

**Factors that influence environmental teaching:
A case study of Ngqeleni District, Eastern Cape.**

by:

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Submitted in partial fulfilment of the academic requirements
for the degree of

Master of Environment and Development

in the

Centre for Environment, Agriculture and Development,

School of Applied Environmental Sciences,

University of KwaZulu-Natal

Pietermaritzburg

2005

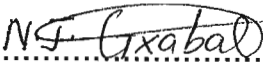
PREFACE

This study has two components, Component A and Component B. Component A provides the theoretical background for the study. It includes, amongst other things, an introduction to the topic of environmental teaching and the factors that impact its effectiveness in rural schools. Component B is a paper written in the format of the **Southern African Journal of Environmental Education**.

DECLARATION

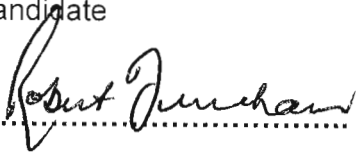
The study described above was carried out in the Centre for Environment, Agriculture and Development, University of KwaZulu-Natal, Pietermaritzburg, under the supervision of Professor Rob Fincham and Miss Mary Lawhon.

This thesis represents original work by the author and has not otherwise been submitted in any form for any degree or diploma to any other university. Work extracted from other authors has duly been acknowledged.


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ABSTRACT

This study investigates factors that influence environmental teaching in rural schools in the Ngqeleni District, Eastern Cape Province of South Africa. Focus-group interviews at selected schools for Grade 4 to 6 teachers were held between 7th and 22nd November 2005. The study shows that the environmental curriculum, teacher qualifications and training, resources, attitudes of teachers and learners, governance and the context, influence the implementation of environmental teaching. The study reflects that teacher qualifications and training are the most limiting factors and need to be addressed immediately because environmental curriculum is not effectively delivered.

Recommendations provided entail that teachers need to be included during the curriculum planning process together with curriculum experts from the Department of Education. The Department of Education also needs to effectively plan teacher training and extend the training period for teachers. Intersectoral collaboration within government in terms of how teachers are trained might also be helpful for better environmental teaching. A buddy system in which schools form environmental support groups might be helpful to keep on building local experience and capacity at the local level.

Teachers are supposed to be part of the publishing process of resource materials to ensure relevance of resource materials to their contexts. A traveling resource centre with DVD's, for example, for showing different contexts beyond local level might also be helpful. Further training of teaching staff and the use of study trips for the best classes of pupils might also motivate learners and teachers.

ACKNOWLEDGEMENTS

I would like to thank Prof. Rob Fincham and Miss Mary Lawhon for their guidance and supervision for this study. I would also like to thank Prof. Heila Lotz-Sisitka, Dr. Jim Taylor, Dr. Nyambe and Miss Ingrid Timmermans for their advice and guidance during the research process.

Thanks to my family for their encouragement and support during this study. Successful completion of this project would not have been possible without the selected ten Nqeketo zone schools from Ngqeleni. Thank you very much to principals and teachers of these schools for their great support.

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ACRONYMS

C2005	Curriculum 2005
CEAD	Centre for Environment, Agriculture and Development
DEAT	Department of Environmental Affairs and Tourism
DoE	Department of Education
DoL	Department of Labour
EDOs	Education Department Officials
EEASA	Environmental Education Association of Southern Africa
EEFSD	Environmental Education for Sustainable Development
EEPI	Environmental Education Policy Initiative
GET	General Education and Training
IUCN	International Union for the Conservation of Nature and Natural Resources
LA	Learning Area
NCS	National Curriculum Statement
NECC	National Education Co-ordination Committee
NEEP	National Environmental Education Project
NEEP-GET	National Environmental Education Project for General Education and Training
NEMA	National Environmental Management Act
NEP	National Education Policy
NGOs	Non- Governmental Organizations
OBE	Outcomes- Based Education
RDP	Reconstruction and Development Programme
RNCS	Revised National Curriculum Statement
UKZN	University of Kwa Zulu-Natal
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environmental Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WCED	The World Commission on Environment and Development
WESSA	Wildlife and Environment Society of South Africa
WWF	World Wide Fund for Nature

1. CHAPTER ONE: INTRODUCTION

This study investigates factors that influence environmental teaching within the Nqeketo zone teachers, Ngqeleni District in the Eastern Cape, South Africa. Chapter One consists of an introduction that provides a 'roadmap' of the study, followed by the problem statement, research aim and objectives, and the background and motivation for the research. Chapter Two is a detailed literature review, which starts with the background to the South African education system, and the historical context to environment within the national curriculum in South Africa. Factors that influence environmental teaching, research objectives and conclusion are also provided in this chapter. Chapter Three includes a description of the geographic context and methodology for the study.

1.1 Problem Statement

Environmental education is necessary in South African schools for many reasons. Firstly, it is needed to make pupils aware of the critical importance of the environment. Secondly, it is important to integrate new thinking regarding social, biophysical, political and economic issues into the curriculum (O'Donoghue and van Rensburg, 1995). Finally, environmental education can be seen as a collection of diverse educational processes through which we might enable ourselves and future generations to respond to environmental issues in ways which might promote change towards sustainable community life in a healthy environment (Janse van Rensburg and Lotz, 1998).

Contemporary South African environmental education is not working in some schools due to various factors (Le Roux, 2000). There are a range of issues which need to be addressed in order to ensure effective environmental education. However, given the limited resources available, there is a need to understand the most limiting factors that prevent successful environmental teaching. This will allow problems to be prioritised so that key challenges can be addressed as soon as possible by the Department of Education. Since the teachers are the ones most directly involved in implementing the curriculum, they offer important insights from "on the ground". Their perspectives have been overlooked so far and not been determined in research.

1.2 Research aim and objectives

The aim of the study is to understand the perspectives of teachers on the factors that impact on the delivery of environmental component of the OBE curriculum.

The objectives of this research were developed out of the author's own understanding as well as a review of the literature.

The objectives of the research are to determine teachers' perspectives on:

1. the levels of understanding and ability to deliver environmental curriculum.
2. their levels of qualification and capacity to implement the environmental curriculum.
3. the availability and usability of resources to foster environmental teaching.
4. the levels of interest and commitment to teach environmental education.
5. the level of support from school governing structures to facilitate environmental teaching.
6. the challenges that face rural schools for better environmental teaching.

The literature review is organised according to these key objectives. Although they may not be an exhaustive list, the researcher used it to help guide and give the literature review structure.

1.3 Background and motivation of the researcher

The researcher is currently an educator for Senior Phase learners (Grades 7-9) at Nyibiba Junior Secondary School, Mt Fletcher in Eastern Cape. She has been an educator since 1993 teaching Natural Science, a subject that was formerly known as General Science. The curriculum that was in place when she started teaching was based on traditional methods of teaching. Methods used include teacher-talk whereby teachers transmit knowledge and learners bank the information (Pettigrew and Akhurst, 1999). After 1994 there was a great concern about the need to change in curriculum. As a result of this in 1997 an Outcomes based curriculum was launched, marking an end to the past education system which prepared learners in different ways for the social, economic and political life positions they were expected to occupy (DoE, 1997).

The National Curriculum Statement (NCS Grades R-9) was termed Curriculum 2005 because it was to be gradually phased into all schools by the year 2005. In 2000 Outcomes Based Education (OBE) was implemented in Grade 7. This posed a big challenge for teachers who had to implement the new curriculum. The researcher was impressed by the integration of environment into the curriculum because it raises important issues about the environment such as conservation and management of resources.

Because of the problems that the new curriculum had at its first stage of implementation there was a need for its revision (DoE, 2000). In June 2000, the Council of Education Ministers agreed that the National Curriculum Statement for Grades R-9 should be revised to strengthen Curriculum 2005. The Revised National Curriculum Statement for grades R-9 replaced NCS for Grades R-9 with effect from 2004 for the Foundation Phase (Grades R-3), 2005 for Intermediate Phase (Grades 4-6) and will be implemented in 2006 for Senior Phase (Grades 7-9). As a result of this experience, the researcher is now trying to identify the critical factors that impact on environmental teaching by Nqeketo zone teachers. The concern is with teachers from rural areas, as opposed to urban teachers, as they experience problems in terms of preparing lessons with an environmental focus.

The researcher will be implementing the new revised curriculum in Grade 7 in 2006 and will be teaching environmental lessons since it is integral to the curriculum. Areas of interests involve present practices of environmental teaching by Grade 4- 6 teachers. The purpose of choosing the above mentioned group of teachers is that they implemented Curriculum 2005 and now are currently implementing the revised curriculum (NCS R-9). This is important, as these teachers are required to plan lessons with an environmental focus, because environment is integral into the curriculum as stated in the National Curriculum Statement (NCS R-9) (NEEP-GET, 2004). Again, the above-mentioned group of teachers might be in a position to help the Senior Phase teachers in preparing environmental lessons.

1.4 Conclusion

This chapter has provided the introduction, problem statement, research aim, background and motivation for the research and lastly the conclusion. The following chapter provides a detailed literature review, starting with the background to South African education system, historical context to environment within the national curriculum in South Africa and environmental education trends in South Africa. Lastly, factors that influence environmental teaching, research objectives and conclusion are provided.

2. CHAPTER TWO: SOUTH AFRICAN EDUCATION SYSTEM

South Africa's democratic government inherited a divided and unequal system of education. Struggles to transform South African schooling have revolved around questions of access, content and control (Chisholm, 2004). Learners were prepared in different ways to occupy positions in social, economic and political dimensions (DoE, 2002). One of the challenges in transforming the South African education system is how the curriculum is to be transformed (Hindle, 1996). In 1995 the National Education and Training Forum started to revise and rationalise subjects. In 1998 Curriculum 2005 was launched for the first time in South African schools in Grade One. This curriculum seeks to create independent active learners that can meet the challenges of the twentieth century (DoE, 2002).

2.1 South Africa's environmental education background

South Africa's history is marked by human rights abuses, social injustices, exclusions and environmental degradation and risk. This environmental degradation and risk frequently affects those who were previously disadvantaged, or those that are more at risks (NEEP-GET, 2004). South Africa's environmental education has been developing alongside the development of formal education policy both at national and local levels. Initial developments were introduced in the early 1990s through the Environmental Policy Initiative (EEPI) (DoE, 1995). The 1995 *White Paper on Education and Training* (DoE) seeks to "set the scene for environmental education as involving an interdisciplinary, integrated and active approach to learning and must be a vital element of all levels and programmes of the education and training system, in order to create environmentally literate and active citizens of South Africa" (DoE, 1995:18).

Environment and development issues have come within rights-based discourse in policy in a broader scale. These developments have led to the inclusion of an environmental focus in curriculum policy, as shown by 'environment' as phase organizer in C2005 (NEEP-GET, 2004). The establishment of the National Environmental Education Project for the General Education and Training (NEEP-GET) became a symbol of institutionalising environmental learning (NEEP-GET, 2005).

According to DoE (1998) the cross-curricular nature of environmental learning can be observed in different competencies. Some of the competencies enable learners to be environmentally literate and also to take action on environmental issues. Environmental issues are explicitly considered, as they particularly enhance the learner's capacity to take action on environmental issues. The curriculum in South Africa aims to reflect the principles and practices of social justice, respect for the environment, and human rights and inclusivity through the Learning Outcomes, Assessment Standards and lesson planning.

The new Constitution of South Africa enshrines the right of every South African citizen to an environment that is not detrimental to his or her health. It also emphasises the need for sustainable utilisation of resources for the well-being of both current and future generations; and a better quality of life for all (DEAT, 1999). South Africa is characterised by many environmental and developmental issues such as soil erosion that reduces the productivity of land grazing and food production, poor management of pollution and waste and uncontrolled utilization of forests (Lotz-Sisitka and Olivier, 2000). All these issues present threats to habitats, leading to a loss of biodiversity and a reduction in quality of life for many South Africans, mainly those that depend directly on natural resources to sustain their livelihoods (Conde, 2004). Twenty-six percent of households in South Africa live in poverty with limited access to education, health care, water, sanitation and proper disposal of waste (Statistics South Africa, 2005). This now makes it an essential main concern to create healthy environments in schools and communities (NEEP-GET, 2004).

