participants in the field of study (Babbie, 2009). Its aim was to gain more information about particular characteristics within the field of study. A descriptive study was used to develop theory, identify problems with current practices, and justify current practices (Neuman, 2005).

3.4 RESEARCH SAMPLE

Sampling is a selection of research participants from the entire population, and involves decisions about which people, settings, events, behaviour and social processes are to be observed (Terreblanche, Durrheim & Painter, 2006). It is a technique used by researchers to select a group of items, events, situations or individuals to be involved in the study (Magi, 2010).

The study used a random sampling technique, which eliminates bias in the processing of chosen data. A sample of 50 schools was randomly selected from 85 schools in the Ubombo Circuit. The schools were both primary and secondary, 100 educators were chosen from 1213 educators, targeting those educators who were teaching subjects with environmental topics, such as natural science, social science, physical science, life orientation, technology, life sciences and tourism, and 5 subject advisors were also randomly selected for the earlier mentioned subjects. Interviews were conducted with 2 School Governing Body members randomly selected from 12 members from different schools; one Ezemvelo KZN Wildlife officer, one Wildlife and Environmental Society of South Africa officer, and one World Wildlife Fund officer selected. Participants from schools and the district were 51 males and 54 females. Purposeful sampling was conducted targeting 2 schools with environmental clubs out of 85 schools earlier mentioned; the aim being to find out their involvement in outdoor environmental education activities.

Educators were in the majority since they were the implementers of the curriculum, and the subject advisors were in the minority as they were the monitors of the curriculum. The environmental officers were the custodians of the environment, and members of school governing bodies represented parents and decision makers in schools. The questions to educators were based on the implementation, methods and attitudes to do with environmental education, workshops, and curriculum. These questions further focused on the availability of trained educators to teach environmental education, policy guidelines on the implementation of environmental education, and the availability of resources. Questions to the subject advisors were based on implementation, workshops conducted, policy guidelines and understanding of the concept of environmental education. Questions to SGB members and environmental officers were based on their roles in the implementation of environmental education in schools.

3.5 DATA COLLECTION

Questionnaires were well recognised as means of gathering information that describes the nature of data that ranges from physical to human attributes (Babbie, 2009). Research data were collected through the use of structured questionnaires. Questions were structured in accordance with the research topic on the implementation of environmental education in schools. 100 copies of the questionnaires were randomly distributed to 100 educators and five to subject advisors of the Ubombo Circuit. 81 copies were filled in and returned by educators, and three by subject advisors. 19 questionnaires were not returned by educators, and two were not returned by subject advisors. Data were further collected through interviews with both environmental officers and SGBs of primary and secondary schools, as well as through the researcher's observation. Gathering data usually varies with the type of research method being used (Magi, 2010). Other information was obtained from the Ubombo Circuit Office and Jozini Municipality where the study was conducted, such as the total number of schools in the circuit, and map of the study area.

3.6 RESEARCH INSTRUMENTS

The research study used structured questions which were divided into two sections. Section A consisted of nine questions, which solicited information about personal background of the respondents. Section B consisted of twelve (12) questions for educators and seven for subject advisors, about the availability of policy guidelines, resources, implementation of environmental education, attitudes of educators and subject advisors towards its implementation, training or workshops on environmental education, The understanding of the dynamics of environmental education by educators and subject advisors, and the outdoor environmental education activities available for learners. Interviews were conducted with two members of the SGB. The questions were about their understanding of whether schools should implement environmental education or not, and three environmental officers were questioned about their role in environmental education. Observation was done in 6 primary schools and 6 secondary schools. Some data were collected from research journals and articles on the implementation of environmental education in various publications and conference papers. Brochures and reports on environmental education from various departments such as Agriculture, Environmental Affairs, Tourism and Water Affairs, and from NGOs provided valuable information on environmental education. Internet websites were also used to provide relevant material, and digital camera was used to take photos for evidence. Questionnaires allowed for frankness and honesty, it can be made anonymous and participants fill the questionnaires during their spare time. Questionnaires were randomly distributed to 100 educators in both primary and secondary schools, and to five district subject advisors. Both closed-ended and open-ended questions were used to collect data.

Closed-ended questions were very popular as they provided greater uniformity of responses and were easier to process (Babbie & Mouton, 2007). The research study used questionnaires that allowed the participants to choose between predetermined responses. Closed-ended questions were best for obtaining demographic information, and data could easily categorized (McMillan & Schumacher, 1997). Open-ended questions allowed respondents to express their views on the questions asked. Questions were written in English since the participating educators, subject advisors and environmental officers were competent in English, and for SGB members interviews were conducted in isiZulu since most of them cannot read and write, especially as the study area was rural.

3.7. THE INTERVIEW TECHNIQUES

A structured interview schedule was used for the purpose of collecting data for this study area. The interviews with members of SGBs were conducted in isiZulu, as some of them were unable to read and write or speak English. With regard to the environmental officers, their interviews were conducted in English. Questions for SGB members were translated from English to isiZulu.

A structured interview has the following advantages:

- Some people (SGB members) explain their views clearly in the interview in isiZulu.
- It avoids misunderstanding of the questions since they can be clarified.
- Ideas are explained if there is a need.

The researcher used the vernacular (isiZulu) to facilitate the understanding of the questions, especially to SGB members. According to Kabudi (2004), an interview has some disadvantages such as the need for more time, money and energy to conduct it, but the interviewer may elicit the degree of bias in the participants. Kabudi (2004) writes that race, age, sex, religion, vocabulary, accent, ethics, the social background or social class of the interviewer may alter the responses of the respondents. These potential sources of problems were considered during the data collection process.

3.8 DATA ANALYSIS AND PRESENTATION

Research data was analysed by using both qualitative and quantitative methods. Data were presented in the form of tables, facts, plates and figures. Data analysis aims to make sense of the amount of data collected through the use of questionnaires, interviews and observation. It reduces the volume of information and constructs a meaning.

3.9 DATA ANALYSIS

Analysis in research means breaking down, categorising, ordering and summarising data so as to get answers to the research questions (Magi, 2010). Data analysis is the transformation of the gathered information or data into answers to the original research question (Kabudi, 2004).

In analysing data for the study, the Statistical Package for Social Science (SPSS) was used to construct graphs and figures, SPSS was further used to analyse questionnaires. Computer programme micro soft excel was used to draw tables. Data were further presented in the form of percentages. Facilitating analysis is often necessary to change the variable data into the desired tables, graphs, models, figures and various illustrations (Magi, 2010). Interviews and observation data were analysed through description, explanation and prediction of facts which were collected in the study area.

3.10 ETHICAL ISSUES

The essential purpose of research ethics is to protect the welfare of research participants (Terre Blanche, et al., 2006). Permission to conduct the research was requested in letters to the Head of Department of Education and the Circuit Manager and to the principals whose educators participated in the study. The researcher fully disclosed the whole purpose of the research to the Head of Department, Circuit Manager, principals, SGB members, educators and environmental officers. The roles of the participants were clearly explained before they got involved in research activities. All participants were allowed to put questions to the researcher for further clarity.

The researcher was open and honest with the participants, and informed them of all the aspects of the research. Information provided by the participants was treated confidentially, and their privacy was ensured. Participants did not write their names on the questionnaires. They were also not forced to participate in the research study and it was voluntary. They completed the questionnaires in their own time at home and returned them to the researcher, and interview days were scheduled with SGB members and environmental officers. Participants were allowed to withdraw from participating in the study at any stage.

3.11 PROBLEMS ENCOUNTERED IN THE STUDY

The study was not funded; the researcher had to make use of personal finances to conduct all research activities. This included transport to the research area, collecting maps from the Jozini municipality, collecting statistics from the circuit, photocopying questionnaires, distributing and collecting questionnaires from the respondents, typing letters to make appointments with principals and SGB members, and for interviews with environmental officers, and distributing questionnaires to educators. Respondents were given questionnaires to complete at their homes, but when the researcher came to collect them, some respondents had left them at their homes, and others said the questionnaires were lost. The researcher had to arrange another day with them to collect the questionnaires. Since the research involved educators, environmental officers and SGB members, for any research activity the researcher had to use break time or lunch time to avoid interfering with teaching and learning in classes so as to comply with government policy.

Since, as stated earlier, some members of SGBs could not read and write, the researcher had to translate questions into their home language. Some SGB members refused to participate in the study: they believed that since it was about environmental education, its aim was to remove them from their land because their forefathers had been forcefully removed from it for the establishment of game reserves.

Others wanted to know what they would get for the information they provided. The researcher had to explain that the information would be kept at the University of Zululand Library for students to consult. The Department of Education would see the importance of introducing environmental education in schools across the curriculum in the senior phase, and the community would understand the importance of environmental education in their lives and the interdependence that exists between human beings and the environment.

3.12 CONCLUSION

Chapter Three is about the research methodology. The research used both qualitative and quantitative methods. A total of 50 schools were randomly selected from 85 schools. The sample for the study consist of 100 educators, targeting those who were teaching subjects with

environmental topics, 5 subject advisors, 2 school governing body members were randomly selected and 2 environmental officers. The study further used questionnaires, interviews and observation to collect data. Computer programme micro soft excel was used to draw tables and Statistical Package for Social Science (SPSS) was use to draw graphs and figures.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION OF RESULTS

4.1 INTRODUCTION

The focus of this chapter is on the analysis, interpretation, discussion and presentation of the findings of the study. The results are based on the data collected through the distribution of questionnaires to educators and subject advisors, as well as interviews conducted with the environmental officers and school governing bodies. The collection and interpretation of data in this study were intended to facilitate the understanding of the challenges that hinder the implementation of environmental education in the Ubombo Circuit schools. The results of the study follow the analysis, interpretation and discussion. This part of the study further deals with research findings from various perspectives. Firstly, the profile of the survey respondents is presented in the form of tables, graphs and plates. Data collected through interviews are analysed and then followed by in depth discussion.

4.2 DEMOGRAPHIC STRUCTURE OF THE SURVEY AREA

The respondents involved in this study were educators, subject advisors, and environmental education agencies like WESSA and WWF. The data give a description of respondents in order to have a clear understanding of the results. They cover gender, age, teaching experience, learning areas and level of education. It was deemed necessary to obtain data on the above-mentioned variables because they are likely to influence the manner in which educators think and feel about the integration and implementation of environmental education. The level of teaching experience could enrich data collected, and guide educator's perception and understanding of environmental education.

TABLE 4.1: Gender, frequency and percentages of respondents

GENDER	FREQUENCY	PERCENTAGES
MALES	33	41%
FEMALES	48	59%
TOTAL	81	100%

Of the 100 copies of the questionnaires distributed to educators and subject advisors, only 81 copies were returned, while 19 educators and two subject advisors did not return them. They alleged that the questionnaires got lost in the staffroom. Of all the 81 questionnaires returned, 59 percent were from female respondents and 41 percent were from male respondents, as clearly indicated in Table 4.1 above. This table indicates that there is an 18 copies percent difference in the gender distribution of the respondents. The study regards gender as significant because both targeted groups were able to show interest in issues involving environmental education in school.

4.2.1 Age Structure

The study considers the age of the respondents significant, and in this instance, various age groups were included in this research, except for those that were less than 20 years of age. The analysis presented in Figure 4.2 indicates that 36 percent of the respondents were between 31 and 40 years of age, 22 percent were between 41 and 50, 21 percent were between 21 and 30, and 6 percent were more than 50 years old. This graph shows that most respondents were between 31 and 40 years of age. In fact, the age group between 20 and 59 is regarded as the working group (Raven, 2003). In the graph below, age is subdivided into youth (21 percent), young adults (36 percent) and mature adults (22 percent). It was assumed that the selection of this age range could provide a balance of views and information about the possibility of implementing environmental education.

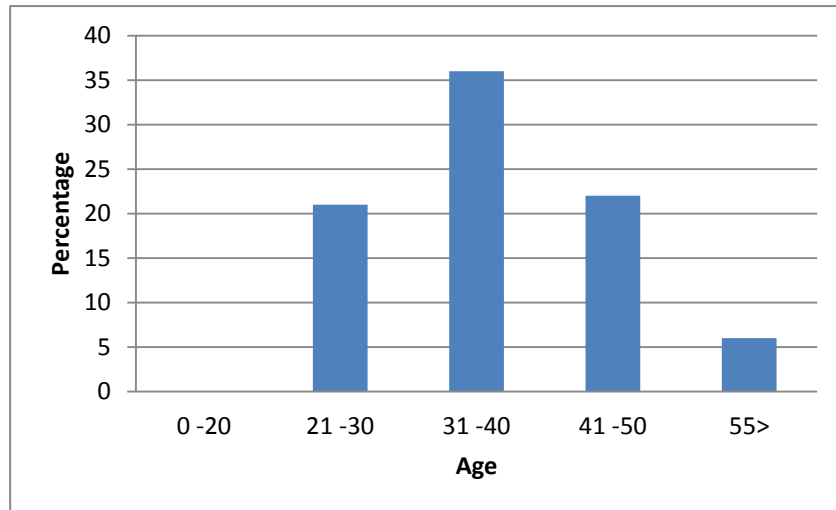


Figure 4.2: Age structure of selected educators of Ubombo Circuit

When considering the percentage in the graph, it shows that these age groups were willing to take part in comprehensive in-service training and effective workshops that would equip them with various skills and methods that are necessary for effective implementation of environmental education. These age groups could assist the Department of Basic Education at Ubombo Circuit to skill educators in order to properly implement environmental education programmes as required by the Department. Age is related to experience, and could be a significant factor to improve the quality of teaching and learning in schools (Oloka, 2013).