2.3 Environment within the national curriculum in South Africa (CONDENSE- include relevant ones)

The government has instituted a number of educational programmes to address these issues noted above. For example HIV/AIDS policies and other programmes have been developed for the education system. The National Curriculum Statement addresses all these issues through the Learning Areas. This has been done initially by putting environment as a phase organiser in all Learning Areas. Following below are principles of the National Curriculum Statement that are

useful to consider in lesson planning as they influence all Learning Programmes and Lesson plans (NEEP-GET, 2005).

Outcomes-based education

Outcomes-based education requires considerable shifts in our thinking about knowledge, and the role of teachers and learners that are very relevant to environmental teaching and learning. The National Curriculum Statement (R-9) states that teachers will be accountable for the development of Learning Programmes (DoE, 2002). These means that teachers are accountable for planning lessons, based on their Learning Programmes and Work Schedules, and are guided by policy when doing this. A wide range of environmental learning opportunities has been incorporated into the different Learning Areas of the National Curriculum Statement (R-9).

Outcomes based education, further means that the process of learning is as important as the content. This means that during lesson planning, both the process and content should be clarified (DoE, 2002). The principle of integrated learning is integral to Outcomes based education and ensures that learners experience Learning Areas as linked and related. Learning Outcomes and Assessment Standards guide teachers on the kind of process and content for lesson planning (NEEP-GET, 2004). Teachers and learners need to find more adaptable and responsive ways of working with knowledge for meaningful environmental learning.

Meaningful environmental learning involves learners searching for information about issues through experiences in the environment, and taking action based on prior knowledge, all of which contribute to better environmental management and better living (NEEP-GET, 2004). This is guided by use of prior knowledge by learners through the teacher asking questions. Learners then start to contextualise the question to find new and exciting information about the issue under investigation. Learners can now explore whether there is anyone in their area who can provide them with information about the issue under investigation (NEEP-GET, 2004). Thus the teacher's role is to contextualise the learning opportunities

for learners by allowing them to explore the different dimensions of their local context.

A high level of skills and knowledge for all

According to this principle, every Lesson Plan should allow all learners to acquire a high level of skills and knowledge by setting high expectations for learners (DoE, 2002). The Learning Outcomes and Assessment Standards and content guidelines in the NCS (R-9) provide this. To ensure that all learners are able to access high levels of skills and knowledge, teachers have a responsibility to ensure that the information shared with learners is of quality (DoE, 2002). Teachers should also consider language and prior knowledge of learners and build on this during lessons to develop their skills. A strong emphasis is placed on values and attitudes that need development of critical thinking and critical analysis of issues in context (NEEP-GET, 2005). Teachers also need to consider language of instruction used so that all learners can have access to information and therefore make use of knowledge and skills.

Clarity and accessibility

This principle means that in lesson planning, lesson plans should be clear and comprehensible. This means that learning materials, ideas and learning activities should also be clear and accessible in different languages (DoE, 2002). Well-planned lessons create better opportunities for learners to acquire the required skills and knowledge.

Progression and integration

The principle of integrated learning is integral to Outcomes-based education and ensures that learners experience Learning Areas as linked and related. This principle emphasizes the importance of enabling progressively more complex, deeper and broader expectations of learners (DoE, 2002). Because environmental issues and risks are often complex and to understand, integrated responses are often required. All Learning Area teachers can do this by integrating Learning Outcomes from different Learning Areas. Lesson Plans should be designed in a way that enables learners to encounter progressively more complex expectations

of learners. For example, Lesson Plans at the start of a phase will be qualitatively different to Lesson Plans at the end of a phase (NEEP-GET, 2004).

Environment being integral to each Learning Area means that there is an environmental focus entrenched within each of the Learning Areas (Timmermans and Gon, 2003). It is very crucial to interpret the environmental focus in all Learning Areas so that all the Learning Areas have a contribution to make towards enabling learners to be aware of the relationship between human rights, social justice, a healthy environment and inclusivity (NEEP-GET, 2004). This promotes the issue of sustainable living, as outlined in the South African Constitution and the curriculum's aims, which hope to develop on learners an ethic of social justice and respect for the environment.

Social justice, a healthy environment, human rights and inclusivity

The curriculum in South Africa (through the Learning Outcomes, Assessment Standards and lesson planning) aims to reflect the principles and practices of social justice, respect for the environment and human rights and thus opening close links with ideas of sustainable development (DoE, 2002). Sustainable development is defined as development that meets the needs of the present generation without compromising the ability of future generations to meet their needs (WCED, 1987). This requires the establishment of new relationships between teachers and learners, and a culture of human rights and inclusivity in classrooms and schools (NEEP-GET, 2005).

As the emphasis within this framework is on the relationship between a healthy environment, social justice, human rights and inclusivity, the curriculum aims to be sensitive to issues related to over-exploitation of resources for the benefit of a few; unequal distribution and use of resources; ways of accessing resources (e.g. water, soil) contribute to the quality of life of people and how humans impact on the environment in ways that intimidate life and the future planet (NEEP-GET, 2004). Specifically, the curriculum aims at addressing issues of poverty, inequality, race, gender, age, disability and challenges such as HIV/AIDS (DoE, 2002). In this context learners are encouraged to think critically for the benefit of their lives and

future generations. For example, teachers should plan lessons that show the relationship between an unhealthy environment and human rights or social justice (Timmermans and Gon, 2003).

2.4 Environmental education trends in South Africa

Three curriculum theories of environmental education have been identified as 'education *about* the environment', 'education *through* environment' and 'education *for* the environment'. Education *about* the environment seeks to discover the nature of the area under study (Palmer and Neal, 1994). This approach emphasises environmental education processes, which consist mainly of transmitting facts about human impacts on the biophysical environment (Palmer and Neal, 1994). Methods associated with this perspective include show and tell methods, question and answer, and talk and chalk (UNESCO, 2000).

Education *about* environment is also concerned with providing cognitive understanding that includes development of skills essential to attain this understanding Palmer (1998). Le Roux (2000) further argues that the integration of natural systems and social systems is often neglected in programs of education *about* the environment. Traditional subjects such as science and geography are often strongly located in the tradition of education about the environment that focuses on ecological concepts and technical solutions to environmental problems at the expense of human causes and of the changes in social systems necessary for solving them (UNESCO, 2000).

Education *through* the environment uses the environment as a learning resource, which enables the development of knowledge as well as investigation and communication skills (Le Roux, 2000). This curriculum theory engages learners in practical activities and also encourages them to appreciate the environment. Students do this through direct contact with the environment. Methods associated with this theory include experiential methods such as fieldwork, habitat and solitaire- whereby learners go outside classrooms and appreciate nature by singing nature songs or poems (McKay, Mosidi and Lotz-Sisitka, 2000).

Education *for* the environment is linked to development of attitudes and values, which include human understanding and behaviour necessary for sustainable development and caring use of the environment (Palmer and Neal, 1994). Students are encouraged to be critical of society and the causes of environmental problems (McKay, Mosidi and Lotz-Sisitka, 2000). The aim is to engage students in exploring and resolving environmental issues to foster new environmental perspectives.

According to Le Roux (2000) the focus of education *for* the environment is on supporting the preservation and improvement of the environment in promoting environmental welfare as the major goal. This theory is based upon an integration of international trends in environmental education and critical theorising developments. Education *for* environment provides a socially critical orientation in environmental education. Education *for* environment also seeks to foster socially and ecologically sustainable ways of organising people-environment relationships through education. Although education *for* environment internationally has been regarded as one that connects nature and human use of the planet, there are still schools that are not involved in socially transformative environmental education. This is because they are not incorporating environmental content in their existing curriculum. Reflections show that in these schools little is done to empower students to resolve environmental problems (Palmer, 1998).

Some of the current curriculum reform options for environmental education include evaluation that brings into question and enhances current theories of education. Besides that, all the above curriculum theories are interrelated and complement each other within a more relevant curriculum where historical contexts and environmental issues underpin active learning opportunities (Walker, 1997). Education *for* environment is the best as it involves attitudes of people so that they can appreciate environment. Changing people's attitudes is crucial for sustainable development to take place as people become more involved in solving environmental problems. Figure 3 illustrates the interrelationship between education *about*, *through* and *for* the environment.

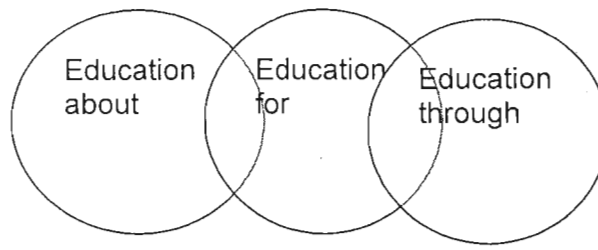


Figure1: Model for teaching and learning in environmental education

Adapted from: Palmer and Neal 1994

All the above curriculum theories are important as they are intertwined. Anyone responsible for planning environmental education needs to take account of all these interrelated theories. Failure of one theory can result in failure of the whole environmental education system as mentioned by Palmer and Neal (1994). Thus educations *about* and *through* environment are combined to provide skills and knowledge to support intentions of education *for* the environment (Walker, 1997).

2.5 Factors that influence environmental teaching

Key factors that influence environmental teaching have been identified based on an extensive literature review as well as the researcher's own experience. These might not be the only factors, but were chosen to help structure the literature review and interviews. The factors identified for this study are: curriculum, teacher qualifications and training, resources, attitudes of teachers and learners, governance and the context. These factors overlap and impact on each other, but distinctions have been made for clarity in the study. These factors are discussed below.

(a) Curriculum

Brimfield (1988) defines curriculum, as the study of what should comprise a world for learning and how to go about making this world. It is in microcosm the very implicit questions in the curriculum such as what is the good society, what is good life, and what is a good person that seem to be of important concern to all humanity (Brimfield, 1988). From a South African perspective, Curriculum is defined as the collection of subjects, their structure and related requirements with which provision is made for a particular target group (DoE, 1996). It is further

understood as referring to all the teaching and learning activities that take place in learning institutions which include aims and objectives, strategies of learning and teaching, how the curriculum is serviced or resourced and also reflects the needs and interests of those it serves (African National Congress, 1995).

Due to change within the South African education system, Curriculum 2005 (C2005) is the name given to the curriculum plan, which pertains to Grades R to Grade 9. This curriculum is a planned process or strategy of curriculum change, which is underpinned by elements of redress, equity, access and development (DoE, 1997). A large organization of researchers indicates that the introduction of Curriculum 2005(C2005) that uses Outcomes Based Education (OBE) approach is proving difficult in all schools, particularly rural schools (DoE, 2005).

Numerous environmental learning opportunities have been integrated into the different Learning areas of the National Curriculum Statement (R-9). A number of Learning Outcomes focus exactly on the environment, while other Learning Outcomes can help to strengthen environmental learning processes in the curriculum (NEEP-GET, 2004). Environment, as a phase organiser, had been integrated or incorporated in all phases and all Learning Areas. Integration of Learning Areas is important to create opportunities for active learning to take place. Integration also helps learners to know the value and purpose of different Learning Areas, and what each Learning Area impacts. Integration also helps in the development of lesson ideas to establish a meaningful, relevant, holistic and challenging learning experience for learners (NEEP-GET, 2004).

A challenge that has been identified in the Eastern Cape Province through NEEP was the need to clarify an environmental focus in the Learning Areas, Learning Outcomes and local context, to develop capacity for environmental learning (NEEP, GET, 2004). Teachers are frustrated about the curriculum because it is difficult to understand and even to prepare lesson plans with an environmental focus. This means that teachers need support to prepare lessons that go further than superficial studies and link issues with the context (Timmermans and Gon 2003). In the National Curriculum Statement (NCS R-9), environment is integral to each Learning Area. This means that there is an environmental focus entrenched

within each of the Learning Areas, which needs environment to be interpreted differently in each of the Learning Areas (Timmermans and Gon 2003). Each Learning Area has an contribution to make towards enabling learners to develop an ethic of social justice, sustainable living and respect for the environment (NEEP, GET, 2005).

Although environment is integral in the curriculum, teachers are still not confident about how to approach it because it is new to them. Furthermore what is happening is instability in curriculum whereby it changes before teachers understand or master expectations and are able to implement it fully. Teachers do not understand learning processes to interpret the Outcomes-based curriculum meaningfully (NEEP-GET, 2005). Teachers also find it difficult to address environmental issues because they have little knowledge or understanding of perspectives concerning environmental education. This is due to lack of engaging them with literature on the new curriculum by using available documents (NEEP - GET, 2004). Reasons can be the sudden change of Curriculum 2005 framework to RNCS (Grades R-9) framework, which creates difficulties for them to link the two frameworks (DoE, 2005). This statement can reflect back to issues of interests, attitudes and also commitment of teachers to environmental teaching.

Janse van Rensburg and Du Toit (2000) state clearly that although environment has been introduced in educational policies it is not complimented by visible action of the government on the ground and therefore difficult for teachers to apply it to their own contexts. This means there are still gaps in terms of policy and practice even though environment is integral within the curriculum. If this gap between policy and practice is not addressed it will continue to be a challenge for curriculum development even for the next century (NEEP-GET, 2004).

(b) Teacher qualifications and training

Studies show that there are not enough teachers who have the capacity, support and ability to run a school or teach in rural schools (DoE, 2005). There have been complaints from teachers about lack of training to implement the new curriculum (Taylor and Vinjevoold, 1999). Critical ideologies prominent in education concerning democracy states that the government failed to empower teachers but instead

burdened them by designing educational programmes without teacher's input or support (Chisholm et al. 2000). This now has led to poor implementation of the new curriculum with an environmental focus. A recent survey conducted in 2005 by Human Sciences Research Council (HSRC) also shows that staff qualifications and in-service training is one of the systematic factors affecting the quality of education (Sapa, 2005).

Christie and Jansen (1999) also comment that few black teachers were against OBE in principle: however these same teachers expressed strong reservations about their level of preparedness to engage with this new policy. As a result more training was needed (Christie and Jansen, 1999). OBE training has been heavily criticized in the literature with some evident criticism in the public submissions. It has been mentioned that there are plenty of policies available and many workshops are conducted but when it come to dissemination at school level there is a serious breakdown (DoE, 2005). OBE guides and materials that are unsupported tend to be insufficient for teachers, hence there is a strong need to train teachers in the planning, design and development of these materials.

Environmental education is regarded as a critical component of all education and training programmes at all levels (DoE, 2002). It is therefore very crucial to recognise the impact teacher education qualifications and methods to teach environmental lessons have, because teacher-training affects the way teachers address environmental issues (NEEP-GET, 2004). Studies show that the environmental focus in each Learning Area is not understood by teachers and education department officials and is also not well supported from a methodological point of view (NEEP-GET, 2005). The result of this is that teachers often resort to 'old knowledge' that, in turn, leads to superficial understanding of Outcomes and Assessment Standards (Timmermans and Gon, 2003). Teacher training can have a significant impact on other factors, like understanding the curriculum, how to select and adapt resources to implement it and to suit their local context, as well as changes in teacher and learner attitudes that can lead to better governance in schools.

Biology and Geography used to be the two main subjects that dealt with environmental issues, although this was not considered to be environmental education. However, it was not compulsory for teachers to take these subjects because they could choose to do subjects they were comfortable with. Now integration of environment in all learning areas is creating a challenge for teachers who have little training in this area. However, there is no flexibility because all teachers must incorporate environmental issues into their teaching, as environment is integral in the curriculum. Teachers therefore need to be competent so as to integrate environmental teaching in a range of learning programmes (DoE, 2002).

(c) Resources

Resources in this context include learner support material, teacher support material, school buildings and grounds and funds. DoE (1998) emphasised the important roles learning support materials and resource-based learning approaches in enabling curriculum change like the inclusion of environment within the curriculum. Learner support materials signify a concern with both development and the use of materials to foster or support environmental learning (Russo and Lotz-Sisitka, 2003). Learner support materials help learners to build new knowledge. They also supply new information that can inform investigations and action planning to solve or address problems.

Learner support materials also provide useful structure and guidance for fieldwork, for example, interview worksheet, as well as activities that promote skills development (NEEP-GET, 2004). It is important for teachers to consider the relevance of learner support materials when planning environmental lessons. For example teachers need to consider the quality of information and also the usability of the materials (DoE, 2005). Focusing on local issues and using locally relevant materials when planning lessons, can prompt teachers to look for relevant learning (NEEP-GET, 2005). This can also help to encourage action taking. Teachers should carefully mediate these materials to ensure that they support learning.

It is important to consider specific situations and contexts when developing learner support material (Mbanjwa, 2002). For example some resources are designed for

urban contexts, which make it difficult for rural learners to understand the lessons. Teachers have difficulties in designing lesson plans from these materials because learners have little exposure to these issues (NEEP-GET, 2004). For example they may never have seen a factory, and therefore not be able to conceptualise industrial pollution. In some cases teachers simply redesign and copy information directly from textbooks to use with learners without contextualising resource materials in Learning area and learning context. It is therefore the responsibility of teachers to prepare lessons that fit in a particular context.

Sometimes learning support materials currently used by teachers are not relevant to environmental learning (Mbanjwa, 2002). One problem is that when teachers select learner support material they are not orientated about relevant books to order for benefits of both learners and teachers. This now leads to irrelevancy or inappropriateness of learner support materials to meet the desired Learning Outcomes and Assessment criteria to be followed (NEEP-GET, 2004). Establishing school gardens or planting trees to green the school might depend on the quality of fence used to prevent livestock damaging any efforts made to foster environmental teaching and learning (Conde, 2004). Language and literacy abilities are also regarded important when designing learning materials to boost confidence of both learners and teachers (Lupele, 2003).

(d) Attitudes of teachers and learners

Taylor and Vinjevoold (1999) state that for educational change to take place teachers are required to understand themselves first and also be understood by others, for example learners. Attitudes towards change vary in degrees depending on the personality of individuals. Positive attitudes are good for development whereas negative attitudes hinder development (Jensen and Schnack 1997). Environmental education also aims at developing these attitudes of care and concern for the environment so as to create a sense of responsibility towards home, school and the community (Palmer and Neal, 1994).

Poor services like lack of access to facilities such as medicine and health, transport, accommodation and other essential facilities discourage better-qualified educators from teaching in rural areas (DoE, 2005). Therefore employment in rural

areas becomes the last resort while teachers are looking for greener pastures. Lacks of incentives to teachers in rural areas discourage them to provide effective learning for learners. This then exacerbates the situation, by demoralizing the learners to learn effectively. Jensen and Schnack (1997) argue that one of the key features of an action is to enable learners to participate in investigating and solving environmental problems. They further state that the problem facing teachers in lesson planning appears to be preparing lessons for the sake of an activity but not to understand the issue deeply.

The above-mentioned factor is strongly linked to lack of teacher qualifications and training, for if teachers lack capacity, they will not have the drive to use resources and implement the curriculum to suit their local context (DoE, 2005). If learners and teachers have negative attitudes, that can lead to poor governance in schools like de-motivation of governing structures which are school Principals, School Governing Bodies (SGBs) and School Management Teams (SMTs). This can also lead to poor implementation of environmental policies. In some cases attitudes depend on the background of the learner or teacher, for example if you grew up in an area where environment is cared for is likely that you can adopt that style (DoE, 2005).

Besides availability of learner support materials or other resources some teachers are ineffectively preparing environmental lessons because they lack interest and commitment. Lack of interest and commitment can be due to the kind of training they have acquired. Some schools are not well fenced or lack funding to support their projects and therefore teachers end up being de-motivated (NEEP-GET, 2004). However, there are also well-fenced schools but no activities take place: learners and teachers do not practise for example gardening because of lack of interest.

(e) Governance

Governance in this context refers to roles played by National, Provincial and Local Departments of Education. Even though the roles and responsibilities attributed in legislation and policy to the Department of Education provide a framework for policy and implementation respectively, lack of clear policy, leadership and

coordination at National level has resulted in Provincial Departments of Education responding proactively and independently to crisis facing rural schools (DoE, 2005). The major risk facing intervention strategies led by National and Provincial Departments of Education lies in the lack of take-up at District level and by the school (School Management Team, School Governing Bodies, educators and learners) and the community (DoE, 2005). School environmental policies are also regarded as critical and need to be included in this discussion for effective environmental teaching.

Le Roux (1999) states that the concept of school environmental policy was found useful for effective environmental curriculum delivery and also for getting schools organised. Australia and the United Kingdom also explored the use of developing environmental policies to organize their schools (Baczala, 1994). But governments seem to have poor records of acting to solve environmental problems, and it is usually left to non-governmental organisations (NGOs) to attempt to build better lives for the people in rural communities (Loubser 2002). Again, environmental education is usually low on the programme of education departments because other fields like science seem to be more important to education than others. The Department of Education fails to fund schools sufficiently in order for environmental educators to carry on with their projects.

Sometimes members of the School Governing Bodies (SGBs) are uneducated and uninterested in their schools and that impact on negatively on policy implementation. School Management Teams (SMTs) lack awareness about environmental issues and therefore that hinders the addressing of environmental issues in schools (DoE, 2005). Due to lack of appropriate governance of schools, some parents neglect their responsibilities of being in loco parentis with the educators. In some instances they are totally unaware that there is need to conserve resources because of lack of knowledge. Lack of support from school managers and government officials worsens the situation because if teachers do not get support from them they feel de-motivated (NEEP-GET, 2004).

Eco-schools have been developed as a motivating concept and process to motivate teachers to implement the environmental curriculum effectively (Raven,

Timmermans, Lotz-Sisitka & Nduna, 2005). This programme involves formulation of School Environmental Policies to get schools organised. Janse van Rensburg and Taylor (1993) define policy as simply an agreed expression of principles and values to guide action. They further state that environmental policies can be useful for providing a framework that set out intentions and principles for improving school environmental activities.

(f) Context

Context may take into account the social, political, economic and biophysical factors influencing teaching and learning and learner's lives in different settings (O'Donoghue and Janse van Rensburg, 1995). Because environmental issues and risks are often context-specific and different in different context, therefore teachers need to consider the context when dealing with them. This however requires teachers to consider context of learning when planning lessons. Different perspectives provide different contexts, and all of these perspectives influence understanding of environmental issues and risks by learners. Contextual factors often manipulate the nature, causes and impacts of environmental issues (NEEP, GET, 2005). For example soil erosion related issues in Transkei might be different to soil erosion related issues in Grahamstown (which was not affected by former homeland policies). It is therefore essential to search environmental issues contextually to find out about environmental history, causes and impacts of the issue on different settings.

Christie and Jansen (1999) have shown that teachers in rural schools seem more disadvantaged and less qualified which leads to them struggling to prepare environmental lessons. The context in which schools are situated can be another contributory factor to hinder teaching of environmental education. It is very important to consider the local environmental issues in environmental teaching because rural contexts are different to urban contexts. For example environmental teaching may include topics like pollution by industries in towns whereas in rural areas lessons related to eroded soils or overgrazing might be helpful (NEEP-GET, 2004).

Some schools are located on marginal lands and thus have most examples of environmental degradation and it is thus easy to prepare environmental education. However, as teachers lack capacity to prepare environmental lessons using available resources like degraded soils, environmental teaching seems to be lagging behind. Marginal lands are the areas where most of the people in the case of South Africa were forced to live in congested conditions that are no longer able to support them, resulting in extreme poverty (Yeld, 1997). However, these some eroded areas can be of educational value to learners living in rural areas. For example learners can investigate about the history of the area, and how soil erosion became an issue. This therefore shows the importance of designing resource materials in relation to the context in which schools are situated and for relevance of the content (DoE, 2005).