4.2.2 Teaching Experience of Respondents

The results presented in Figure 4.3 show that 31 percent of respondents had from 6 to 10 years of teaching experience, 26 percent varied from no teaching experience to five years, 20 percent had from 11 to 20 years, two percent had from 21 to 25 years, and one percent had more than 30 years of teaching experience. The graph below shows that the majority of the respondents have adequate experience in the field of teaching and learning, which could be an advantage in the implementation of environmental education.

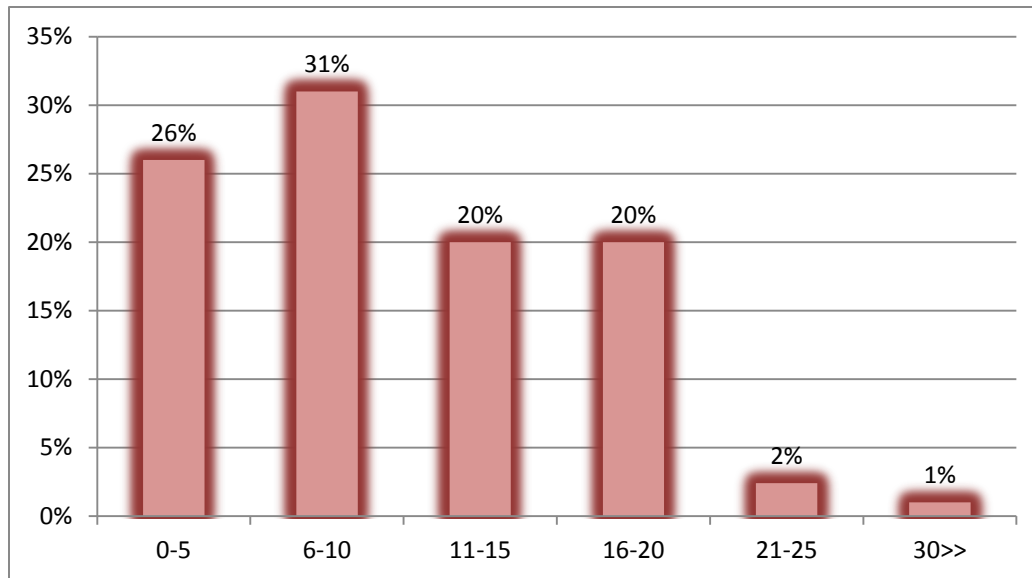


Figure 4.3: Teaching experience of respondents

Raven (2003) states that in general, educators have been attending various capacity-building workshops in the past to upgrade their skills and knowledge in order to integrate teaching and practical activities in their lessons. It is assumed that such educators could cope with the implementation of environmental education if the Department of Education could organise regular workshops. The workshops could equip educators with new teaching methods. The next section gives a brief outline of how the curriculum frame work is structured in South African schools.

4.2.3 Learning Areas

The results of the study below show that some learning areas have environmental topics. Subjects such as life sciences, social sciences, natural science, life orientation, agricultural science, physical science and tourism provide educators with the opportunity to integrate environmental education in their lessons. The graph below shows the percentages of educators who participated in the study and the learning areas they are teaching. Educators who teach English constituted 20 percent, life orientation 12 per cent, natural science 11 percent, numeracy and social science 8 percent.

Economics and management sciences constitute 7 per cent, mathematics 6, life skills, literacy 2 percent, business studies, physical science and technology 3 percent, tourism 4 percent, mathematics literacy 2 percent, agricultural science 3 percent, life skills 6 percent and life sciences percent. The graph shows that 8 percent of educators teach social sciences, 2 per cent teach tourism, and 1 percent teaches agricultural science, life sciences, life skills and economic management sciences. These learning areas have various environmental topics.

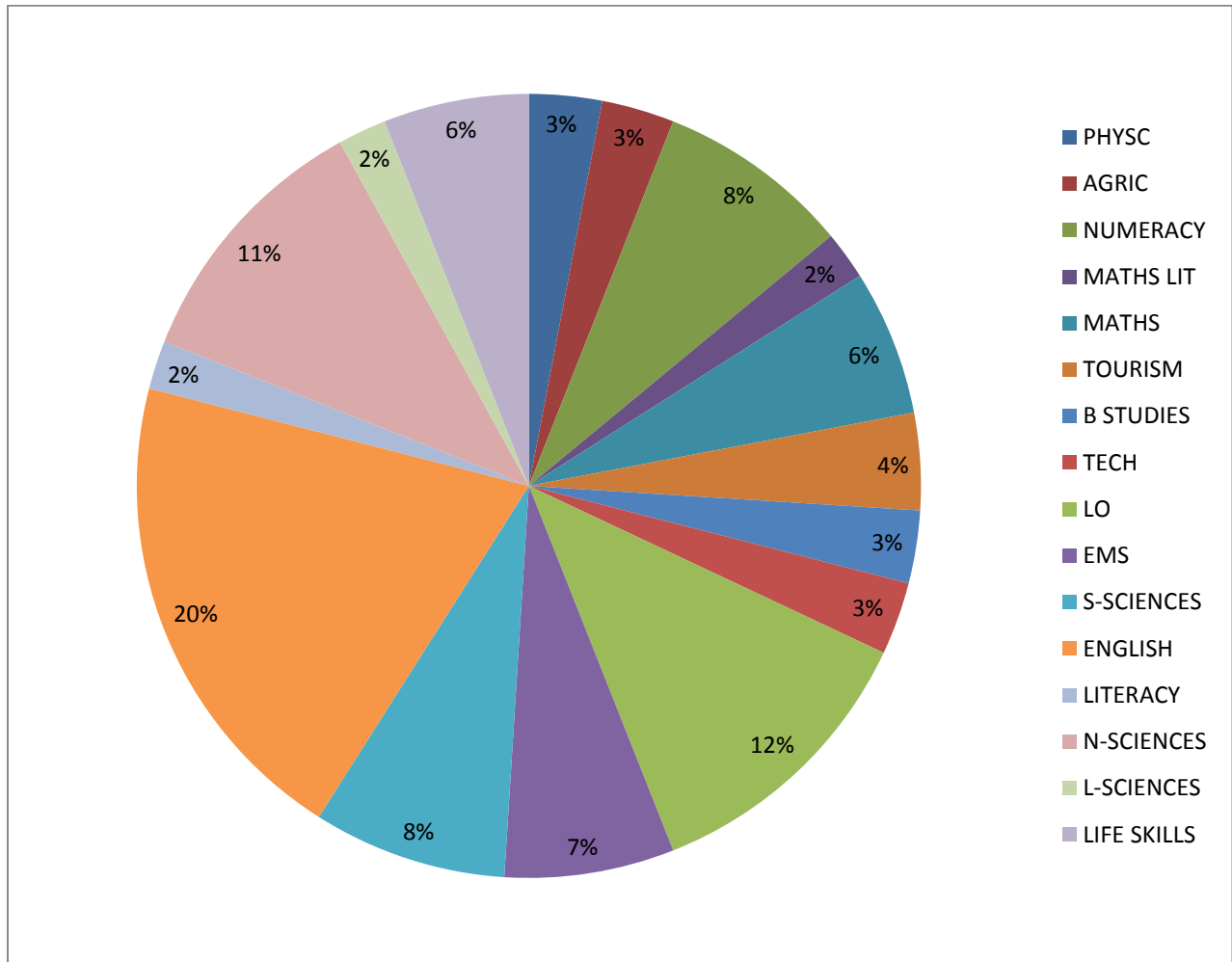


Figure 4.4: Selected educators and the learning areas they are teaching

This suggests that educators who are teaching these learning areas have an opportunity of exposing learners and themselves to some environmental issues. The remaining learning areas in the graph below have limited environmental topics in their syllabi. It means that educators and learners involved in these learning areas are exposed to limited information about environmental

issues. Some educators are exposed to environmental issues, but their creativity is crucial in selecting what environmental topics should be included in their lessons.

This further implies that many educators and learners may not be fully exposed to environmental concepts. In fact, only educators and learners who are engaged in the subjects with environmental topics get exposed to environmental issues, since environmental education is not formally integrated across the curriculum in the senior phase. The study found that one educator was teaching more than one learning area. The results in the graph concur with the results of the whole study that 79% of educators believe that environmental education would add workload to educators, although they agree that it is important in addressing the environmental crisis. Some even suggested that environmental education should be an independent subject because it has so many topics.

4.2.4 Educational Level of Respondents

Professional training is regarded as the most important tool for teaching and learning. It provides educators with the opportunity to impart new knowledge, and develops learners to be mentally and spiritually perceptive. The results in Figure 4.5 below show that 26 percent of the respondents have degrees, 19 percent have the Primary and Secondary Teacher Diploma, 17 percent have the Advanced Certificate in Education (ACE), and 9 percent have the National Professional Diploma in Education, 7 percent have other training certificates such as the National Diploma in Electrical Engineering, or the National Diploma in Business Management, 6 percent have the Higher Diploma in Education (HDE), 6 percent have the Postgraduate Diploma in Education (PGCE), 5 percent have a B.Ed. Honours degree in Education, 2 percent have the Primary Teaching Certificate (PTC), another 2 percent have the University Education Diploma (UED), and 1 percent has a Master's Degree in Education.

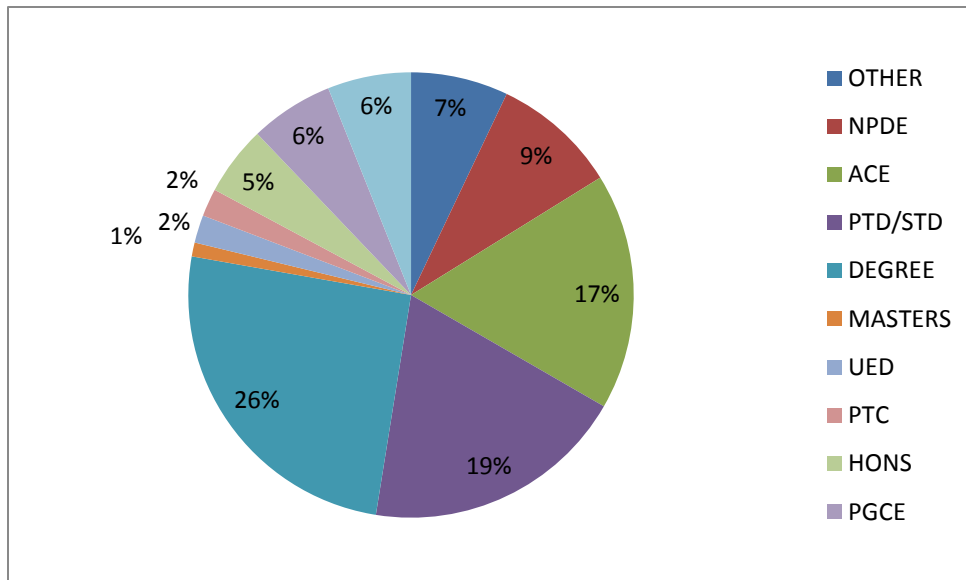


Figure 4.5: Education Level of Respondents

These results in Fig 4.5 above show that educators in both primary and secondary schools are professionally trained to impart knowledge to learners. They confirm that all participating schools do not have specialist educators to formally teach environmental education. Although the graph shows that they are professionally trained, the majority lack basic understanding of environmental education. Besides, education is a lifelong learning process, despite the respondents' level of tertiary education, it is crucial to expose them to various environmental concepts and topics through workshops and in-service training. Workshops conducted to capacitate educators need to be conducted by environmental practitioners in the field of environmental education. It was indicated earlier in Schudel, et al., (2008) that the workshop conducted on the implementation of environmental education failed to capacitate educators with necessary knowledge and skills. The reasons were that educators were trained by non-experts in the field. That is why their training never made any impact in the educators' career development.

It is assumed that educators are vested with various teaching methods and strategies. They would easily cope with new methods and strategies of integrating and teaching environmental education. The challenge for the Department of Education is to organise capacity-building workshops or in-service training for educators in order to implement environmental education

effectively and confidently in schools. The results agree with findings of the research conducted by Mason, (2014) in South Africa, which indicated that whatever the quality of the curriculum is, its success or failure depends largely on the development of quality educators.

4.3 IMPLEMENTATION OF ENVIRONMENTAL EDUCATION ACROSS THE CURRICULUM

The National Curriculum Statement (NSC) is the curriculum that emphasizes the implementation of environmental education across the curriculum in schools up to the senior phase. The research found out that environmental education was not properly implemented in the Ubombo Circuit schools; about 98% of educators indicated that they lack pedagogical content knowledge and understanding of implementing environmental themes across the curriculum, and so they did not do so. Only two per cent of educators indicated that sometimes they informally implement environmental topics in their subjects such as natural science, geography, life orientation and agricultural science, but they lack formal training.