Sometimes use of indigenous knowledge can be helpful to foster environmental learning, for example learners in rural area can make use of what is available to them (Lupele, 2003). Most information accessible to learners in schools today is of Western type, and confuses learners sometimes. Providing indigenous knowledge allows learners to be open-minded and to see an issue from different dimensions (Lupele, 2003). Learners are also able to explore indigenous knowledge in local cultural context. It is important for teachers to use strategies that mobilise local indigenous knowledge and also accommodate for cultural diversity, when planning environmental lessons (NEEP-GET, 2004). Some schools are located in areas where they are not easily accessed and therefore make it difficult for government officials and educators to visit and give them support. Lack of access to departmental officials because of bad roads can result to poor governance in schools. Figure 3 below illustrates factors that influence environmental teaching.

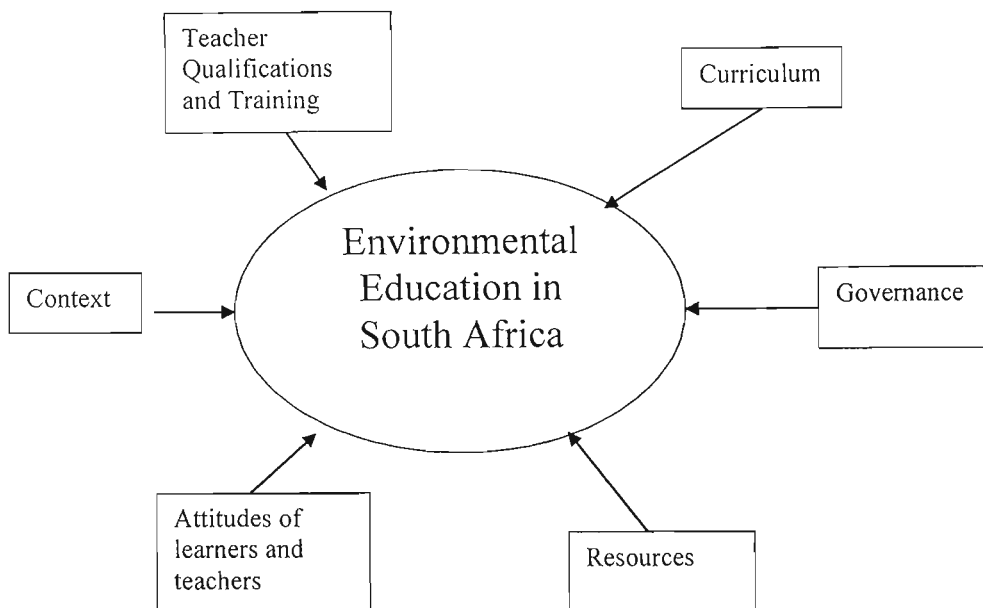


Figure 2: Some factors that influence environmental teaching

The above figure illustrates that environmental education is at the centre and is influenced by many factors including: curriculum, teacher qualifications and training, resources, attitudes of teachers and learners, governance and context. Inadequate qualifications and training might impact on teacher and learner attitudes which might lead to lack of understanding of the curriculum and resource use by teachers and learners based on local context. This might in turn impact on governance in schools. All these factors as shown, if not addressed, might lead to ineffective environmental teaching.

2.7 Conclusion

What has emerged from this chapter is that South Africa has responded in many ways to address environmental issues by including environment into the curriculum so as to create responsible and active citizens. Although environment is integral to each Learning Area, teachers are still facing problems in contextualizing the information. Curriculum, teacher qualifications, resources, attitudes of teachers and learners, governance and the context have been identified as key factors that influence effective environmental teaching. These factors are interrelated as they impact on one another. Providing adequate training might change attitudes of learners and teachers and better understand the curriculum, select and use

available resources that fit into their context. This might also lead to effective governance in schools.

The next chapter provides the research context and methodology of how the research will be conducted. It starts with the study area description, sampling method involving a case study. Then data collection methods which include literature review, observations and focus group interviews, data analysis and how reporting will take place are provided.

3. CHAPTER THREE: CONTEXT AND METHODOLOGY

This chapter provides the research context and methodology followed during the study. It starts with study area, followed by the case study and sampling methods. Subsequently, data collection methods and data analysis are given. Lastly assumptions and anticipated problems a conclusion has been provided.

3.1 Study area

The study will be conducted in Ngqeleni District, formerly under Transkei in the Eastern Cape. Eastern Cape is the second largest province in South Africa covering an area of 170,600 square kilometres that represents 14% of South Africa's land mass (Statistics South Africa, 2005). The area is situated on the southeast coast of South Africa and borders Kwa Zulu-Natal, Free State in the

north and Western Cape in the west. The province is also regarded as amongst the most densely populated areas in the country with 6, 4 million people in 2001 representing 14,4 % of the total South African population (Statistics South Africa, 2005).

The Eastern Cape is predominantly rural, with a huge development backlog. It is also one of the country's poorest regions with an estimated 70% of households living in poverty (Statistics South Africa, 2005). Some of the primary environmental and developmental issues confronting communities of the Eastern Cape include, unemployment, illiteracy health issues particularly HIV/AIDS, lack of basic services, increase levels of crime and overexploitation of natural resources (DoE, 2005). Two former "independent" homelands, Transkei and Ciskei are also part of the Province. People in the former Transkei are dependent on cattle, maize and sorghum farming. Transkei consists of 28 Districts and selection of Ngqeleni emanates from the researcher's background and schooling in that area. Due to large numbers of schools within Districts, they have been divided into Circuits, which are also subdivided into zones. Teachers from Nqeketo zone, a component of Circuit 4 within Ngqeleni District, which falls under O.R Tambo District Municipality, Nyandeni Local Municipality in Ward 4 will be interviewed for this study.

3.2 Case study and sampling

Neuman (1999) defines a case study as a detailed description and analysis that includes meanings or intentions about that particular situation. The advantage of using this approach is that the researcher is concerned with how things happen and why they happen in that way (Kumar, 1999). Case studies also give the researcher an opportunity for one aspect of a problem to be studied thoroughly within a limited period (Greenbaum, 1998). According to Silverman (2000), case studies provide a systematic way of looking at events, collecting data, analyzing information and reporting the results. The researcher's aim is to gain an understanding of why the instance happened as it did (Lewis and Ritchie, 2003). In this case the researcher is concerned about perceptions that teachers have about delivery of environmental curriculum.

This approach according to Shaw (1999) requires certain characteristics such as a deep understanding of the theory about case study, understanding of literature, flexibility, ability to ask questions, observe and having an enquiring mind. It is also important to consider ethics issues showing that steps have been taken to secure consent and to safeguard privacy, confidentiality and well-being of participants during this process (Patton, 2002). The researcher possesses some of the above-mentioned characteristics, particularly flexibility and an enquiring mind, and also has the advantage of familiarity with the context. These will be demonstrated in the quality of the written output.

Sampling will be important for this study, as it will provide depth and insight. A balanced sample involves clarity and honesty about groups or dimensions that are missing (Mason, 2002). In most cases one assumes that no sampling takes place if one uses a case study, but rather state features of schools under study and locate study. Qualitative studies have as its goals the understanding of the sample studied, rather than generalizing from the sample to the population (Scale, 1999). The sample taken for this study will be used to understand the perceptions of teachers under study rather than generalizing. In this situation, random sampling would be possible because the researcher knows the area as she grew and attended schooling there. Because the area is large, the researcher decided to take thirty percent of the population in that located study area, which will be a true representative of the study (Neuman, 1999).

The researcher therefore decided to use this method, as it will give a chance for all schools in the study area to be selected, and to avoid any bias that might affect the results of the research. Random refers to a process that generates a mathematically random result and researcher can calculate the probability of outcomes (Neuman, 1999). This sampling method is also selected because according to (Kumar, 1999) random samples are likely to yield a sample that truly represents the population in which the study takes place.

Having selected the above-mentioned district, the researcher arranged a meeting with the District Manager to receive detailed information of the area and how schools are demarcated. A reason for carrying the above activity is that Districts

are composed of circuits, which vary in number depending on the number of available schools. Because circuits are composed of many schools, time constraints for the study and availability of resources, the researcher will not be able to deal with all the schools at district level. Therefore random sampling was used to select the circuit and zone. Circuits will be allocated numbers that will be put in a pool and then randomly selected by a pick-up method.

Afterwards, the same process was performed to select a zone to narrow the focus of the study. At the zone level there are thirty-one schools, thirty percent of the schools within the zone level were randomly selected. Ten schools were therefore selected to form part of the case study. From the selected schools, Grade 4-6 teachers will be the main focus because they were exposed to environmental teaching in Curriculum 2005 and are now implementing the new revised curriculum (RNCS Grades R-9).

Although random sampling is considered to be useful by many researchers like Kumar, it can be less accurate if not monitored carefully. Sometimes it might be possible that the sample is not representative as all the teachers involved in the sample group come from a small number of schools within that particular Zone, District or Region (Patton, 2002). The researcher believes that in this case the schools chosen are true representatives of the case study as supported by Neuman (1999) that thirty percent of the population is considered representative of the population under study.

3.3 Data collection

The type of data collected will be qualitative. Data captured in qualitative studies tend to be detailed, rich and complex (Lewis and Ritchie, 2003). Qualitative studies provides in depth understanding of people's experiences, perspectives and histories in the context of their personal circumstances (Silverman, 2000). Selection of data tools depends on the research approach.

Most qualitative studies in environmental education rely heavily on a process known as triangulation that use multiple sources of data, data collection methods and theories to validate research findings (Anderson and Arsenault, 1999). Many

researchers consider triangulation important for its reliability and validity (Silverman, 2000). Patton (2002), states that there is an overdependence on interview data than observations amongst qualitative researchers. To overcome this issue, triangulation will take the form of literature review, observations and focus group interviews as methods of data collection to save time and also for the researcher's belief that they are rich in information.

Literature review

Reviewing literature helps the researcher to produce a concept or build a theoretical structure that explains facts and relationship between them (Neuman, 1999). Shaw (1999) states that the purpose of research should be indicated by two principles: nature of the research problem and the type of data required to unpack the problem at hand. Scale (1999) further states that the choice of research designs and methods are largely influenced by the desired end product like a thesis and the best way to examine the research question.

Literature reviewed for this study includes published and unpublished reports, books, journals, textbooks, newspapers and conference or workshops proceedings, documents from the Department of Education and maps. Interviews were also held with individuals from Wildlife and Environment Society of South Africa (WESSA) and Kwa Zulu-Natal Department of Environmental Affairs.

Focus group interviews

Focus group interviews were conducted so as to get teachers' perspectives about teaching environmental lessons. Teachers are the policy implementers, but their perspectives have been overlooked in the existing research from universities, NGOs, and consultants.

Data collection strategy includes focus groups interviews and verbal discussion that will be recorded in the interviewer's notebook. A focus group according to Hammersley (2003) is a moderated informal discussion among people, which usually consists of 6 to 12 people who share a common understanding about the topic being researched. Having a reasonable number of teachers, according to

Bryman (2001), can be an opportunity for all participants to share their thoughts. The researcher will gain entrance in schools by arranging with school managers appropriate dates and time that will be used. The researcher will use open-ended questions and keep a record of the responses in focus group interviews.

Open-ended questions are advantageous in that they can invite respondents to express themselves freely and in their own words. This technique is normally used when the researcher expects a broad range of responses to a question and also allows the researcher to explore a broader base about the issue (Scale, 1999). Greenbaum (1998) further states that open-ended questions can be disadvantageous in that a broad range of responses makes systematic analysis difficult if the researcher is not skilled. The researcher will also try to get the group's permission to videotape or record the session to avoid the pressure of taking notes and at the same time asking questions.

Greenbaum (1998) further states that the interviewer needs to control the group and also prompt answers from those who are passive but also controlling the energy of individuals who are active and dominate the discussion. The strength of this method is that it saves time and also the interviewer will be in a better position to give guidance and also to clarify questions when the respondents are not clear about the questions (Kumar, 1999).

Gorden (1992) identifies different criteria that need to be met for the success of focus group interviews, which include a range of questions to be structured to reach the widest range of potential respondents. Questions will be specific and also consider the personal context of participants based on their experience. Compared to individual interviews this method needs highly skilled interviewers although it saves time while individual ones are costly and consume more time (Gorden, 1992). The interviewer will limit the number of questions so as to concentrate on quality rather than quantity to allow logic or coherence of the discussion.