The results of the study agree with the survey conducted by le Roux, (2009) in South Africa on the implementation of environmental topics in formal and non-formal education, which found that environmental education was not formally implemented in schools.

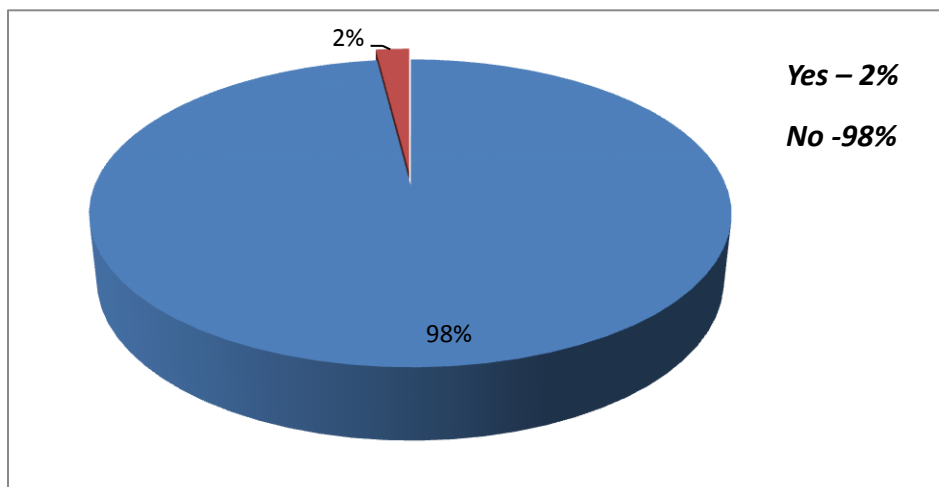


Figure 4.6: Implementation of environmental education in schools

The study also revealed that most activities in environmental education were carried out by non-governmental environmental organisations, Ezemvelo KZN Wildlife and WESSA. The activities conducted included eco-school competitions in specific environmental issues and excursions to game reserves, rivers, swamps, pans, mountains, forests and coastal areas. This concurs with the research conducted by Loubser (2000) in South Africa which found that environmental education activities were limited to conservation, wise management of natural resources and basic ecology.

One educator has argued very strongly that environmental education can be integrated across the curriculum. He suggests that “environmental education should only be integrated in learning areas such as geography, life science, English, agricultural science and tourism because they have environmental topics such as deforestation, pollution, erosion, ecology, ecosystem, and biodiversity.” He adds that learning areas such as Mathematics and Accounting should not integrate environmental education since they have a lot of work to be done by learners and educators.”

It is evident that according to many educators, implementing environmental education across the curriculum needs to be strengthened. Educators need to plan together and agree on one environmental theme to be championed in a particular term, and which would be integrated in all learning areas in the senior phase.

The results of the study revealed that some schools were invited by Ezemvelo KZN Wildlife to participate in environmental education projects, which covered the following environmental topics: testing water quality, rehabilitation of eroded areas, pollution and greening of school premises and recycling. This approach to environmental awareness is similar to the ideas advanced by Bush and Carter (2005) which is put into practice in Pennsylvania’s environmental education included watershed, wetlands, environmental health, renewable and non-renewable resources, endangered and extinct species, humans, the environment and environmental law and regulations.

The officer from WESSA from argued that they were conducting workshops for environmental clubs such as greening of school premises, endangered plants and animals, types of pollution, recycling and the sustainable use of natural resources. Another educator indicated that he understood environmental education very well; he had once worked for Ezemvelo KZN Wildlife

before joining the Department of Education. He indicated that officers were conducting different environmental learning activities for schools, workshops in conservation, wetland sustainability, poaching, biodiversity, ecosystems and ecology. This confirms that environmental education was informally conducted by non-governmental organisations.

The majority of educators indicated that they were not aware of any programme that emphasized the implementation of environmental education across the curriculum in schools. This was consistent with the study conducted by Marta (2007) in Poland that the Education Track Scheme makes it obligatory to integrate environmental education in all school subjects.

The three advisors subjects who participated in the study argued that integrating environmental education in schools remains a challenge since it is a new concept in teaching and learning. They seemed to agree that some of these challenges emanated from the poor support given by the Department of Education. It was a shocking discovery that educators and subject advisors lacked environmental awareness and environmental understanding, which led to the assumption that the process of implementing environmental education would not be effective in schools. These findings concur with the survey conducted by Mokhele & Jita, (2008) which discovered that support provided by the Provincial Department of Education to implement environmental education was too limited. This was in total contradiction to the objectives, guidelines and principles adopted in the Inter-Governmental Conference held in Tbilisi, Russia in 1977, which advocated the effective integration of environmental education. Some of these principles stated that environmental education must involve a holistic approach and thus an interdisciplinary focus on the relation between human beings, nature and the universe, to empower all people and promote grassroots democracy and participation (Selaledi, 2001).

More recently, many of the educational reforms that are instituted around the world appear to be placing greater emphasis on environmental concern and environmental education components (Oguibgwe, 2009). It seems the authorities in the Department of Education do not have the will to fully implement environmental education across the curriculum in schools. The majority of educators and subject advisors did not understand the core concept very well, and that would have hindered the process of implementing environmental education in schools.

The assumption is that neglecting the implementation of environmental education in formal and non-formal education will exacerbates the destruction of the remaining natural environment, which has led to climate change, global warming, and ozone depletion. Most of these conferences such as Earth Summit 1992, exclude the youth from sharing their views about the environmental crisis (Popovic, 2013). Yet the youth constitute the majority in most societies, and are the future leaders.

The school governing body member of Lifaletu Secondary School, interviewed about the implementation of environmental education in schools as a cross-curricular theme, said: “It is good to know more about nature, provided it would not remove us from our land and not restrict us to interact freely with nature, to collect firewood, to kill animals to get skins to make traditional attires, and not to prevent traditional healers to harvest curative herbs to heal sick people.” This comment emanated from the fact that his forefathers were forcefully removed from their habitat in 1902 when the National Parks Board was establishing the Mkuze Game Reserve. One can conclude that the principles and objectives adopted in various conferences held around the world regarding environmental education were hardly implemented in schools in the Ubombo Circuit.

4.4. POLICY GUIDELINES ON THE IMPLEMENTATION OF ENVIRONMENTAL EDUCATION

The National Curriculum Statement (NCS) emphasizes that schools should have environmental policies (DoE, 2003) which should guide educators in implementing environmental education across the curriculum. Janse van Runstburg (2009) stressed that the guidelines in the National Environmental Education Programme (NEEP) should be incorporated into the NCS and CAPS for effective implementation of environmental education. He further recommends the need for environmental focus areas and suggests environment-related learning-outcomes in each learning area. Janse Van Runsberg (2009) research revealed that 90% of the schools did not have policies on the implementation of environmental education. This is in agreement with the research conducted by Le Roux, (2009) in Mpumalanga which found that many schools did not have

environmental education policies, educators lacked knowledge about recycling and re-use and most schools had a littering problem.

The reasons provided by the majority of educators were that the Department of Education did not supply all schools with sufficient policies on environmental education, it intensifying the catastrophic impact by its delay in rolling out a programme for implementing environmental education. The statement shows that some educators are aware the importance of environmental education. The results of the study from the educators' perspective show that environmental education is grounded on the objectives and principles established in the Tbilisi Declaration (1977) which involves awareness, help learners to acquire knowledge and sensitivity to environmental problems.

Environmental conferences seem to be talk shows since some of them do not directly involve the Department of Education and the Department of Higher Education and Training, in particular, where issues of the development of curriculum are debated. Conferences on environmental issues are mostly dominated in parts by various non-governmental organisations such as Greenpeace, the Wildlife Environmental Society of South Africa, the World Wildlife Fund (Popovic, 2013). It is however important that these conferences involve educationists and students from tertiary institutions during the planning phase.

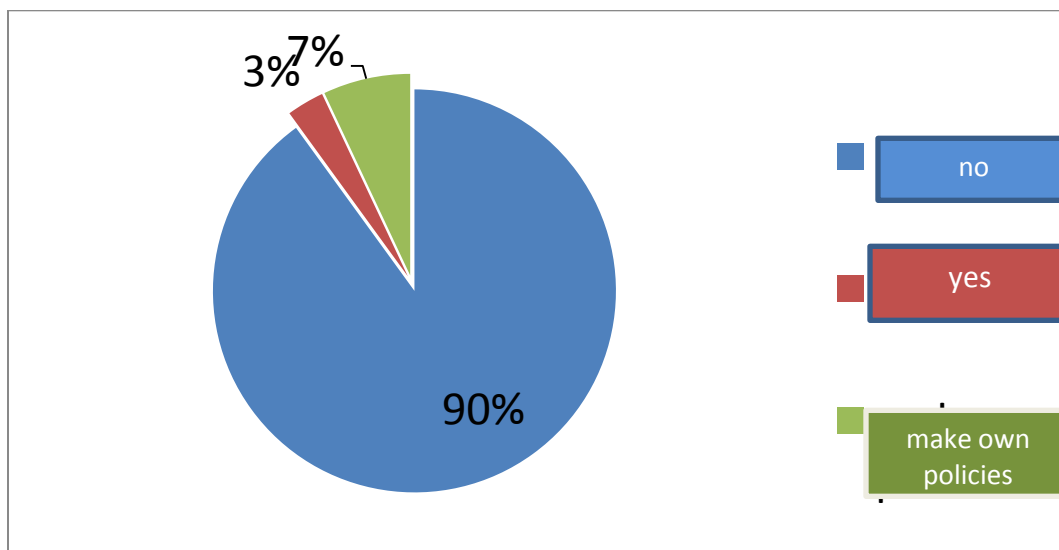


Figure 4.7: Educators with environmental education policy and with no policy and those who make their own policies

When (OBE) was introduced environment was introduced as a phase organiser and would be integrated as a cross curricular theme (DoE, 2007). It appears that the programs did not succeed in implementing environmental education in all learning areas across the curriculum in schools in the senior phase. The results of the present study show that only 3% of the participants indicated that they had policies on environmental education.

The authorities in Government and in the Department of Education should ensure that the objectives and the principles of Tbilisi, Rio de Janeiro and Kyoto Protocol resolutions on environmental education are implemented in schools to address environmental issues (Popovic, 2013). In an interview the WESSA officer said that *“the Department of Education is neglecting environmental education, which is very crucial in protecting the threatened remaining environment”*. The results show that the Department of Education has not yet delivered policies for the implementation of environmental education in schools in the Ubombo Circuit. The White Paper on Education and Training (2010), states that through environmental education, literate and active citizens should be created, but such education has not been fully implemented by government. As was stated earlier, environmental education is carried out by non-governmental environmental organisations and by environmental departments on a limited scale not across the curriculum.

About 7% of educators revealed that they formulated their own environmental policies, which focus on the cleanliness of the classrooms, administration buildings, toilets and school premises. These policies had little to do with the implementation of environmental education in teaching and learning across the curriculum. They were formulated to suit the need of that particular school. The results of this research reveal that there were two educators who indicated that they had environmental policies; they were from Mabandleni Secondary School and Lifaletu Secondary School respectively. These schools had environmental clubs and were affiliated to WESSA which provided them with guidelines on environmental policy and environmental issues. WESSA provides schools affiliated with them guidelines for different environmental activities and calendar for environmental days, weeks and months to be celebrated.

The results of the present study indicate that although the majority of educators were interested in the implementation of environmental education in their lessons; they lacked knowledge and policy guidelines. They acknowledged that environmental education is one of the most important

educational components that should be integrated across the curriculum in schools. Environmental education is one of the alternatives that could address environmental crises, which have forced the countries of the world to hold various conferences in an attempt to find solutions.

Subject advisors that participated in the study confirmed that the Department of Education has not yet provided schools with environmental education policies. The subject advisors believed that the implementation of environmental education could not be properly rolled out without policy guidelines. It seems that the Department of Education is less bothered as educators about the destruction of the environment; 90% of educators in this study strongly believed that environmental education is the key in addressing various environmental crises around the world. Majority of those who participated in this study indicated that they needed a workshop on formulating an environmental policy for their schools. It is clear that environmental education is neglected, since 90% of the educators showed that they were not aware of environmental policies and their implementation in schools. A lot has been done with regard to environmental education, but it appears that there is no political will from government and the Department of Education to ensure that it is integrated in the school curriculum. It remains a challenge to the Department of Education to ensure that all schools have policies on the implementation of environmental education.

4.5 EDUCATORS TO IMPLEMENT ENVIRONMENTAL EDUCATION

Human resources remain the most critical element in the implementation of environmental education in most of our schools. The study shows that 99% of schools do not have specialists' educators in environmental education. The schools pointed out that educators were not trained in the tertiary institutions to teach about the environment. The results agree with findings of the research conducted by Mason, (2014) in South Africa which indicated that most institutions of higher learning did not prioritize environmental education in their teacher training programmes and the success or failure of any curriculum largely depends on the development of quality educators.

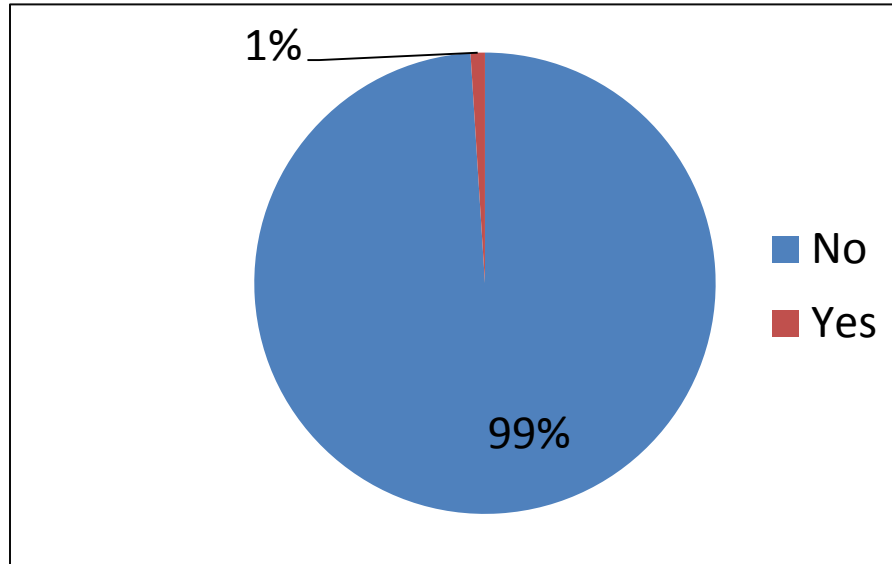


Figure 4.8: Environmental Education Specialist Educators

Only 1% of educators indicated that they were trained in environmental education at the tertiary level. One of them mentioned that she was trained in environmental education but she was teaching English, which according to her has few environmental topics. The implementation of environmental education across the curriculum could give such an educator an opportunity to impart environmental knowledge and skills to the learners to understand various environmental issues. For a language educator the integration of environmental education topics in the lesson becomes very challenging but one has to be creative when planning a lesson to accommodate environmental issues. In contrast, two educators believed that they could implement environmental education although they were not environmental education specialist because they were teaching Agricultural Science, Geography and Life Sciences with various environmental topics, such as ecosystem, conservation, pollution, diseases and erosion.

There is inadequate orientation, training and development of educators in South Africa which leads to the shortage of environmental educators (Foulds, 2010). The lack of guidance and environmental orientation programmes from the Department of Education constituted some of the causes pointed out by many educators. The research found that some educators believed that schools should develop career guidance that could assist learners to choose programmes that have environmental courses during their academic training. This could compel Department of Education to advertise vacancies which seek to advance interest in environmental education.

Subject advisors indicated that some officials in the Department of Education lack understanding of environmental education and its importance in sustaining or rehabilitating a depleted or destroyed environment.

As has been stated the general understanding of the term environmental education is that it is about plants and animals. The study found that 99% of the educators did not understand all the dynamics of environmental education well. Only one educator indicated that he did not have a clue about environmental education. An extensive survey conducted by Selaledi, (2001) in the Free State revealed that educators' understanding of the term environmental education was very low. This suggests that the implementation of environmental education across the curriculum remains a major challenge for educators and the Department of Education.

Only two educators indicated that they understand all the dynamics of environmental education; their schools have environmental clubs and are affiliated to (WESSA). It is non – governmental organisations which take care of the environment and deal with various environmental issues. The Southern African Development Community (SADC) has recommended the integration of environmental education in schools, with a view to establish how best it could address the environmental crisis. The low level of understanding of the term environmental education remains a challenge to the programme of implementing environmental education across the curriculum. The Department of Education has not adequately exposed educators to the programme the research found that educators still perceive the lack of knowledge and understanding of environmental education and natural science to be the most important barriers (Emily, 2013). Educators lack understanding of the environment when it is integrated in formal teaching and learning. It is clear that educator development remains key in any curriculum reforms. Understanding the fundamental concept that underlines the whole programme of environmental education is vital (Liisa, 2007).

One subject advisor revealed that the lack of in-service training for educators' leads to lack of knowledge and understanding, which could hamper the process of implementing environmental education in schools. He emphasized that workshops are the foundation for implementing environmental education. They would build the capacity of educators who have never been introduced to the concept and would provide them with the opportunity to be exposed to various

environmental issues. Workshops and in-service training could assist educators to develop skills to identify local available teaching resources. Environmental Education is essential to enable citizens to conserve and use natural resources sustainably. It could contribute immensely to the reduction of environmental crises such as the one encapsulated in world's buzzword, climate change, which is now threatening various countries of the world. Poor understanding of core concept could lead to the poor implementation of environmental education in schools across the curriculum.

4.6. THE ATTITUDE OF EDUCATORS AND SUBJECT ADVISORS TOWARD ENVIRONMENTAL EDUCATION

The respondents in this study have mixed perceptions about the implementation of environmental education across the curriculum in schools. The study found that 79% of educators believed that the implementation of environmental education would give educators more work and increase the failure rate. About 21% of educators believed that the implementation of environmental education will reduce administrative work and increase the pass rate, since most of its activities are hands-on. Liisa (2009) had earlier stated that in Finland integration of environmental education was introduced in vocational courses and it was identified as one of the most effective ways of increasing the pass rate in schools. He also noted that environmental education is practical and hands – on, and deals with things most learners know, including pollution, soil, plants, animals, water, wetlands and other environmental issues. Two educators from Mabandleni Secondary School and Lifaletu Secondary School indicated that the implementation of environmental education would be good for them and their learners, since their schools had environmental clubs. The clubs engaged learners in various environmental learning activities, eco-school competitions, gardening, plants, learning about the animals in the red data list, and greening of the school premises, recycling, and capacity building workshops to identify and resolve environmental problems.

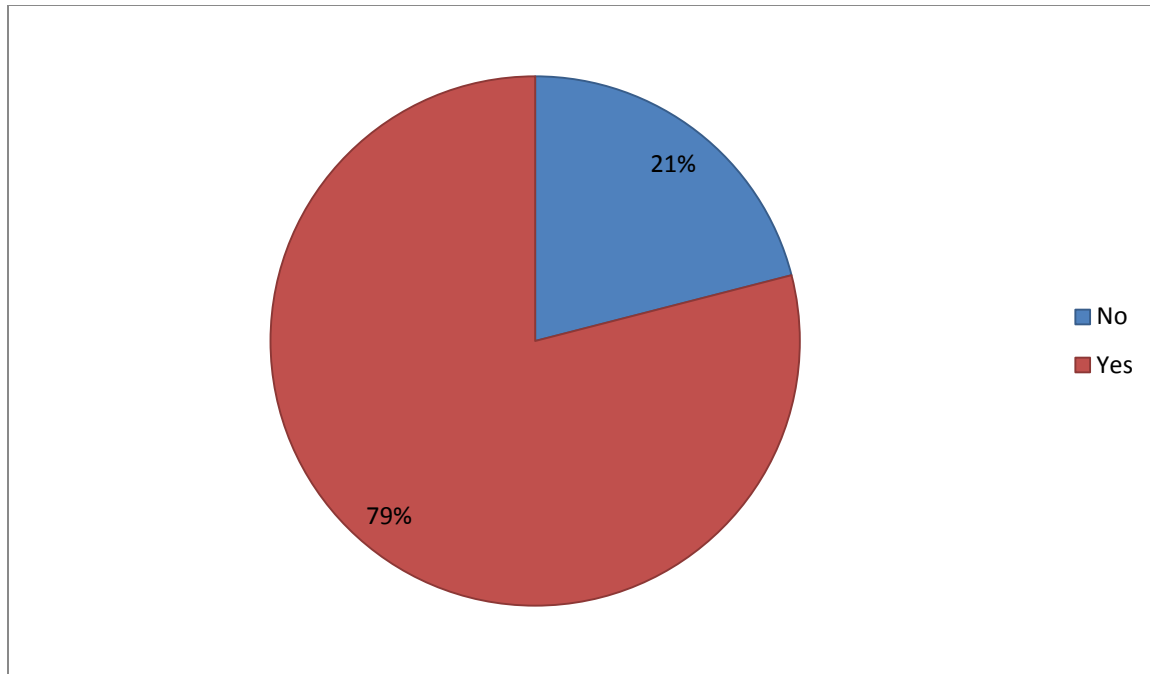


Figure 4.9: Attitude of Educators and Subject Advisors towards Environmental Education

Another educator strongly believed that environmental education could provide educators with the opportunity to work with various environmental organisations, in the sustainable use of natural resources to meet the needs of the present and future generations. Environmental education is practical; it tends to ensure that learners master the skills that are required for thorough understanding of environmental issues affecting the world (le Roux, 2009).

The challenges involved in environmental education also evident during class observation indicated that educators were not teaching one learning area, they taught more than two learning areas and some of the classrooms were overcrowded. One educator was expected to prepare lessons, sets tests, and mark over fifty exercise books or scripts per class, file, hold meetings, do remedial teaching, and gather relevant resources for the lesson. Foulds (2010) maintains that most classrooms, especially in rural areas, are overcrowded and not much teaching and learning is taking place. Such situations are not suitable for the implementation of environmental education. There is a need to look critically at the existing classroom interaction and the underlying values and interest of educators and school administrators in the integration of environmental education (Foulds, 2010).

Foulds (2010) stresses that environmental education needs motivated and professional educators. It requires educators who are creative, with organisational and management skills. Environmental education requires educators to apply various teaching methods; strategies and different approaches including group work, demonstrations, and learner-centred approaches; it requires creative and dedicated educators. The findings of this study revealed that an educator was expected to organise various learning activities such as role-plays, simulations, projects, investigations, research, competitions and worksheet. The research revealed that 79% of educators were concerned that environmental education would increase the failure rate because learners would undertake outdoor learning activities whereby they would learn about the environment which is only single area for the whole day.

One respondent indicated that educators are used to indoor style of teaching and learning. It would be challenging to organise outdoor activities that most environmental education seems to require. Educators need to plan and organise educational excursions to various environmental areas, including game reserves, wetlands, industries, rivers, towns, forests and landfills. Some educators indicated that learners were overloaded with eight learning areas in the senior phase. Learning areas such as Technology and Life Orientation require learners to do practical assessment tasks and projects respectively. The rest of the learning areas have researches, investigations, assignments, tests and homework. According to educators, it would be difficult for an educator to cope with assorted tasks, such as marking projects, preparing lessons, marking tests or conducting mid-year, trials and final examination. Educators are already struggling to cope with the terminology of the ever changing curriculum. Subject advisors participating in the study concurred with educators that both educators and learners would be overloaded with curriculum activities. One subject advisor suggested that environmental education should be a learning area on its own, since it had many environmental topics, such as deforestation, water, ecosystem, diseases, ecology, erosion and drought.

Another educator strongly believed that introduction of environmental education could provide educators with the opportunity to work with various environmental organisations, in the sustainable use of natural resources to meet the needs of the present and future generations. Environmental education is practical subject and it tends to ensure that learners master the skills

that are required for thorough understanding of environmental issues affecting the world (Le Roux, 2009).

It is evident that educators and subject advisors concur that the implementation of environmental education would overload educators and increase the failure rate in schools, although some believe that it would increase the pass rate and reduce administrative work. This remains challenge for the Department of Education to plan and organise workshops or conferences, seminars to capacitate educators and subject advisors in the implementation environmental education.

4.7. RESOURCES TO IMPLEMENT ENVIRONMENTAL EDUCATION

Any curriculum implementation requires teaching resources for effective teaching and learning to take place. Subject advisors who participated in the study concurred with educators that the Department of Education did not supply schools with resources for the implementation of environmental education. The resources available were not meant for environmental education, were meant for other subjects like Physical Science, Mathematics, Geography, Agricultural Science and Life Sciences. As has been mentioned the survey conducted by Foulds, (2010) in South Africa found that most schools did not have quality learning support materials. Educators indicated that various resources could be used to teach environmental education such as books, charts, posters, newspapers, water, plants, soil and animals.

The Ezemvelo KZN Wildlife officer in Plate 4.1 below was holding workshop for educators about various resources that could be used to teach environmental education. She used blank charts to draw models to teach environmental education and labelled bottles as well as cans to show various environmental items that can be used to integrate environmental education in the lesson. She also used data projector to show some slides on environmental education.



Plate 4.1: Ezemvelo KZN Wildlife Officer Conducting Resources Development Workshop for Grade 8 and 9 Educators

The officer argued that resources for teaching environmental education are easily accessible within the surroundings. She said “educators need to be creative in order to identify and draw models to make the lesson effective and meaningful”. She encouraged educators to re-use and recycle the used items in order to keep the environment clean and healthy. Clean and healthy environment reduce diseases.

One educator said *“It will be interesting to teach environmental education, since it deals with the environment in which people are living, it will be easy to identify local available teaching resources, like plants, animals, water and soil”*.

Another respondent reiterated the statement of the officer that environmental education resource needs a creative educator who can create and identify resources for his or her lesson. Educators further indicated that the area surrounding some schools is bare soil, with not grass and few trees. Some schools did not have tap water: water in the tanks was not used for greening school premises, but for drinking and cooking food for learners.