Observations

Observations will also be carried out during this study as they might assist the researcher to understand the nature of the setting. These might help the researcher in supporting his or her argument during the write-up process (Patton, 2002). Observations will include socio-economic factors, such as the contexts in which schools are situated, in terms of access to services like roads, health and other services, the culture of the schools, resource availability materials, such as learner and teacher support to prepare environmental lessons etc. Observations are also regarded powerful for their validity and reliability if appropriately conducted (Kumar, 1999).

3.4 Data analysis

Data analysis involves four basic elements: collecting data, coding and organising data into themes and constructs, searching for evidence and testing alternative interpretations of the data to see if one's understanding of the information changes (Anderson and Arsenault 1999). This process needs a great deal of patience for accuracy. The researcher also asked support from experienced researchers during the analysis stage for accuracy and also to avoid bias. This was done through contact with supervisors who gave guidance and support.

Data in this case will be analysed using qualitative approach, which involves synthesis of information that the researcher has obtained from various sources, which includes published and unpublished journals, books and newspapers into a coherent description of what has been observed. Data analysis in qualitative studies relies on description rather than on measurement (Mason, 2002). Tables will be used so as to make the situation easier for the reader to understand the results. Once data has been analysed, it needs to be submitted to criticism both by internal and external experts. External criticism raises questions about the nature of the source, its relevance and credibility, while internal criticism evaluates accuracy and worth of observations (Kumar, 1999). Internally, the supervisor for the study will be responsible for criticism, whilst an external examiner from a nominated institution will do the external criticism.

In this type of study conclusions will be drawn throughout the process because the study is ongoing and consistent (Patton, 2002). Therefore it is very important that the researcher makes use of the literature and tries to interrogate what has been learned from the study, draws conclusion and makes recommendations against the background of the literature review, adding to existing knowledge during the research process (Hammersely, 2003). This will be demonstrated in the quality of written report. The last stage is to write a report that fits with the expectations or the journal appropriate for the study. The selected journal is the **Southern African Journal on Environmental Education**.

3.5 Assumptions and anticipated problems

The study will be successful if there will be co-operation between the researcher and the respondents who will be teachers from sample schools chosen from Ngqeleni District. Co-operation depends on the interest of the teachers to be interviewed. The outcome of the study can be critical, as it will raise some questions about the previous curriculum and the present curriculum status about environmental teaching. Another anticipated problem is teacher's behaviour, as they will think the researcher is there to assess their performance.

Availability of teachers can also be another constraint, but the researcher will inform participants on time to avail them on scheduled dates to prevent any bias. The researcher will have to explain to participating teachers that she is a peer rather than a researcher. Again problems can be the quantity and quality of information that will be received and significance of information to the study. The researcher has catered to deal with this kind of issue as she is from the same field.

Although there are anticipated problems for the study, the researcher is aware of them and will overcome them. Because of the researcher's background as a teacher the researcher will use experience to solve any problems that might crop up. Having worked as the Head of Department in schools might help the researcher to solve some problems. Transparency from the beginning of the research process might be the best solution to avoid any problems that might crop up (Greenbaum, 1998).

3.6 Conclusion

In this chapter an introduction has been provided followed by the study area, case study and sampling techniques, data collection method which involves triangulation and data analysis. Methodology and design described above has indicated a potential for the success of the study. What has emerged from the study is that although no sampling is needed for case studies, in this case sampling took place to identify a case study. Strengths and weaknesses of sampling for a case study have been identified and will assist researchers for this study and future studies. The next part, Component B will provide findings, discussion and recommendations after data has been collected for the above-mentioned study.

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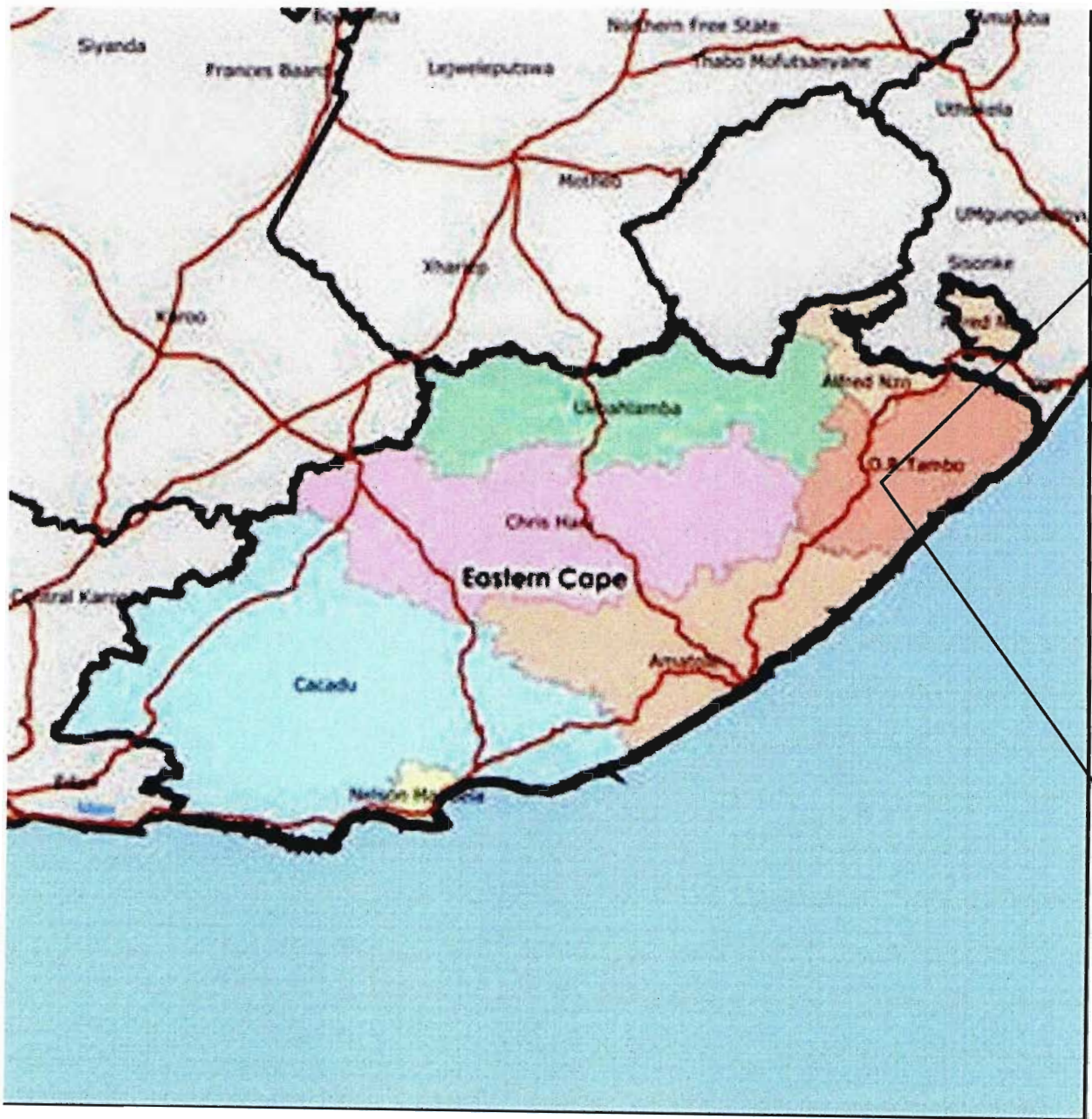
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NEWSPAPERS

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Appendix 1: Map of the study area
From the Municipal Demarcation Board 2000



Appendix 2 Field Questionnaire

Introduction

I am Nobuntu Gxaba from the University of Kwa Zulu-Natal, Pietermaritzburg campus, Centre for Environment, Agriculture and Development (CEAD). I am pursuing a Masters degree on Environment and Development. I am carrying out a study about "Factors that influence environmental teaching in rural schools". The aim of the study is to find out factors that influence environmental curriculum delivery in rural schools. The study is conducted in selected Nqeketo zone schools focusing on intermediate phase teachers. The information will be confidential and used for academic purposes only. Your full co-operation in this task is highly appreciated.

Research topic

Factors that influence environmental teaching: A case study of Ngqeleni District, Eastern Cape.

1. Curriculum

- 1.1. Is the curriculum content environmentally focused? Yes ☐ or No ☐. Please explain your answer.
- 1.2. Is the OBE approach useful for lesson planning within this curriculum? Yes ☐ or No ☐
(a) If useful, how? (b) If not, why not?
- 1.3. Would you consider learning materials clear and accessible in different languages? Yes ☐ or No ☐. Please explain your answer.
- 1.4. Suggest ways of improving environmental curriculum delivery in terms of: (a) Content (b) Lesson plans (c) Portfolios. Please explain your answer.
- 1.5. Would you regard the environmental curriculum as?

Very good	Good	Not sure	Poor	Very poor
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Please explain your answer

2. Teacher qualifications and training

- 2.1. Are you qualified to implement this new curriculum with an environment component? Yes ☐ or No ☐. Please explain your answer.
- 2.2. Is there any training you have acquired to assist in environmental teaching? Yes ☐ or No ☐. Please explain your answer.
- 2.3. If there has been training provided, has it been sufficient for effective environmental teaching? Yes ☐ or No ☐. Please explain your answer.
- 2.4. How can we improve teacher qualifications and training for effective environmental teaching?
- 2.5. How would you consider your present teacher qualifications and training to deliver the environmental curriculum?

Very good	Good	Not sure	Poor	Very poor
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Please explain your answer.

3. Resources

- 3.1. Do you have learner or teacher support materials? Yes ☐ or No ☐
(a) If yes, what kinds? (b) If no, why not?
- 3.2. Are the learner and teacher support materials environmentally focused? Yes ☐ or No ☐
(a) If yes, how (b) If no, how
- 3.3. Do you have other kinds of resources to foster environmental teaching? Yes ☐ or No ☐
(a) If yes, what kinds (b) If no, why. Please explain your answer
- 3.4. Do you feel that this situation needs improvement? Yes ☐ or No ☐.
Please explain your answer.
- 3.5. How would you regard resource accessibility and relevancy to prepare environmental lessons?

Very sufficient	Sufficient	Not sure	Insufficient	Very insufficient
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Please explain your answer.

4. Attitudes of learners and teachers

4.1 How would you regard the curriculum with an environmental focus?

Very interesting	Interesting	Not sure	Un-interesting	Very un-interesting
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Please explain your answer.

4.2 How would you regard learner attitudes towards learning environmental curriculum?

Very positive	Positive	Not sure	Negative	Very negative
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Please explain your answer.

4.3. Do we need to change teacher attitudes for better environmental curriculum delivery? Yes ☐ or No ☐. Please explain your answer.

4.4. Do we need to change learner attitudes for better environmental curriculum delivery? Yes ☐ or No ☐. Please explain your answer.

5. Governance

5.1. Do you have any policies in place to foster environmental teaching? Yes ☐ or No ☐. Please explain your answer.

5.2. Are the policies useful in terms of environmental curriculum delivery? Yes ☐ or No ☐. Please explain your answer.

5.3. Do you get any support from governing structures to foster environmental teaching? Yes ☐ or No ☐. Please explain your answer.

5.4. Do you feel this situation needs improvement? Yes ☐ or No ☐. Please explain your answer.

5.5. Would you regard governance controlling your curriculum to teach environmental education as?

Very Supportive	Supportive	Not sure	Unsupportive	Very unsupportive
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Please explain your answer.

6. Challenges of teaching in rural schools?

- 6.1. Do you think the local context contributes to effective environmental curriculum delivery? Yes ☐ or No ☐. Please explain your answer.
- 6.2. Do you have any special programmes in place to foster environmental teaching? Yes ☐ or No ☐. Please explain your answer.
- 6.3. Do you think this situation needs improvement? Yes ☐ or No ☐. Please explain your answer.