The research found that educators were aware of natural resources in the surrounding, but educators and subject advisors concurred that the Provincial Department of Education did not deliver any teaching resource to implement environmental education in schools in the Ubombo

Circuit. Poor provision of teaching resources and personnel hinders effective environmental education across the curriculum in schools, a sentiment which Foulds (2010) agrees with. Integration and provision of such resources could address the continuous destruction of the natural environment.

4.8. ENVIRONMENTAL EDUCATION IN THE NATIONAL CURRICULUM STATEMENT

It was stated earlier that South Africa after 1994 democratic elections, replaced the traditional curriculum (NATTED550) with the National Curriculum Statement (NCS). The curriculum was based on outcomes as an approach for curriculum delivery in the classrooms, which promised to implement environmental education across all learning areas in the senior phase.

The research found out that many educators stated that they were not adequately informed of the concepts that underpin the (OBE). The curriculum overloaded educators with administrative work. The implementation of OBE in schools has been confounded by a range of difficulties such as a skewed curriculum structure, lack of alignment between curriculum and assessment policy and a, shortage of personnel and resources to implement the curriculum (Foulds, 2010). The research conducted by McCafferty (2005) found that OBE system came with obscure language, organiser, assess (meaning the environment) assessment standard, and range statement.

Educators who participated in the study believe that NCS is not suitable for the implementation of environmental education because it is not stable, it keeps on changing. Many educators are still confused as to the methods that must be employed to implement the content of environmental education in the National Curriculum Statement. Roberts (2010) mentions (see above) that the major issue with the (NCS) in South Africa is the lack of training and resources. Schudel, et al., (2008) stated that one of the most pressing challenges identified during contextual profiling at the Provincial level was a serious shortage of experienced curriculum support staff. Raven (2003) says that many curriculum support staff has spent several years in other government departments and consequently lack experience of the new curriculum and educational processes in general.

The research found that 79% of educators believed that the implementation of environmental education in the senior phase would overload them. This agreed with the study conducted by Roberts (2010) in South Africa which showed that many educators were spending less than 50% of their working days in the classrooms and another 50% was spent on lesson preparation. Educators revealed that outcome based education involved them in a vast quantity of administrative work and reduced time for teaching and learning. As stated above that this scenario makes the implementation of environmental education difficult because educators are faced with different challenges include the use of new concepts such as range statement, learning outcomes, assessment standard, values and assessment grid.

Educators, learners and subject advisors have been expected to cope with challenges of the new curriculum and the integration of environmental education. Roberts (2010) states that the system was forced on to state school without any evidence that it had been tried anywhere and found effective. Educators in the research study indicated that the workshops did not adequately equip them with necessary strategies and methodology to implement environmental education in their lessons. Research findings indicated that educators were confused as to how to assess learners based on the various outcomes that are required to be achieved at the end of the lesson. Most educators were still not confident about the content of environmental education and how to integrate it in other subjects.

As has been mentioned above motioned that the content of the curriculum was radically adjusted causing more confusion to educators and learners. This finding reveals that educators lack background knowledge to incorporate environmental education in the curriculum. Educators and subject advisors were not adequately trained by Provincial Department of Education in the implementation of environmental education in the new curriculum. Educators attended one week workshop which was not enough to equip them with all the necessary skills and knowledge to implement environmental education. The inadequate training of educators and district officials in the requirements of the National Curriculum Statement is one of the major challenges the Department of Education is facing. Therefore, the study assumes that the changing curriculum and poor training of educators and subject advisors hampers the implementation of environmental education in schools in the Ubombo Circuit.

4.9. WORKSHOPS CONDUCTED BY EZEMVELO KZN WILDLIFE AND WILDLIFE AND ENVIRONMENTAL SOCIETY OF SOUTH AFRICA (WESSA)

4.9.1. Workshop on the Breeding of Indigenous Plants

Workshops are very important in capacitating educators for effective teaching and learning. They provide educators various pedagogical methods, knowledge and strategies Roberts, (2010). The Ezemvelo KZN Wildlife officer below in Figure 4.2 was conducting workshop for grade 8 educators on breeding indigenous plants. The officer argued that most indigenous forests were cleared to make way for agriculture and are further harvested by some community members for commercial purposes. He emphasized that the remaining indigenous plants need to be sustained through awareness campaigns and breeding. He argues that *“plantations are not forest; plantations are made of foreign plants whereas forests are made of different indigenous plants growing together harmoniously. Alien plants like gum trees absorb more water. As a result indigenous plants die because they are failing to compete with them for food and water.”*

Communities are using indigenous plants for various purposes, such as fire wood, traditional medicines, shades, building, and fencing. Indigenous forests could play a pivotal role in addressing climate change by absorbing the sunrays and converting them to energy. Educators were capacitated with skills to identify and to remove alien plants.



Plate 4.2: Workshop for Grade 8 Educators on Germinating of Indigenous Plants organized by KZN Ezemvelo Wildlife

Educators indicated that the Department of Education did not organise any workshop on environmental education. They indicated that the workshops they always attended on environmental education were not organised by the Department of Education, there were often organised by KZN Ezemvelo Wildlife and Non-Governmental Environmental Organisations. The officer encouraged educators to establish school gardens where they would germinate and plants various indigenous plants. All participating schools were given seedling trays to breed indigenous plants.

4.9.2. Eco-Schools Registered with WESSA in KwaZulu-Natal

WESSA is a membership-based non-governmental organisation which encourages school and community members to participate in caring for the earth and capacity building for the conservation as well as the sustainable use of natural resources. Table 4.2 below shows schools which are affiliated to (WESSA) in KwaZulu-Natal. The interview conducted with WESSA officer revealed that there were nine schools registered with WESSA in the Umkhanyakude Education District and only two in the Ubombo Circuit where the research was conducted. These were, Mabandleni Secondary School and Lifaletu Secondary School.

Table 4.2: Eco-Schools Registered with WESSA from 2003 - 2011

Province: KwaZulu Natal	2003	2004	2005	2006	2007	2008	2009	2010	2011
Schools Affiliated to WESSA	76	94	399	328	328	390	395	357	321

Educators and learners of Mabandleni Secondary School and Lifaletu Secondary School have a good opportunity to understand various environmental issues because WESSA conducts workshops in various environmental topics for its affiliated schools. Table 4.2 above shows a decline in the number of schools registered with WESSA in 2011 compared with schools registered between 2005 and 2010. WESSA environmental officer believed that the decline was caused by the increase in the affiliation fees from R160, 00 to R210, 00 per school. Some schools refused to pay affiliation fees for clubs. Passionate educators and learners sometimes contributed

affiliation fees themselves to join WESSA. WESSA environmental officer stated that Department of Education discouraged schools from having organised excursions to environmental places complaining about the disruption to the contact time. As a result, many schools withdrew from WESSA and concentrated in classroom bound teaching and learning system.

He said: *Environmental education is about outdoor education. It is more practical, it needs learners and educators to be hands-on.” The protection and conservation of the natural environment needs to be enhanced in schools and in the community through environmental awareness and education.*

In the interview, it appeared that the 2010 FIFA World Cup could be another factor that led to the decline in schools affiliating to the organisation. Since the focus of many South Africans was on the FIFA World Cup, individuals wanted to be part of the exciting and historical global event that was taking place for the first time in Africa and was hoisted by South Africa. The decline in 2011 is attributed to the increase in the affiliation fees and to the Department of Education discouraging educational excursions to various environmental areas.



Plate.4.3: WESSA Officer Conducting Workshop for Grade 7 Educators

The officer argued that *“the country needs citizens who are environmentally aware, active, sensitive and who care for the environment. “School is where the foundation for understanding all environmental issues should be laid. The decline in the number of schools joining WESSA is a threat to the environment, which reduces the number of people who would educate the learners and the community to understand all the dynamics of environment.”*

WESSA empowers educators and learners to understand the various dynamics of environment, including the relationship that exists between humans and environment. The research study found that (WESSA) conduct workshops for schools, community members and other environmental organisations to ensure environmental sustainability for current and future generations. These workshops are important in conserving and sustaining environment. It is assumed that knowledge educators have acquired in these workshops will benefit educators, learners and the community at large. Learners will cascade environmental knowledge to their communities.

4.10 THE INVOLVEMENT OF LEARNERS IN OUTDOOR ENVIRONMENTAL EDUCATIONACTIVITIES

4.10.1 Planting and watering of amarula tree (sclerocaryabeirrea)

It has been mentioned earlier that WESSA engages schools in various environmental activities such as competition, recycling, planting indigenous trees, greening school premises, celebrating environmental days, weeks and months such as October as Weed Buster Month. The research found out that WESSA provided schools with environmental themes and each school has to choose one theme which will guide its environmental activities.

WESSA officer indicated that:

Although they provide schools with environmental themes, very few schools include environmental themes in the lesson; they concentrate on the lessons prescribed by the Department of Education since education in South Africa is results driven and less skills orientated.

It seems in South Africa, teaching and learning is concentrating on the number of learners who would pass grade 12 at the end of the year (DoE, 2007). The Department of Education made a landmark ruling that it expects all learners to be in classes learning. The introduction of environmental education would sometimes take them for excursions, outside the school premises. During outdoor excursions, educators who are teaching the same class would be deprived access to these classes as they would be absent. Therefore their work schedule would be highly affected (Roberts, 2010).



Plate 4.4: Planting and irrigating of amarula tree at Mabandleni Secondary school

In Plate 4.4 above, the researcher observed environmental club members of Mabandleni Secondary School planting amarula tree (*sclerocaryabeirrea*) as one of their activities, the locals call it *umganu*. The study found that the amarula tree is one of the most important local indigenous trees in the Umkhanyakude District Municipality (IDP, 2013/2014). In the interview with a school governing body member, it was clear that this tree bears fruit that produces the refreshing and intoxicating amarula beer.

He said “*this type of beer carries significant cultural heritage for the Tembe Tribe that is why we the local community celebrate amarula beer annually in the month of February*”. The participants call this ceremony *Umthayi*, meaning the ceremony of drinking amarula beer. Interestingly, a member of the school governing body stated that even Cabinet Ministers from Kwazulu-Natal Provincial Legislature supports this and in most cases attend the annual ceremony. The ceremony has turned out to be an international event, with neighbouring countries such as Swaziland and Mozambique sending delegates to it and tourists coming for it from different parts of the world. Some educators believed that environmental education will be a major role-player in protecting and conserving the amarula tree, the pride of the Tembe Tribe at Manguzi or Kwa-Ngwanase on the north east coast of KwaZulu-Natal at Kosi Bay.

In the interview with SGB member, it appears that at Umkhanyakude District Municipality amarula tree is a protected tree, it is a crime to cut it without the permission from the tribal council, amarula trees are retained when clearing the fields for development. Educators indicated that environmental clubs members are encouraged to germinate and plant various indigenous trees in schools and at home. Even the community of Manguzi area is taught to protect and conserve the amarula tree as it produces natural beer. The research found that amarula beer is not produced for sale, people drink it for leisure. During the ceremony, the local people bring amarula beer to the palace of the Inkosi in containers of various sizes such as 25litres, 20 litres, 10 litres, 5 litres, clay pots and pour it in big containers such as 2500 - 5000 litres jojo tanks when it is first tasted by the Inkosi. During the ceremony, Inkosi declares the drinking of amarula beer open and then the visitors and the locals drink together. The locals further enjoy it in their homes until the season is over. The research found that amarula seeds are stored, eaten raw or cooked with samp and the bark is used to cure a running stomach and to make dye for baskets weavers. Fruit and bark are stripped off and eaten by elephants. The role of environmental education, environmental awareness, environmental campaigns and environmental clubs will be crucial in conserving and protecting such precious trees.

4.10.2. Greening of school premises and planting of indigenous trees

The researcher observed Ezemvelo KZN Wildlife officer assisting learners in greening the school premises by planting indigenous plant, mahogany (*trachiliaemetica*). Learners are taught by Ezemvelo KZN Wildlife officer about the impact of climate change and the importance of

growing grass and planting indigenous trees. The officer told the learners that grass prevents soil erosion; Plants absorb carbon dioxide and release oxygen for human beings and animals. Plants provide fruit and shelter for animals, human beings, birds and insects. Both plants and grass beautify the landscape by keeping it green and colourful. The officer said: *“Ezemvelo KZN Wildlife has a campaign to donate plants to schools and toilets affiliated environmental clubs. What we do here today is teach learners to germinate indigenous trees and grass which are collected locally”*.

The interview reveals that Ezemvelo KZN Wildlife officer are working closely with schools near Mkuze Game Reserve. It was evident from the interview that, Ezemvelo KZN Wildlife conducts awareness programmes which are based on nature conservation, since some community members were found to be involved in illegal activities in the game reserve especially the cutting of fence, poaching and the poisoning of birds and animals. The officer said that since the programme’s inception the incidents of poaching, poisoning animals and birds had declined.

According to one of the officers this indicated that the local community is beginning to understand the importance of nature conservation and the sustainable use of other natural resources. As part of this campaign, learners are encouraged to conserve and to grow indigenous trees in their homes and rehabilitate the degraded areas in their communities. The officer indicated that environmental education could make a huge difference in reducing environmental crises. The officer believed that knowledge is the key; people need to understand the mutual relationship that exists between humans and their environment.