Thank you for your co-operation

.....
Nobuntu Gxaba

COMPONENT B

Factors that influence environmental teaching:

A case study of Ngqeleni District, Eastern Cape.

This component is written in the format required by the **Southern African Journal of Environmental Education**. Guidelines of this journal (Appendix 1) have been followed when writing this paper as per thesis requirements.

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INTRODUCTION

Environmental education is needed in South Africa for many reasons. Firstly it is needed to make pupils aware of the critical importance of the environment for sustainable living. Secondly it is needed to integrate new thinking about the environment in which concerns for social, biophysical, political and economic issues are critical (O'Donoghue and Janse van Rensburg 1995). Furthermore, environmental education can be seen as a set of diverse educational processes through which we might enable ourselves and future generations to react to environmental issues in ways which advance change towards sustainable community life in a healthy environment (Janse van Rensburg and Lotz, 1998). Major South African environmental issues include poverty, which leads to people destroying and degrading natural resources through inappropriate practices (Le Roux, 2000).

Contemporary South African environmental education is not working in some schools in the Eastern Cape for many reasons. Some of the factors that influence effective curriculum delivery includes the nature of the curriculum and teaching methods involved, teacher qualifications and training, attitudes of teachers and learners (DoE, 2005). Other factors include resource availability, the context in which schools are situated and the role of school governance, which includes School Management Teams (SMTs) and School Governing Bodies (SGBs) (Sapa, 2005). The researcher sought to establish the most limiting factors and prioritize them so that the Department of Education, environmental groups, universities, technikons and schools can address them. Therefore, the aim of the study is to determine teachers'

perspectives about the factors that impact on the delivery of effective environmental curriculum.

This article provides the findings of a study conducted in Ngqeleni District on the factors that influence environmental teaching in rural schools. It starts with the background and motivation for the research, followed by context and methodology. Findings and discussion are also provided. Lastly, recommendations and conclusion are provided.

BACKGROUND AND MOTIVATION FOR RESEARCH

The researcher is currently an educator for Senior Phase learners (Grades 7-9) at Nyibiba Junior Secondary School, Mt Fletcher District in the Eastern Cape Province. She has been an educator since 1993 teaching Natural Science, a subject that was formerly known as General Science. The curriculum that was in place when she started teaching was based on traditional methods of teaching. Methods used include teacher-talk, whereby teachers transmit knowledge and learners bank the information (Pettigrew and Akhurst, 1999).

The researcher has been experiencing problems in terms of incorporating environmental lessons in her planning since she started teaching in 1993. Now she is trying to find out factors that influence environmental teaching in rural schools. Areas of interest involve present practices of environmental teaching by Grade 4-6 teachers. The purpose of choosing the above mentioned group of teachers is that they implemented Curriculum 2005 and now are currently implementing the Revised

National Curriculum Statement (RNCS Grades R-9). This is important, as it will help the next group of teachers in the senior phase (Grades 7-9) to have an understanding of delivering the environmental curriculum.

CONTEXT AND METHODOLOGY

STUDY AREA

The study was conducted in Ngqeleni District, formerly under Transkei in the Eastern Cape, using Nqeketo zone teachers. Eastern Cape is the second largest province in South Africa that represents 14% of South Africa's land mass (Statistics South Africa, 2005). The area is situated on the southeast coast of South Africa and borders Kwa Zulu-Natal, Free State in the north, and Western Cape in the west. The province is also regarded as amongst the densely populated areas in the country with 6, 4 million people in 2001 representing 14,4 % of the total South African population (Statistics South Africa, 2005).

The Eastern Cape is predominantly rural, with a huge development backlog. It is also one of the country's poorest regions with an estimated 70% of households living in poverty (Statistics South Africa, 2005). Some of the primary environmental and developmental issues confronting communities of the Eastern Cape include, unemployment, illiteracy health issues particularly HIV/AIDS, lack of basic services, increase levels of crime and overexploitation of natural resources (DoE, 2005). Two former "independent" homelands, Transkei and Ciskei are also part of the Province. People in the former Transkei are dependent on cattle, maize and sorghum farming. Transkei consists of 28 Districts and selection of Ngqeleni emanates from the

researcher's background and schooling in that area. Due to large numbers of schools within Districts, they have been divided into Circuits, which are also subdivided into zones. Teachers from Nqeketo zone, a component of Circuit 4 within Ngqeleni District, which falls under O.R Tambo District Municipality, Nyandeni Local Municipality in Ward 4 will be interviewed for this study. See Appendix1 on page 48 for the map of the area. Schools involved in the case study are Mavubeza J.S.S, Msintsini J.S.S, Gqira J.S.S., Lower Mdumbi J.S.S., Nkantsini J.S.S., Welese J.S.S., Ngonyama J.S.S., Mkhundlu J.S.S., Nqeketo J.S.S and Nkunzimbini J.S.S.

TRIANGULATION

Triangulation, which includes literature review, observations and focus group interviews, was followed during this study. Many researchers consider triangulation important for its reliability and validity (Silverman, 2000).

Literature review

Literature reviewed for this study includes published and unpublished reports, books, journals, textbooks, newspapers and conference or workshops proceedings, documents from the Department of Education and maps. Interviews were also held with individuals from Wildlife and Environment Society of South Africa (WESSA) and Kwa Zulu-Natal Department of Environmental Affairs. What has cropped up from the study is that there are differences in literature reviewed, interviews and observations made by the researcher. For example literature provides information about resources that have an environmental focus related to all context, teachers say that available learner support materials do not consider the local context. The researcher had to

check textbooks and found that textbooks do have an environmental focus but teachers are having problems to contextualize the information in the textbooks when preparing environmental lessons.

Observations

The schools that were part of the study are situated in rural areas of Ngqeleni District. High levels of poverty are affecting all the schools in that area. HIV/AIDS, unemployment, poor health and nutritional status pose a threat to many members in that area. Infrastructure is poor in that most classrooms are built out of mud blocks, learners taught under trees when hot because of lack of classrooms in some of the schools observed like Mavubeza, Nkantsini, Msintini, Welese. Gqira, Lower Mdumbi, Mkhundlu, Nomadolo and Nkuzimbini have classrooms made out of bricks but with leaking roofs. Ngonyama has classrooms that are in good condition, built three years ago by Japanese Company. All the schools observed have shortages of desks, chairs, chalkboards, tables and learner and teacher support materials.

All the schools have access to learner and teacher support material but teachers complained that they do not know which books to select, as they do not understand how to prepare environmental lessons. All the observed teachers use the old textbooks that were used before the new curriculum was introduced. When asked why they use these textbooks as main resources other than additional resources, they said that the traditional books are the ones that are rich in information compared to the prescribed books for this new curriculum (NCS Grades R-9). Only textbooks were observed by the researcher that are used by teachers to prepare environmental

lessons. No additional materials inside the classroom observed by the researcher that foster environmental teaching.

All the observed schools have no access to roads, and this makes it difficult for Departmental Officials to visit them. All the schools have clinics built nearer schools but the problem is lack of resources from clinics, which include medication and waiting rooms for patients. Ngonyama, Mkhundlu, Lower Mdumbi and Mavubeza are fenced but the problem is the community that does not participate in providing security for the school. For example on rainy days the schoolyards are used as a kraal for their livestock.

Poor environmental management is visible in some of the observed schools, as some of the schools have no access to clean water and proper sanitation. Teachers from two schools, Msintini and Welese complained that due to lack of toilets, learners opt to use velds as their toilets. Because of this, water from the nearby rivers gets polluted when rain comes. As a result most people in the area suffer from diseases like cholera as they drink untreated water from rivers and streams. Dongas are also prominent in all schools due to poorly managed school grounds. To foster environmental learning, dongas can be used in a lesson to check the environmental history of the area and also to probe learners to find ways of how to prevent them and also find solutions on how to deal with them. Because some teachers are not aware of environmental problems, some of the interesting issues in learning consider them as problems that hinder learning.

Few schools observed which include Gqira, Lower Mdumbi, Ngonyama and Nkunzimbini have well-maintained, school grounds. These schools have well erected fences to prevent livestock from entering. The remaining schools have problems in managing their waste because the community discourages them as they open school gates after school hours for their livestock and the school yard end up polluted. Two schools, Lower Mdumbi and Mkhundlu have vegetable gardens that help people affected with HIV/AIDS in the community. In one school, a principal was interested to join the discussion out of her own interest. It was beneficial to involve principals so as to gain a different perception.

Focus group interviews

Ten schools in the Nqeketo zone were randomly selected which make up a total of thirty-five teachers that form part of the focus group discussion. Focus groups are considered to be powerful for their rich information if properly planned, questions specific and well structured (Gorden, 1992). Responses were taken in the form of notes and also tape-recorded to provide transcripts of the sessions and to assist the researcher to save time. Teachers were given the opportunity to discuss and voice their responses, and generally came to consensus about the issue presented before a final response was recorded. All the schools fully participated in the process as they feel that these factors need to be identified and addressed quickly. Questions used were both closed and open-ended so that rich information could be obtained.

In two schools, principals were part of the discussion as they are currently teaching in that phase. In one school, a principal was interested to join the discussion out of her

own interest. It was beneficial to involve principals so as to gain a different perception. The researcher believes that involvement of those principals in the discussions had no impact on the information supplied by the affected teachers during the discussion, due to the way teachers expressed their views transparently. This is supported by observations that teachers were free to express their views in front of their heads that they are not competent to deliver the curriculum. In return, principals expressed their views that they are not competent to deliver the curriculum because of the type of inadequate training they have received.

SUCSESSES TO AND LIMITATIONS OF THE STUDY

Positive response of teachers and managers; sense that environmental issues are critical; but that went beyond the scope of the study and that extended the duration of the fieldwork. Principals feel that environmental curriculum at this stage is critical and needs careful consideration. Sometimes as the discussions continued, teachers had to go beyond the scope of the questionnaires to explain problems that are currently facing the education system in South Africa. For the researcher it was a challenging and an exciting opportunity to find respondents that were so positive to give out information.

Limitation pertaining to the study includes the period that the study was conducted and accommodation for the focus groups. Schools were busy writing end of the year examinations and therefore had to schedule the meeting for midday or afternoons. This was costly as some meetings had to be scheduled and rescheduled depending on teacher commitments. Some schools had problems with accommodation for

conducting the meeting and therefore had to wait until learners finished writing their examinations. To overcome the problem, school managers and concerned staff had to reschedule the meetings. The researcher in some cases had to use Saturdays to meet the teachers affected.

FINDINGS

This section provides a report of the field data. The data is organized using subheadings that were used during the focus group discussions. Although a series of subheadings have been used, there is often overlap and relationship between the factors. For confidentiality teachers were labeled using letters of alphabet, factors at the end of the discussion were ranked using numbers from 1-6 as a way of prioritizing the most limiting ones. 1 is the first most limiting factor, 2 is the second limiting factor, 3 is the third limiting factor, 4 is the fourth limiting factor, 5 is the fifth limiting factor and six is the sixth limiting factor. Results are shown in a table so that the reader can understand them. Table 1 on page 21 illustrates the results. Following is a discussion on factors that influence environmental teaching in subheadings.

(a) Curriculum

(Taylor and Vinjevold, 1999) state that lack of support to teachers at the early stages of attempted implementation of curriculum impacted on delivery of the curriculum. These authors imply that curriculum delivery has been a problem internationally. In South Africa, the curriculum, which has recently been revised, added to the challenge of delivery as there had been complaints from teachers about lack of sufficient training and support to implement the curriculum that uses OBE as an approach

(Taylor and Vinjevoold, 1999). A large body of research indicates that the introduction of C2005 in all schools is proving difficulty and requires substantial changes in the mindset of teachers and school managers (DoE, 2005). DoE (2005) further states that use of English, as medium of instruction often creates a further barrier to learning for rural schools.

The National Curriculum Statement (NCS) (R-9) seeks to create enduring learners who are certain and independent, literate, numerate, and multi-skilled, understanding, with a respect for the environment and ability to participate in society as active and critical citizens (DoE, 2002). NCS is guided by five principles, which provides useful direction for lesson planning and also influence all Learning Programmes and Lesson Plans. These principles are Outcomes-based education, a high level of skills and knowledge for all, clarity and accessibility, progression and integration and social justice, a healthy environment, human rights and inclusivity (DoE, 2002).