Plate 4.5 shows how learners should plant indigenous trees at their schools. Most indigenous trees in the Umkhanyakude District Municipality have a significant role to play in the local community. Mahogany (*trachilia mahogany*) provides excellent shade at home. Its bark is used as traditional medicine by traditional healers. It is one of the few trees that grow well in both subtropical and tropical areas. Mahogany is evergreen and hardly sheds its leaves in winter. Indigenous trees such as mahogany are believed to be good nesting sites for various birds and insects, since its leaves are packed together. They are good for promoting the diversity of our animal species. An increase in the growth of similar trees could have a positive impact in addressing environmental crises and conservation.



Plate 4.5: Planting of mahogany tree at Mnqobokazi Primary School

The research study found that mahogany tree is one of the most important trees in the Umkhanyakude District Municipality because in summer it bears fruit which is eaten by the local community. It is said that its fruit is soaked in cold water and produces a milky soup which is eaten with sweet potatoes and spinach and feeds the whole family. Ezemvelo KZN Wildlife officer said that *“Mahogany fruit feeds the wild animals, birds and insects. Oil extracted from the seeds is used as moisturiser and cure for broken bones. The bark is used for stomach and intestinal pains. The wood is used for carving household implements such as wooden bowls. It is assumed that during summer there is huge competition between human beings, animals and birds for mahogany fruit. The tree is known for its cool shade in summer.”*

Ezemvelo KZN Wildlife officer is seen in the plate above teaching the learners about various indigenous trees, animals and birds that need to be protected and conserved. Animals such as black rhinos, black, wild dogs, birds such as black swallows and trees such as the fig tree

(Ficussycomorus) which provides fruits for various animals and birds and nesting sites for birds and other creatures. The brown berry (*Syzygiumguineense*) provides fruit for people, birds, monkeys and baboons. The monkey orange (*Strychnosspinosa*) is eaten by people and monkeys and its shell is used to make sound boxes for traditional musical instruments and to treat snakebites. The Lebombo wattle which is found at Umkhanyakude District Municipality is carved to make wooden bowls. It plays a critical role in the ecosystem because small climbing trees grow on it. Learners had the opportunity to learn to conserve the treasures of their circuit. Environmental education could play a significant role in conserving the lakes, wetlands, indigenous forests, birds, animals, wild fruit, insects and coastal mangroves.

4.10.3. Removal of alien plants in the wetland

As has already been mentioned, that environmental clubs are capacitated by Ezemvelo KZN Wildlife and others environmental organisations with skills and information to identify indigenous plants and alien plants. In Plate 4.6 below, environmental club members are removing alien plant invading the wetland at Cezwana Panin the Kwa-Jobe area. The WESSA officer argued very strongly about the harm that alien plants do to indigenous plants. In his interview, he indicated that indigenous plants are failing to compete with alien plants for food and water. They end up dying making way for alien plants to proliferate. These wetlands are an important source of water as they act as a sponge by absorbing water and releasing it gradually during dry seasons. They normally hold water throughout the year. They are also a hiding place and breeding ground for pelicans, crocodiles, monitor lizards and various insects.

The WESSA officer said:

*“Wetlands provides local people with water for different uses, reeds to thatch houses, and sedge (*Cyperus margitus*) used for weaving beer strainers and they cultivate different crops including sweet potatoes, amadumbe (*Colocasia esculenta*), maize and pumpkins and establish small gardens along the wetland where they grow cabbages, onions, carrots, and green peppers and butter nuts. Wetland provides them with water to irrigate their gardens and for domestic uses e.g. drinking, cooking, washing and building”.*

The WESSA officer indicated that it is important for environmental clubs to engage the community in the sustainable use of wetland and its rehabilitation where necessary as well as educating them about various environmental crises that could destroy the local environment. The destruction of wetland would disturb the valuable resources on the ecosystem on which the communities in rural areas are depending on. Rehabilitation and removal of alien plants in the wetland is crucial to keep the wetland in its original state.

Plate 4.6 below shows that the alien plants had covered large parts of the wetland, destroying most indigenous plants and absorbing water, leaving the wetland floor channel dry. It is important for the Department of Education and National Government to implement environmental education in schools to save wetlands which are invaded by various alien plants and unsustainably used by local communities. One learner said that *“this is a challenging exercise for us, because we can encounter dangerous snakes, or suffer insects ‘bites, and injuries and we are getting dirty, since the place is muddy.”*



Plate 4.6: Environmental club members removing alien plants (water hyacinth) invading the wetland at Cezwana Pan

In the above plate, the researcher observed yellow fever trees (*Acacia xanthophloea*) that are getting dry because they are failing to compete with alien plants for food and water. Environmental club members were rescuing *Acacia xanthophloea* by removing alien plants to make way for indigenous plants to flourish in the wetland. Alien plants change the natural state of the wetland and become dry; all inhabitants of the wetlands (birds and insects) migrate to new places where they normally encounter enormous resistance from the original inhabitants. In the interview with SGB member, it was said that the bark of the yellow fever tree is used to cure fever and eye problems and as medicine that gives luck especially to job seekers and its leaves are browsed by giraffes and elephants. One educator argues that *“the system of education in South Africa is not doing enough to address environmental crises. The nature rich places are under threat of climate change; most of their water sources are getting dry”*. The WESSA officer concurred with educators that the local community is unable to carry on with their subsistence farming, since the rainfall is unpredictable. Environmental awareness, environmental campaigns and environmental clubs could play a vital role to sensitise the community and learners about the impact of climate change in their lives and to craft mitigating strategies to address some of the environmental problems.

4.10.4 Cleaning Campaign along Muzi Pan in the Kwa-Jobe area

In Plate 4.7 below the researcher observed environmental clubs engaged in the clean-up of Muzi Pan in the Ubombo Circuit of the Umkhanyakude District Municipality. The WWF organised the cleaning campaign together with environmental club members and the community hence, they all had an opportunity to learn about the impact land pollution has on the environment. The community was encouraged to reduce pollutants in the environment to use the resources sustainably and make other community members aware that these environmental crises are societal issues, everybody needs to be involved. If all schools in the circuit could have environmental clubs and the community has their own environmental clubs, the area could have healthy environment. The research study found that the community was not yet organised to form their own environmental clubs that would work together with schools clubs, non-governmental environmental organisations and government environmental departments.

The WWF encourages environmental clubs to organise environmental activities that would involve the community. This would automatically lead to the wise management and usage of

natural resources by the community. The WWF teaches the communities and environmental clubs to save endangered species conserve the world's most precious natural places, animals, birds and insects and keep our habitats free from any form of pollution.

An educator said *degradation of the environment needs all stakeholders to be hands-on in different environmental activities that champion environmental sustainability. Our active involvement will reduce the negative impact and consequences we human beings have on natural resources*". In Plate 4.7 below shows the WWF providing environmental club and community members with plastic bags to collect all forms of pollutants in the area and t-shirts which act as a uniform. The community leader said:

"Muzi Pan is home hippopotamus, crocodiles, birds, water lilies, reeds and different fish species. It is a breeding place for different birds including pelicans, jacanas and fish eagles. It is a tourist destination with different tourist activities, hippo tours, bird watching and canoeing. Therefore it is necessary for us the local community and environmental clubs to take care of our environment since it creates job opportunities for us through tourism".



Plate 4.7: Clean-up campaign organised by environmental club and WWF in the Muzi Pan

Natural environment is the draw card for international tourists. The interview with the WWF officer confirmed that the environment has created job opportunities for the local communities since they started these road shows and campaigns. They found it necessary to keep their environment clean. A community leader who participated in these campaigns seems to understand the vision of these environmental groups on issues of conservation; this is what he said about community empowerment.

“We thanked World Wildlife Fund for empowering us with different skills to take care of our environment; we vow to teach and encourage other community members to join us in caring for the environment.

The involvement of the local community and learners in various environmental activities will ensure a clean and healthy environment which is free from any form of pollutant. The acquired skills will assist the community to identify any environmental problem in their areas and they will craft a mitigating strategy to address such issues.

4.11. CONCLUSION

This chapter presented a critical analysis of the challenges facing the implementation of environmental education in schools in the Ubombo Circuit. The information presented in this chapter shows evidence that environmental education was not formerly implemented in schools across the curriculum. The findings indicated various challenges that hindered the implementation of environmental education. Both educators and subject advisors lack the skills and knowledge to implement it, about 79% of educators was not work-shopped in environmental education. The Department of Education did not supply schools with policies and resources on environmental education. Schools have a shortage of specialist environmental educators. The results showed that both educators and subject advisors believed that the implementation of environmental education across the curriculum would overload educators and learners and increase the failure rate in schools. The study found that Ezemvelo KZN Wildlife and various non-governmental organisations capacitate educators through workshops and engaged learners in various outdoor environmental activities.

CHAPTER 5

SUMMARY, RECOMMENDATIONS AND CONCLUSION

5.1. INTRODUCTION

The implementation of environmental education across the curriculum could be an alternative answer to address various life threatening environmental issues. This study is based on an investigation of the implementation of environmental education in schools in the senior phase in the Ubombo Circuit. This chapter provides a summary recommendations and conclusion of the study. The results analysis showed that environmental education has been not properly implemented in schools. The programme lacks trained educators to implement it from the Department of Education and in schools. The results indicated that most subject advisors and educators did not understand well the programme of implementing environmental themes across the curriculum, the highlighted various challenges such as lack of policy guidelines, attitudes of educators and subject advisors towards environmental education, shortages of resources, inadequate workshops and changing curriculum. The Department of Education is supposed to rollout the programme, since educators and subject advisors were not well informed of the concepts that underpin it. Its failure to act suggests that there is a lack of political will from the Government and the Department of Education to implement environmental education in the senior phase across the curriculum in schools.

5.1.1 Objectives

- To establish if schools are implementing environmental education in all learning areas in the senior phase,
- To find out whether schools have policy guidelines on the implementation of environmental education,
- To find out whether schools have specialist educators in environmental education and workshops are attended on its implementation,

- To ascertain the attitude of educators and subject advisors towards the implementation of environmental education,
- To establish whether the changing curriculum has any effect on its implementation

5.1.2 Questions

- Is environmental education implemented in all learning areas in the senior phase in schools in the Ubombo Circuit?
- Do schools have policy guidelines on the implementation of environmental education?
- Do educators and subject advisors approve or disapprove of implementing environmental education in schools?
- Are there any workshops conducted on the implementation of environmental education?
- Does the changing curriculum have any effects on the implementation of environmental education in schools?

5.2. SYNTHESIS OF FINDINGS IN RELATION TO RESEARCH QUESTIONS

5.2.1. The implementation of environmental education in the senior phase

The data analysis from educators and subject advisors by means of questionnaires revealed that 98% of schools did not formally implemented environmental education in the senior phase and only 2% indicated that they did implement. The findings indicated that educators' level of understating of the programme for implementing environmental education across the curriculum was very low and that teaching and learning in schools is still based on the subject content. It did not integrate environmental themes. The results showed that the implementation is facing various challenges such as lack of policy guidelines, attitudes of educators and subject advisors towards environmental education, shortages of resources, inadequate workshops and a changing curriculum. Even the subject advisors who participated in the study did not understand how to implement environmental theme across the curriculum in schools. Environmental education is generally understood to be about plants and animals. An SGB member interviewed believed that

environmental education would restrict the local community to using natural resources for assistance.

5.2.2. Policy guidelines for implementation of environmental education

Research findings highlighted that about 90% of schools did not have policy guidelines on the implementation of environmental education. About 7% of schools had developed their own environmental policies, which did not advance the implementation of environmental education. The findings revealed that these policies are about cleanliness of school premises, classrooms, toilets and administration building. About 3% of schools indicated that they had policy guidelines on environmental education.

5.2.3. Specialist educators in environmental education

The findings indicated that there is a shortage of environmental educators in schools. The findings indicate that about 99% schools did not have specialist educators in environmental education. Only 1% indicated that they had such specialist. The schools pointed out that educators were not trained in the tertiary institutions to teach environmental education. The results concur with findings of the research conducted by Mason, (2014) in South Africa which indicated that most institutions of higher learning did not prioritize environmental education in their teacher training programmes. The lack of guidance and environmental orientation programmes from the Department of Education was one of the deficiencies pointed out by many educators. The research found out that some educators believed that schools should develop career guidance that could assist learners to choose programmes that have environmental courses during training in the institutions of higher learning.

5.2.4. Resources and workshops conducted on environmental education

The research revealed that resources available in schools were not meant for the implementation of environmental education, but for other subjects such as physical science, mathematics, life sciences, agricultural science and geography. An extensive survey conducted by Foulds (2010) found that most schools did not have quality teaching resources in environmental education. Some educators were assisted by Ezemvelo KZN Wildlife, WESSA and WWF to develop their own teaching resources. Workshops on environmental education were mainly conducted by non-

governmental environmental organisations such as those mentioned above. It appeared that the workshops conducted by the Department of Education did not adequately equip educators with the necessary knowledge and skills to implement environmental education across the curriculum.

5.2.5. Attitude of educators and subject advisors towards the implementation of environmental education

The findings revealed that educators have different perceptions about the implementation of environmental education in schools. About 79% of them believed that the implementation of environmental education would overload them with administrative work and increase failure rate. In contrast, 21% believed that it would reduce the workload, increase the pass rate and the contact hours and put further strain on schools budget. Educators need to develop new methods and skills for integrated teaching and learning. The findings revealed that they are used to classroom bound teaching and learning. The implementation of environmental education will need them to organise educational excursions outside the classrooms.

5.2.6. Changing curriculum

After the 1994 democratic elections the South African Government replaced the traditional curriculum NATTED550 with the National Curriculum Statement (NCS). This curriculum was based on outcomes as an approach for curriculum delivery in the classrooms. It promised to implement environmental education across the curriculum in all learning areas in the senior phase. However, the findings indicate that many educators believed that the curriculum was not suitable for the implementation of environmental education because it kept on changing and involved complex concepts which demanded a lot from educators. Research conducted by McCafferty (2005) concurred with educators that outcomes based education came with obscure language, such as critical outcomes, assessment standard, range statement and assessment criteria. The results revealed that some educators are still confused as to the method that must be employed to implement environmental education as given in the National Curriculum Statement. Educators indicated that this curriculum reduces time for teaching and learning because it engages them in the too much administrative work. They lack background knowledge to incorporate environmental themes in the new curriculum.

5.3. LIMITATIONS OF THE STUDY

Some questionnaires were returned incomplete and some were not returned at all. The researcher distributed 100 questionnaires to educators of which only 81 were returned, 19 were not returned. Of five questionnaires given to subject advisors only three were returned and two were not returned. The researcher had to use break time or lunch time to avoid interfering with teaching and learning so as to comply with government policies. This time was so limited because some educators had to have their lunch before they took part in the research activities. Some educators refused to be observed in class while teaching.

As mentioned above some members of the SGBs could not read and write; the researcher had to translate questions to their home language for interview. Some members of the SGB refused to participate in the study; they believed that since the study was about the environmental education its aim was to remove them from their land because their forefathers had been forcibly removed from it to establish game reserves.

Others wanted to know what they would get for the information they provided. The researcher had to explain that the information would be kept at the University of Zululand Library for students to refer. As for the Department of Education, it would hopefully see the importance of introducing environmental education in schools across the curriculum in the senior phase and the community would understand the importance of environmental education in their lives and interdependency that exist between human beings and environment

5.4. RECOMMENDATIONS

The study investigates the implementation of environmental education in schools across the curriculum in the senior phase. Data analysis in Chapter 4 revealed various challenges with regard to the implementation of environmental education in schools. In an attempt to address these challenges the following recommendations had been made:

5.4.1. Provision of policy guidelines on environmental education by Department of Education

It is recommended that the Department of Education should assist schools by providing clear policy guidelines on the implementation of environmental education in the senior phase. The policy should provide various teaching methods and strategies, including researches, projects, role plays, assignments, simulations, investigations and group work. Policy guidelines should state the number of tasks to be covered per week, month and term. Environmental educators should focus not only on awareness, but also on attitudes, skills development and citizen participation in environmental problem solving. The development of school environmental education policy would provide the potential to develop skills, relationships and changes that contribute towards comprehensive school development.

5.4.2. All tertiary institutions to offer environmental courses for teacher training

It is also recommended that tertiary institutions that offer environmental education should recruit more students to enrol in environmental education. The Department of Higher Education and Training should encourage all tertiary institutions in South Africa to introduce environmental courses and offers bursaries to students. This would increase the number of educators to teach environmental education in schools. This initiative could assist in addressing the catastrophic impact human beings have on the natural environment, which has led to environmental crises around the world.

5.4.3. Non-Governmental environmental organisations to provide resources and conduct workshops on environmental education

This research found that non-governmental organisations such as Wildlife and Environmental Society of South Africa; Greenpeace, Eco-Schools International, World Wildlife Fund and Department of Agriculture, Environmental Affairs, Rural Development, Water Affairs and Ezemvelo KZN Wildlife have various resources on environment which could be given to schools for effective implementation of environmental education. To this effect, workshops and in-service training should be organised by the Department of Education and non-governmental environmental organisations to capacitate educators, subject advisors, principals, ward managers and circuit managers to understand and to develop different skills and methods that are required

to implement the programme across the curriculum. There must be a coherent programme that covers various aspects of environmental education such as soil erosion, climate change, diseases, deforestation and pollution. The programme should be cascaded from the National Department of Education to the provinces, the districts and circuits; it should be monitored and evaluated by subject advisors.

5.4.4. Establishment of environmental clubs in schools

The study shows that very few schools have environmental clubs. It is recommended that all schools should establish them. Environmental organisations and environmental Departments should assist schools to establish clubs which would assist the educators and learners to understand all the dynamics of environment. The NGOs, Ezemvelo KZN Wildlife and Environmental Departments should organise various eco-schools competitions that would engage learners and educators in various environmental activities.

5.4.5. Celebration of environmental days, weeks and months

School calendar should include all environmental days, weeks and months to be celebrated. Schools should be encouraged to organise and celebrate events, such as Arbor Day, Water Week, Environmental Day, National Arbor Month, World Aids Day, National Marine Month, World Tourism Day, World Habitat Day, and Wetland Day.

5.4.6. Curriculum planners to integrate environmental themes in the work schedules

Curriculum planners need to integrate environmental themes in the work schedules of all senior phase subjects. This would make implementation simpler. Work schedules should be in line with policy guidelines and should cover various topics on environmental issues.

5.4.7. The Involvement of traditional leaders

The inclusion of indigenous knowledge could play a vital role in the implementation of environmental education. One respondent claimed that environmental education would restrict the communities from interacting freely with nature, but indigenous knowledge would address their concern, since the approach to environmental education would be integrated rather than top-down. Environmental education involves a lot of outdoor activities which would take place in the

areas under the jurisdiction of Amakhosi (Traditional Leaders). Traditional leaders need to be made aware about environmental excursions that could take place in their areas.

5.4.8. Conference on environmental education to be championed by Department of Education and Higher Education and Training

It is recommended that there should be a conference or Environmental Indaba on environmental education that would be championed by the Department of Education and Higher Education and Training. The implementation of environmental education in schools should be advocated by Government and the Department of Higher and Basic Education. It was earlier stated that the Government and Department of Education should support schools to implement the objectives and principles adopted in the Inter-Governmental Conference, Tbilisi Declaration (1977) and Kyoto Protocol (2001) which stress the implementation of environmental education across the curriculum in schools.

5.5. CONCLUSION

According to the research findings, the Department of Education did not formally implement environmental education in schools in the Ubombo Circuit in the senior phase across the curriculum as it is stated in the National Curriculum Statement (DoE, 2007). The respondents have indicated various challenges, regarding the implementation of environmental education in schools in the senior phase such as lack of policy guidelines a shortage of specialist educators in environmental education, the changing curriculum, inadequate workshops and in-service training, attitude of educators and subject advisors towards environmental education, and a shortage of resources. The research findings reveal that subject advisors and educators lack the basic understanding of environmental education. The general understanding of the concepts is that it is about plants and animals. The results also show that, Ezemvelo KZN Wildlife, World Wildlife Fund and Wildlife and Environmental Society of South Africa are still conducting workshops for schools in environmental education. Education is the key to addressing the catastrophic destruction of the environment. With the information obtained from the respondents, one can deduce that the aims and objectives of the study have been achieved.

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APPENDIX A: Questionnaires to educators

QUESTIONNAIRES TO EDUCATORS

**THE IMPLEMENTATION OF ENVIRONMENTAL EDUCATION IN THE UBOMBO
CIRCUIT SCHOOLS.**

NAME OF THE SCHOOL :.....

DATE :.....

Please use a cross(X) in the space provided to answer the following questions.

Please respond to the questionnaire by choosing the response that is most applicable to you. The information asked is for research purpose only and will be confidentially treated. You are at liberty to express your views honestly and correctly.

SECTION A:

Personal Background

1. Gender.

Male	
Female	

2. Age.

<20	
21 – 30	
31 _ 40	
41 _ 50	
51>	

3. Marital Status.

Single	
Married	
Divorce	
Windowed	

4. Grade (s) you are teaching.

1		5		9	
2		6		10	
3		7		11	
4		8		12	

5. Years of teaching experience.

<1 _ 5	
6 _ 10	
11 _ 15	
16 _ 20	
21 _ 25	
30>	

6. Subject you are teaching.....

7. Professional training.....

PTC	
PTD/ STD	
UED	
SED/ HDE	
ACE	
Other	

8. Academic qualification.

Metric/ STD	
3 Years Degree	
Honours Degree	
Masters Degree	

SECTION B

Possible Barriers on Implementation of Environmental education.

The Constitution of South Africa includes environment, Environmental, Management Act of 1998, White Paper on Environment 1996, Environmental Education Policy for schools 2001 and National Curriculum, Statement all put more emphasis on the implementation of environmental education in all learning areas in schools.

9. Does your school have any environmental education policy guidelines?

Yes	
No	

If no, give reasons.

.....

.....

.....

.....

10. Do you integrate environmental education in your lesson?

Yes	
No	

If no provide reasons.

.....

.....

.....

11. Are there any resources you use to implement environmental education in your lesson?

Yes	
No	

If yes, list those resources.

.....

.....

.....

12. Are there any resources you use to teach environmental education?

Yes	
No	

If yes, list those resources.

.....

.....

.....

13. Does your school have any specialist educator in environmental education?

Yes	
No	

If no, give reasons.

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

14. Do you understand all the dynamics of environmental education?

Yes	
No	

If no, give reasons.

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

15. Have you attended any workshops in environmental education?

Yes	
No	

If no, give reasons for your option.

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

16. Do you think there is a need for training in environmental education?

Yes	
No	

Give reasons for your option.

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

17. Does the introduction of environmental education add workload to educators?

Yes	
No	

Give reasons for your option.

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

18. Do you think the introduction of environmental education will increase pass rate?

Yes	
No	

If yes, give reasons.

.....
.....

19. Do you think introduction of environmental education will increase failure rate?

Yes	
No	

20. Do your school have environmental club?

If yes, what outdoor environmental education activities you learners are involved in?

.....

.....

.....

21. General Comments.

.....

.....

.....

.....

APPENDIX B: Questionnaire to the subject advisors

QUESTIONNAIRES TO SUBJECT ADVISORS

THE IMPLEMENTATION OF ENVIRONMENTAL EDUACTION IN THEUBOMBO CIRCUIT SCHOOLS.

Please use a cross (X) in the space provided to answer the following questions.

Please respond to the questionnaire by choosing the response that is most applicable to you. The information asked is for research purpose only and will be confidentially treated. You are at liberty to express your views honestly and correctly.

Place

Date.....

SECTION A

Personal Background

1. Gender

Female	
Male	

2. Age

<20	
21 - 30	
31 - 40	
41 -50	

51>	
-----	--

3. Marital status.

Single	
Married	
Divorced	
Widowed	

4. Professional training

PTC	
PTD/STD	
UED/	
ACE	
Other	

5. Academic qualification

Metric	
3 years Degree	
Honours Degree	
Masters Degree	

Other	
-------	--

6. Subject you are specializing in as subject advisor.....

SECTION B

Implementation of environmental education

7. Do you have any policy on the implementation of environmental education?

Yes	
No	

If no, give reasons.

.....

.....

Yes	
No	

8. Do all schools under Ubombo Circuit integrate environmental education?

Yes	
No	

If no, give reasons.

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

9. Do integration of environmental education add workload to subject advisors?

Yes	
No	

If yes, explain.

.....
.....

10. Do you have resources for the implementation of environmental education?

Yes	
No	

If yes, list those resources.

.....
.....

11. Do you conduct workshops for the educators on the implementation of Environmental education?

Yes	
No	

If no, give reasons.

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

12. Did you do environmental education in the tertiary institution?

Yes	
No	

If no, give reasons.

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

13. General Comments.

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

APPENDIX C: Interview questions to environmental officers

INTERVIEW QUESTIONS TO ENVIRINMENTAL OFFICERS

**THE IMPLEMENTATION OF ENVIRONMENTAL EDUCATION IN THE UBOMBO
CIRCUIT SCHOOLS**

1. Do you work with schools regarding the implementation of environmental education?

YES	NO
-----	----

If no, give reasons for your answer

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

2. Are you working with primary schools or secondary schools?

Primary	Secondary	Both
---------	-----------	------

Give reasons for your answer.

3. How do you engage learners in environmental education activities?

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

4. Do you integrate environmental education activities in specific subject (s) offered in schools?

YES	NO
-----	----

If yes, name the subject (s)

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

APPENDIX D: Interview questions to school governing body

IMIBUZO EBHEKISWE KUMALUNGU OKHANDLU OLAWULA UKUPHATHWA KWESIKOLE

THE IMPLEMENTATION OF ENVIRONMENTAL EDUCATION IN THE UBOMBO CIRCUIT SCHOOLS

1. Nike naziswa ngothisha ngokufakwa kwezemvelo ohlelweni lokufundisa ezikoleni?

YEBO	
CHA	

Nikeza izizatho zempendulo yakho

.....