Outcomes-based education

Outcomes-based education means that the process of learning is as significant as the content, which means that when teachers plan lessons should spell out the process and content (NEEP-GET, 2004). The Learning Outcomes and Assessment Standards provide direction on the kind of process and content for lesson planning (Timmermans And Gon, 2003). This means that teachers need to consider Learning Outcomes to be achieved at the end of the lesson. Learning Outcomes and Assessment Standards are important as they allow creativity and originality to teachers as they design lessons on what and also how to teach.

Teachers, therefore need to establish links between Learning Outcomes, Assessment Standards and the curriculum principles (Timmermans and Gon, 2003). This linkage helps teachers to interpret what is required for the Learning Outcomes at each of the different phases and grades. Linkage also provides opportunities to develop additional knowledge, skills and values and also interpret the Assessment Standards to make meaningful and relevant learning (NEEP-GET, 2004).

A high level of skills and knowledge for all

According to this principle, every Lesson Plan should allow all learners to acquire a high level of skills and knowledge by setting high expectations for learners (DoE, 2002). The Learning Outcomes and Assessment Standards and content guidelines in the NCS (R-9) provide this. To ensure that all learners access high levels of skills and knowledge, teachers have a responsibility to ensure that the information shared with learners is of quality and assist in strengthening learners knowledge and skills (NEEP-GET, 2004). Teachers also need to consider language of instruction used so that all learners can have access to information and therefore make use of knowledge and skills.

Clarity and accessibility

This principle means that in lesson planning, lesson plans should be clear and accessible. This means that learning materials, ideas and learning activities should also be clear and accessible in different languages (DoE, 2002). If planned lessons

are clear, learners will be in a better position to acquire the required skills and knowledge.

Progression and integration

The principle of integrated learning is integral to Outcomes-based education and ensures that learners experience Learning Areas as linked and related. This principle emphasizes the importance of enabling progressively more complex, deeper and broader expectations of learners (DoE, 2002). Because environmental issues and risks are often complex and to understand, integrated responses are often required. All Learning Area teachers can do this by integrating Learning Outcomes from different Learning Areas. Lesson Plans should be designed in a way that enables learners to encounter progressively more complex expectations of learners. For example, Lesson Plans at the start of a phase will be qualitatively different to Lesson Plans at the end of a phase (NEEP-GET, 2004).

Environment being integral to each Learning Area means that there is an environmental focus entrenched within each of the Learning Areas (Timmermans and Gon, 2003). It is very crucial to interpret the environmental focus in all Learning Areas so that all the Learning Areas have a contribution to make towards enabling learners to be aware of the relationship between human rights, social justice, a healthy environment and inclusivity (NEEP-GET, 2004). This promotes the issue of sustainable living, as outlined in the South African Constitution and the curriculum's aims, which hope to develop on learners an ethic of social justice and respect for the environment.

Social justice, a healthy environment, human rights and inclusivity

The curriculum in South Africa (through the Learning Outcomes, Assessment Standards and lesson planning) aims to reflect the principles and practices of social justice, respect for the environment and human rights and inclusivity (DoE, 2002). Specifically, it aims at addressing issues of poverty, inequality, race, gender, age, disability and challenges such as HIV/AIDS (DoE, 2002). This principle, emphasizes the relationship between a healthy environment, social justice, human rights and inclusivity and a healthy environment, aiming at addressing issues such as over-exploitation of resources for the benefit of few and unequal distribution and use of resources (NEEP-GET, 2004). In this context learners are encouraged to think critically for the benefit of their lives and future generations. For example, teachers should plan lessons that show the relationship between an unhealthy environment and human rights or social justice (Timmermans and Gon, 2003).

All the ten schools consider OBE approach to be not useful because the design is very complex as there are many specific outcomes that need to be achieved. Again teachers from all the schools commented that the language used to design learner and teacher support materials is not clear and accessible to both learners and teachers. Before revision of Curriculum 2005 there were sixty-six specific outcomes and now it has been reduced to thirty-seven, which is still a lot. It is also expensive, as it demands a lot of resources to prepare lessons and these schools do not have them (L).

Out of ten schools, seven schools say the curriculum is poor because its environmental content is not designed for rural schools. Teachers sometimes have to explain to learners what things like industries and national parks are. A frustrated teacher L gave an example by saying, "We don't have industries here, so this makes it difficult for our learners to understand some of the environmental lessons unless we take them out for tours. Where are the funds to take them out because parents are poor?" The three other schools say the curriculum is good but OBE, which requires teachers to consider the Learning Outcomes and Assessment Standards, needs to be mixed with the traditional methods of teaching. Teachers have not received adequate training and are used to the old methods of teaching and also believe that they are powerful.

Lotz-Sisitka and Raven (2000) recommend that attention remain focused on the quality of activities, lesson planning, school improvements, educator competence and confidence for dimensions of educational change. Schools need to join the Eco-Schools programme, which is a programme that promotes environmental learning through conservation of the environment. This can assist teachers to produce better quality lesson plans and be more involved in planning together (Lotz-Sisitka and Raven, 2000). DoE (2005) recommends the implementation of a study that assesses the impact of lessons learnt from South African and international levels to assess the modes of delivery on curriculum in rural areas.

Teachers from one school also recommend that the curriculum be environmentally focused based on the local context, and that textbooks need to be designed to suit

rural schools: for example inclusion of forests, rivers and degraded soils. Inclusion of industries might be helpful if teachers and learners can be orientated first. Teacher O also recommends that curriculum documents be simplified and expressed in clear terms of what is to be done and also consider different use of languages.

(b) Teacher qualifications and training

Numerous studies had shown that, internationally, few teachers involved with environmental education are qualified or have received formal training to implement environmental education (Palmer and Neal, 1994). In 1998, the Commission on Sustainable Development called for UNESCO to develop guidelines for reorienting teacher training to address sustainability (UNESCO, 2005). Broadly, education for sustainability includes improving quality basic education, reorienting education to address sustainability, improving public awareness and providing training to many sectors of society (UNESCO, 2005). An International Network of 30 teacher-education institutions in 28 countries was established to address this issue. This network undertook many types of initiatives in their efforts to reorient teacher education, decide which curricular themes are or sustainability goals to emphasize within their curricular to ensure that teacher-education programs fit the environmental, social, and economic conditions of their communities (UNESCO, 2005).

Although South African teachers received some training, which addressed the entire curriculum, it was generally regarded as insufficient and at times inappropriate (Chisholm et al. 2000). There are not enough teachers, principals and District officials who have the capacity, support and ability to run schools (Timmermans and Gon,

2003). There are many workshops that have been conducted and also plenty of policies, but a serious breakdown is the implementation at school level (DoE, 2005).

Educators require intensive training on OBE teaching methodologies as unsupported OBE guides and materials are inadequate for educators (Jansen, 2001). One factor noted that contributed to non- implementation of C2005 was that schools were not yet structured in line with National Qualifications Framework (NQF)(DoE, 2005). There is also lack of coordination between the training offered by various agencies and the government (Jansen, 2001). Various strategies like mobilization and training associated with relevant projects such as, environmental projects can be helpful to both teachers and learners (Perry, 2003). Coordination of training amongst schools in a district with details of content and process being decided locally can also help (DoE, 2005).

All the teachers from the ten schools feel unqualified to implement the environmental component of the new curriculum because training provided for them was too general, not focused on the environment. No training has been provided for teachers to assist them in environmental teaching for unknown reasons. Furthermore, their studies did not cater for environmental education but focused on Social Sciences and Mathematics (A). "What makes things worse is that workshops facilitators are not confident about what they deliver. If we attend workshops, they expect to get everything from us, and always consider our responses as good and acceptable so how can we be confident?" said W.

Two principals mentioned that they did Environmental Studies long ago, but they are not confident about their ability to deliver this as the new curriculum involves a high level of skills and knowledge (A and P). Teacher G who is interested in the environment and decided to register for an environmental certificate said, "I am using that knowledge to foster environmental teaching although it is not easy in this context". No other teachers have had training and qualified to teach environmental education.

Teacher O recommends that teachers who have attended special programmes on their own be given opportunities by the government to disseminate the knowledge to others. These teachers can be placed in education offices and visit schools so that they can motivate other teachers and learners to develop passion for the environment (C). Again O recommends that teachers be taken to environmental centers to be educated about the environment.

(c) Resources

Chisholm et al (2000) states that historically disadvantaged schools do not have resources to implement Curriculum 2005 effectively because of past political practices whereby resources were unequally distributed in South Africa. Lack of resources was the single most powerful theme in comments on conditions in rural schools. A challenge lies in the inequitable provision of essential facilities and services (DoE, 2005). Resources like learning and teaching support materials are very important to foster environmental learning. These materials are important as they introduce both

teachers and learners to new ideas, and new knowledge. They are also important to meet the curriculum principle of high knowledge and skills (NEEP-GET, 2004).

Learning and teaching support materials need to be cautiously selected and used to support the learning process. It is also very important for teachers to assist learners when using learner support materials, exceptionally if materials are written in a foreign language (Timmermans and Gon, 2003). This sometimes results in teachers using additional strategies like code switching and translation. Using a range of locally available learning and teaching support materials can be useful for both learners and teachers as they address issues in context (NEEP-GET, 2004).

Projects that involve greening of the school like tree planting and establishment of school gardens depend on properly erected fence (Timmermans and Gon, 2003). The success of the Eco-Schools program demonstrates how a fairly simple and cost-effective program can strengthen community participation in schooling and unleashes the potential for integrating knowledge across all Learning Areas to promote learner activity (Baczala, 1994). This program has a strong impact on the culture of schools with learners, educators and communities increasing a strong sense of ownership (DoE, 2005). Only two schools have well erected fences around their schools.

Teachers and learners also have difficulties in understanding textbooks because of the complex language used (H). "Publishers, for example Vivilia Publishers bring samples with few pages to schools and convince teachers to order them, but when they bring the orders back, teachers don't get what they expect," B commented.

Again these textbooks tend to be boring both to learners and teachers because most of the time they are designed for urban schools (C). Teachers tend to order books for the sake of ordering not having enough knowledge about which books are relevant to the environment (M). Teachers sometimes order books from popular bookshops not necessarily considering their relevance in preparing good lessons, but because the publisher is well known in that area (Y).

All the ten schools have one kind of learner and teacher support materials, which are textbooks. All the ten schools say that learner and teacher support materials are general, not specifically focusing on environment. Firstly, the complex language used by publishers when designing learner and teacher support materials is not effective for better education delivery. The problem is the limited English proficiency of teachers as it is a second or third language to many of them.

Two of the schools interviewed, Lower Mdumbi J.S.S and Mkhundlu J.S.S are Section 21 schools, which are self-managing schools that receive money from the government. Such schools tend to be better managed and more financially sound than other schools. These schools have other kinds of resources like charts and garden tools from Department of Environmental Affairs to foster environmental teaching. They managed to get these charts through visits to the Department of Environmental Affairs. These two schools have well-fenced yards and gardens to practice agriculture. The remaining eight schools do not have other kinds of resources besides textbooks to support environmental teaching.

One of the above mentioned schools, Mkhundlu J.S.S had also been fortunate to be amongst the Health Promoting schools. Health Promoting Schools are those schools that are chosen by Department of Health to promote health in schools through formation of gardening projects in partnership with communities to reduce poverty. There is a community project, taking place in partnership with the school. Teachers from this school said this is one way that the school has improved awareness about the environment both amongst the community and the school.

All the ten schools agree that sourcing of schools needs improvement for better environmental teaching. They also regard resources to deliver effective environmental learning as strongly insufficient. Teachers from all the ten schools interviewed recommend that schools need to be better resourced, for example provided with relevant learner and teacher support materials that match the local context, like environmental charts. "Publishers must not make decisions for us about textbooks to order as teachers; rather they must call us to form a joint venture with them before they write books so that we can bring issues about our local contexts", (D) suggested.