.....

.....

.....

2. Ungafisa yini ukuthi ezemvelo zifakwe ohlelweni lokufunda nokufundisa ezikoleni?

YEBO	
CHA	

Nikeza izizathu zempendulo yakho

.....

.....

.....

.....

3. Ngokucabanga kwakho, yiliphi iqhaza elingabanjwa ngumphakathi ekufundisweni kwezemvelo ezikoleni?

.....

.....

.....

4. Ngokucaba kwacha lichen yini iqhaza elingabanjwa wukufakwa kwezemvelo ohlelweni lokufunda nokufundisa ezikoleni ekongiweni noma ekugcineni kwayo? .

YEBO	
CHA	

Nikeza izizathu zempendulo yakho

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

APPENDIX E: Letter from the Head of KwaZulu-Natal Provincial Department of Education



education

Department:
Education
PROVINCE OF KWAZULU-NATAL

Enquiries: Sibusiso Alwar

Tel: 033 341 8610

Ref.:2/4/8/1/83

Mr J S Mathenjwa
P/Bag X 567
Mkuze
3965

Dear Mr JS Mathenjwa

PERMISSION TO CONDUCT RESEARCH IN THE KZN DoE INSTITUTIONS

Your application to conduct research entitled: "THE IMPLEMENTATION OF ENVIRONMENTAL EDUCATION IN THE UBOMBO CIRCUIT SCHOOLS", in the KwaZulu-Natal Department of Education Institutions has been approved. The conditions of the approval are as follows:

1. The researcher will make all the arrangements concerning the research and interviews.
2. The researcher must ensure that Educator and learning programmes are not interrupted.
3. Interviews are not conducted during the time of writing examinations in schools.
4. Learners, Educators, Schools and Institutions are not identifiable in any way from the results of the research.
5. A copy of this letter is submitted to District Managers, Principals and Heads of Institutions where the Intended research and interviews are to be conducted.
6. The period of investigation is limited to the period from 01 February to 30 June 2014.
7. Your research and interviews will be limited to the schools you have proposed and approved by the Head of Department. Please note that Principals, Educators, Departmental Officials and Learners are under no obligation to participate or assist you in your investigation.
8. Should you wish to extend the period of your survey at the school(s), please contact Mr. Alwar at the contact numbers below.
9. Upon completion of the research, a brief summary of the findings, recommendations or a full report / dissertation / thesis must be submitted to the research office of the Department. Please address it to The Director-Resources Planning, Private Bag X9137, Pietermaritzburg, 3200.
10. Please note that your research and interviews will be limited to schools and institutions in KwaZulu-Natal Department of Education (Umkhanyakude District)

Nkosinathi S.P. Sishi, PhD
Head of Department: Education
Date: 09 April 2014

KWAZULU-NATAL DEPARTMENT OF EDUCATION

POSTAL: Private Bag X 9137, Pietermaritzburg, 3200, KwaZulu-Natal, Republic of South Africa
PHYSICAL: 247 Burger Street, Anton Lembede House, Pietermaritzburg, 3201. Tel. 033 392 1004 Fax: 033 392 4002
EMAIL ADDRESS: kehlogile.connie@kzndoe.gov.za; CALL CENTRE: 0860 596 363;
WEBSITE: WWW.kzneducation.gov.za

APPENDIX F: Participants consent form

PARTICIPANT'S CONSENT

I _____ agree to participate in the research of the implementation of environmental education in schools. A case study of Ubombo Circuit.

- I understand that I am not obliged to participate in this study, that I am free not to answer certain questions, and that I have a right to withdraw from the study at any time,
- I understand how confidentiality will be maintained during this research,
- I understand my right to confidentiality and anonymity,
- I understand that I will complete the questionnaires at my own spare time,
- I also understand that the interviews will be conducted on face-to-face bases with the researcher,
- I understand anticipated uses of data, especially with respect to publication, communication and dissemination of results,
- I understand that I can use the language that I am comfortable with.

I have carefully studied the above and understand my participation in this agreement; I freely consent and voluntarily agree to participate in this study.

This research will add to the existing body of knowledge on the implementation of environmental education in schools under Ubombo Circuit.

Date _____

Signature _____

APPENDIX G: letter requesting to conduct research to the Ward manager

**UNIVERSITY
OF
ZULULAND**



Private Bag x1001
KwaDlangezwa
3886

Enquiries: Mathenjwa J.S. Reference: Research Date: 18/03/13

DEPARTMENT OF EDUCATION

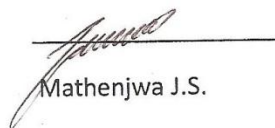
TO: WARD MANAGER

**SUBJECT: REQUEST TO CONDUCT RESEARCH IN SCHOOLS UNDER JOZINI AND
TSHONGWE WARDS**

I am presently registered for a Masters Degree at the University of Zululand, under the supervision of Prof. E.T. Dlamini. I have now reach the stage where I am required to conduct my field study, which will involve administering questionnaires to educators, as well as conducting interview with the members of the School Governing Bodies. The title of dissertation is: Barriers Hindering the Implementation of Environmental Education in Schools.

I am writing to request access in some of the schools in your ward, in order to carry out investigation regarding the topic. I wish to administer questionnaires to 100 educators and 10 School Governing Body members at Jozini and Tshongwe wards. You are assured that the study will not interfere with the normal running of the schools; educators will be requested to complete the questionnaires in their own spare time.

I pledge to abide by any conditions that you may wish me to comply with.


Mathenjwa J.S.

18/03/2013
Date

APPENDIX H: Reply slip for the Ward Manager

REPLY SLIP

Dear Mr J.S. Mathenjwa

I hereby give you access to conduct your research in schools under Jozini and Tshongwe wards on the topic: Barriers Hindering the Implementation of Environmental Education in Schools. (A Casey study of Ubombo Circuit)

A.M. THABEDA

Ward Manager

[Signature]

Signature

25/04/2013

Date

APPENDIX J: Letter to the School Principals at the Ubombo Circuit

**UNIVERSITY
OF
ZULULAND**



Private Bag x1001
KwaDlangezwa
3886

Enquiries: Mr Mathenjwa J.S. Reference: Research Date: 16/04/13

THE PRINCIPAL

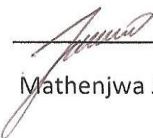
Dear Sir/Madam

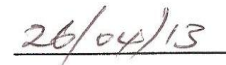
RE: REQUEST TO CONDUCT RESEARCH IN THE SCHOOL

I am presently registered for a Masters Degree at the University of Zululand, under the supervision of Prof. E.T. Dlamini. I have now reach the stage where I am required to conduct my field study, which will involve administering questionnaires to educators, as well as conduct interview with the members of School Governing Bodies (SGBs). The title of dissertation is: Barriers Hindering the Implementation of Environmental Education in Schools. (A Casey Study of Ubombo Circuit).

I wish to assured you that the study will not interfere with the normal running of the schools; educators will be requested to complete the questionnaires in their own spare time.

I pledge to abide by any conditions that you may wish me to comply with.


Mathenjwa J.S.


Date

APPENDIX I: Reply slip for the School Principals

REPLY SLIP

Dear Mr J.S. Mathenjwa

I hereby give you access to conduct your research at school on the topic:
Barriers hindering the implementation of environmental education in schools.
(A Casey study of Ubombo Circuit)

NTULI SS

Principal



Signature

30/04/13

Date

APPENDIX K: Letter to the Circuit Manager at Emkhanyakude District

**UNIVERSITY
OF
ZULULAND**



Private Bag x1001
KwaDlangezwa
3886

Enquiries: Mathenjwa J.S. **Reference:** Research **Date:** 18/03/13

DEPARTMENT OF EDUCATION

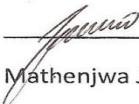
TO: CIRCUIT MANAGER, Mr M.W. MAHLANGU

**SUBJECT: REQUEST TO CONDUCT RESEARCH IN SCHOOLS UNDER UBOMBO
CIRCUIT**

I am presently registered for a Masters Degree at the University of Zululand, under the supervision of Prof. E.T. Dlamini. I have now reached the stage where I am required to conduct my field study, which will involve administering questionnaires to educators, as well as conducting interview with the members of the school governing bodies. The title of dissertation is: Barriers Hindering the Implementation of Environmental Education in Schools.

I am requesting access in some of the schools in your circuit in order to carry out investigation regarding the research topic. I wish to administer questionnaires to 100 educators and 10 School Governing Body members at Ubombo Circuit. You are assured that the study will not interfere with the normal functioning of the schools; educators will be requested to complete the questionnaires in their own spare time.

I pledge to abide by any conditions that you may wish me to comply with.



Mathenjwa J.S.



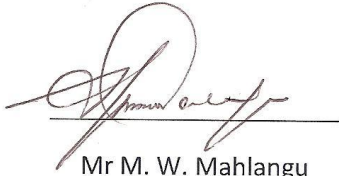
Date

APPENDIX L: Reply slip for the Circuit Managers

REPLY SLIP

Dear Mr J.S. Mathenjwa

I hereby give you access to some of the schools at Ubombo Circuit to conduct your research on the topic: Barriers hindering the Implementation of Environmental Education in Schools. (A Casey study of Ubombo Circuit)



Mr M. W. Mahlangu

(Circuit Manager)

27/03/2013

Date

APPENDIX M: Letter to the educator respondents (teachers) at Ubombo Circuit

**UNIVERSITY
OF
ZULULAND**



Private Bag x1001
KwaDlangezwa
3886

Enquiries: Mr Mathenjwa J.S.

Reference: Research

Date: 16/04/13

THE RESPONDENT

Dear Sir/Madam

RE: REQUEST FOR YOUR PARTICIPATION IN THE RESEARCH STUDY

I am presently registered for a Masters Degree at the University of Zululand, under the supervision of Prof. E.T. Dlamini. I have now reached the stage where I am required to conduct my field study, which will involve administering questionnaires, as well as conducting interview. The title of dissertation is: Barriers Hindering the Implementation of Environmental Education in Schools. (A Casey Study of Ubombo Circuit)

I am writing to request your consent, as a resource person to participate in this study. Your participation will be voluntary and it will be within your right to withdraw from participation at any stage of the investigation, should you feel that your rights are violated. However as in many studies of this kind, the success of this study will depend on your participation. You are assured that, should you agree to take part in the study throughout, the principle of anonymity and confidentiality will be strictly observed. You will therefore not be prejudice as in any way as a result of your participation in the study.

In anticipation thank you for your kind consideration.


Mathenjwa J.S.

26/04/13
Date

APPENDIX N: Consent reply to the participants

REPLY SLIP

Dear Mr J.S. Mathenjwa

I hereby give my consent as a resource person to participate in your research study on the topic: Barriers hindering the implementation of environmental education in schools. (A Casey study of Ubombo Circuit)

P.P. Sibiya

Respondent

P.P. Sibiya

Signature

30/04/13

Date

APPENDIX P: Letter requesting to conduct research to Senior General Manager

From:

To: 0333921223

29/04/2013 09:21

#139 P.008/009

**UNIVERSITY
OF
ZULULAND**



Private Bag x1001
KwaDlangezwa
3886

Enquiries: Mr Mathenjwa J.S.

Reference: Research

Date: 16/04/13

DEPARTMENT OF EDUCATION

TO: SENIOR GENERAL MANAGER

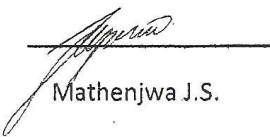
INSTITUTIONAL DEVELOPMENT SUPPORT

SUBJECT: REQUEST TO CONDUCT RESEARCH IN SCHOOLS AT UBOMBO

CIRCUIT UNDER UMKHANYAKUDE DISTRICT

I am presently registered for Masters Degree in the Faculty of Education at the University of Zululand, under the supervision of Prof. E.T. Dlamini. I have now reached the stage where I am required to conduct my field study, which will involve administering questionnaires to educators, as well as conducting interview to the members of school governing bodies. The title of dissertation is: Barriers Hindering the Implementation of Environmental Education in Schools.

I am requesting access to approach schools that will constitute the research sample for the purpose of conducting this research. Altogether, I intend to research out to about 100 educators and 10 School Governing Body members. You are assured that the study will not interfere with the normal functioning of the schools; educators will be requested to complete the questionnaires in their own spare time. I pledge to abide by any conditions that you may wish me to comply with.



Mathenjwa J.S.


Date

APPENDIX Q: Permission given by gate keepers to proceed with the research in their Circuit

From: To:0333921223 29/04/2013 09:21 #139 P.009/009

UNIVERSITY OF ZULULAND



Private Bag x1004
KwaDlangezwa
3886

Supported/Not Supported

[Signature]
Motha P.J.
District Director

23/04/13
Date

Approved by the Head of Department is required. The application must clearly explain the nature of research and must provide samples of subject to input to questionnaires

[Signature]
Lancaster C.P.
General Manager

20/04/2013
Date

Approved/ Not Approved

[Signature]
Dlamini N.J.
Senior General Manager

20/05/13
Date

"restructured for relevance"