(d) Attitudes of teachers and learners

Janse van Rensburg (1994) argues that environmental education could be seen as a process of social change towards more sustainable living in a healthy environment. Therefore, it seems that a flow process, which enables curriculum deliberation, might enable engagement around issues of social and educational change (Janse van Rensburg and Le Roux, 1998). Taylor and Vinjevold (1999) also state that attitudes towards change vary. They further state that individuals, as part of their personality

can have different attitudes towards change. Changing teacher's attitudes can be challenging as it involves time to accept the change and also there needs to be accountability by the teachers themselves to change (Taylor and Vinjevold 1999).

Poor services like lack of access to roads, clean water and health discourage better-qualified teachers from teaching in rural schools (Sapa, 2005). This now restrict teachers to follow the lifestyle of their choice and end up not delivering the curriculum effectively, because they are frustrated. Lack of learning and teaching support materials also discourage teachers to go and work in rural schools. It is important for teachers to work together to bring about significant changes where they work to solve environmental education problems (Janse van Rensburg and Le Roux, 1998).

Janse van Rensburg (1994) recommends that teachers change their attitudes first before learners can change theirs. It is also important for curriculum developers to guide teachers and learners not to draw information from the books but also to question and reflect on their own experience (Janse van Rensburg and Le Roux, 1998). Awarding schools that excel in terms of keeping their school grounds environmental friendly, for example, showed evidence to motivate schools and teachers and also contribute to a better and stronger culture in the school (Lotz-Sisitka & Raven, 2000). Preparation of a programme that addresses priorities for improving conditions of service, including transport, accommodation and access to essential services by the Department of Education might motivate teachers (DoE, 2005).

“Change is affecting us, we were practicing Curriculum 2005 and now they are changing us to implement this RNCS. We are confused because we are still trying to gear ourselves to the first one. The best way is for the traditional approach of teaching, teacher-talk based to come back”, E commented. “We are also confusing learners because we are not confident to prepare environmental lessons and have to promote them to other grades even if they have not mastered the requirements” (I). “As teachers we are interested to prepare environmental lessons because at least we have General Science background to deliver for this phase but lack of resources is a big problem”, N said.

All teachers from the ten schools strongly agree that the curriculum with an environmental focus is interesting because teachers can engage learners in daily environmental activities using their local context. For example working in gardens and school grounds needs garden tools and cleaning instruments. “ It is not easy to foster environmental lessons on conservation in this area because people here are poor and therefore make a living out of the resources, like cutting trees for firewood purposes and therefore end up not valuing environment,” F said.

All the ten schools agree that learners show interest in lessons that involve their local environment. One experienced teacher, Q, mentioned the importance of studies about local rivers, hills, mountains, forests and local seas like Umtata mouth and Coffee Bay as interesting to learners. This shows the link between relevance of the curriculum to the context and attitudes. All the ten schools agree that there is a need to change teacher’s attitudes for effective environmental curriculum delivery. One

teacher, K said she has a negative attitude towards the revised national curriculum as she feels it is a waste of time to learn it, since she had tried and never understood even Curriculum 2005. All the ten schools also agree that learners' attitudes need to be changed for better environmental teaching. When learners come to school for the first time, they seem to lack environmental awareness. This leads to them not being very interested in keeping the school clean, and that poses a big problem in schools (Q).

Teachers who have furthered their studies within this curriculum must be given opportunities to educate other teachers, not to stay in their schools just for salary increase purposes (S). Allowing those teachers to conduct workshops for other teachers can do this. Awards for better performance of learners and teachers at all levels might also be helpful. If well-trained and confident facilitators can conduct workshops, things might improve (M).

(e) Governance

Governance in this context refers to school governance, which consists of the school managers or principals, School Governing Bodies (SGBs), School Management Teams (SMTs) and Education Departmental Officials (EDOs). In South Africa, there are not enough teachers and principals who are capacitated enough to teach or run schools effectively (DoE, 2005). In many provinces there are District offices that are dysfunctional due to lack of capacity. Again, technical difficulties such as limited access to cars of District officials are challenging issues that hinder the process of

curriculum delivery in schools. It has been reported that there are few cases of Districts providing schools with support, particularly SGBs (DoE, 20005).

School environmental policies are also regarded as critical and need to be included in this discussion for effective environmental teaching. Le Roux (1999) states that the concept of school environmental policy was found to be useful for effective environmental curriculum delivery and also for getting schools organized in some schools in South Africa. Other countries like Australia and the United Kingdom also explored the use of developing environmental policies to get their schools organized (Baczala, 1994).

Palmer and Neal (1994) recommend that all schools have environmental policy coordinators for effective implementation of environmental curriculum. Broader school communities in rural areas need to be drawn into decision- making through broadly based participatory processes including *imbizos* and *indabas* for effective delivery of basic facilities (DoE, 2005). It is also recommended that workshops be held with national and provincial officials to discuss the role of District offices in rural schools and also how District officials and school management teams can be capacitated to meet their responsibilities (Nelson Mandela Foundation, 2005).

"School Governing Bodies are not committed to do their work, if we call them for meetings they do not attend for unknown reasons. This now has resulted to the community not attending general meetings because they feel that they will be elected to be part of school committee," R commented. "School Management Teams are

trying to support teachers who are interested in environment like in our case cleaning of school grounds and gardening but on weekends the community uses our yard as a kraal for goats and sheep especially during rainy days,” E said. “That is discouraging because these goats and sheep destroy everything and also leave our grounds environmentally unfriendly,” F added.

All the ten schools interviewed have environmental policies to foster environmental teaching. Eight out of the ten schools consider the environmental policies not to be working in their schools because of lack of co-operation from the community, school managers and also lack of resources like proper fencing and garden tools. The other two schools mentioned earlier as Lower Mdumbi and Mkhundlu state that environmental policies are working in their schools. One of them is a Health Promoting School and therefore gets support from Department of Health and Agriculture. Further, the two principals who were part of the discussion stated clearly that they do not feel confident enough to check what teachers are really practicing in their classrooms because they are not certain about what to look for since teachers from different phases attend workshops alone.

Principals that were part of the discussion recommend that the Department of Education involve principals and Heads of Department in all curriculum workshops for all Phases so that they become confident to visit classrooms to assist teachers who need support. Teachers from all the interviewed schools recommend that governance controlling their school curriculum be made aware of the environment first by attending environmental training. Teacher R recommends that good relations

between teachers and governing structures can lead to better environmental teaching. This can facilitate the process of environmental teachers to run their projects in the schools if they are supported by funds and also praised for their achievements.

(f) Context

Taylor and Vinjevold (1999) argue that when the government changed the curriculum from the old system to Curriculum 2005 the context of practice for both advantaged and disadvantaged schools seems not to have been adequately considered. The curriculum policy can be described as context-blind as some schools received little or no equal support irrespective of their geographical location (Smith and Sheppard, 1999). Context takes into account the social, cultural, political, economic and biophysical factors influencing teaching and learning, and learner's lives in different settings (Munthali, 1997). Economic factors in rural schools can be associated with availability of funds to take out learners to field excursions, whereas cultural factors may influence the way teachers teach in a particular situation, specifically about mobilizing of indigenous knowledge (Munthali, 1997). Mobilizing indigenous knowledge allows learners to encounter more ways of knowing, and more than one knowledge system.

Biophysical factors also influence the way teachers prepare lessons plans, for example pollution issues in rural schools might be completely different than in urban ones (NEEP-GET, 2004). It is very important for teachers to consider the context when preparing lessons as environmental issues and risks are often context-specific,

and differ in different contexts (Usher et al.1997). Teachers, therefore need to look at the issue from different perspectives that will help learners to understand based on their context. Through enabling learners to investigate specific local issues and risks, helps them to recontextualize knowledge, skills and values that prepare them for a better future (Janse van Rensburg and Le Roux, 1998).

All the ten interviewed schools agree that the local context influences environmental teaching. "The curriculum is not in favour of our context at all and we are really in trouble because learners just accept what we tell them as teachers", K said. According to C, policymakers assume that all schools are from the urban contexts when designing the curriculum, forgetting that rural schools lack resources to plan environmental lessons.

Teachers from all the ten interviewed schools agree that rural schools are in crisis because even in terms of resource supply they are not considered. Most environmental activities take place in urban schools or townships. Some teachers noted that sometimes they don't find out about such sessions until afterwards when they contact friends from those schools or from learners who are schooling there. Learners from rural areas receive limited knowledge through pictures from the books, not through practical experience (U). Responses from all the ten schools interviewed reveal that there are no special programmes in place designed for rural schools for reasons unknown so far. Teachers are designing their own programmes to suit the context in which they operate.

All the ten schools interviewed agree that there is need for equity of resource distribution between rural and urban schools for effective environmental curriculum delivery. Another recommendation is that the curriculum be based on both rural and urban contexts (X). It is also recommended that the government must recognize impact of poverty on the education system (D). The table below illustrates how the different schools at the end of the discussion prioritized the factors. Although in many cases all the schools (ten) agreed on the same factors as limiting, prioritizing the factors was different as shown in the table.

Table 1 Prioritization of factors ranked from 1- 6

	Factors that influence environmental teaching					
Degree of limitation	First	Second	Third	Fourth	Fifth	Sixth
Curriculum	10	0	0	0	0	0
Teacher qualifications& Training	0	9	0	1	0	0
Resources	0	0	7	2	1	0
Attitudes of teachers and learners	0	0	3	6	1	0
Governance	0	0	0	1	6	3
Context	0	1	0	0	2	7

Numbers 0, 1, 2, 3, 6, 7, 9 and 10 refer to the number of schools that agree on that particular factor to be limiting. First, second, third, fourth, fifth and sixth refer to the degree of limitation of the factors that influence environmental teaching. For example how many schools regard curriculum as the first limiting factor versus to those who consider it as the second, third, fourth, fifth or sixth according to the table.

DISCUSSION

This section provides the researcher's analysis and interpretation of the results, as well as recommendations about research findings detailed in the previous section. Subheadings are used for clarity purposes to guide the reader.

Despite the rankings given by the teachers, the researcher has come to a different conclusion regarding the most limiting factor, based on researcher's observations and what teachers said during the discussions. Sometimes what teachers said was not supported by what is in textbooks and the researcher had to engage with those types of comments. The researcher had to confirm what teachers said by using available resources like textbooks to check if the content is relevant to environment or maybe favour the urban context. Further, the researcher was able to *****

The focus group interviews indicate that the most limiting factor is the curriculum because without understanding it, environmental teaching will not be effective. Although all the factors impact strongly on one another, without overriding teacher's comments, the researcher indicates that the most limiting factor is teacher qualifications and training because with adequate qualifications and training, attitudes of teachers and learners might change as they will better understand the curriculum and use of resources relevant to their context which might lead to better governance in schools.

(a) Curriculum

The key finding with regard to the curriculum is that teachers do not understand C2005 and RNCS (Grades R-9). This means teachers have problems with planning environmental lessons with high skills and knowledge linked to the principle of social justice, a healthy environment, human rights and inclusivity. Based on discussions with the teachers, the researcher was able to extrapolate that teachers' main concern was not with what the curriculum actually says, but with the fact that they did not really understand the curriculum. English, which is the medium of instruction, as second language is considered to be the primary cause of this difficulty. This can also be linked to insufficient training they have received before implementation of the curriculum and insufficient resources to prepare environmental lessons.

Few students have the opportunity to know about industries, except through parents and family working in towns. Similarly, most learners have never been to National Parks, like Kruger National Park, and do not have interest or understanding of what happens in Parks. Such lessons advantage learners to whom Parks are more accessible. From the researcher's understanding most Parks are closer to rural areas but the problem is in accessing them.

Chisholm et al (2000) further support the statement by Taylor and Vinjevold that teachers did receive training that addressed the entire curriculum, but also regards this as insufficient and appropriate for teachers. Results also revealed that the relevancy of the content must be examined critically. To ensure that learners are able to access high levels of skills and knowledge, teachers have a responsibility to ensure that the information shared with learners is of quality (DoE, 2002).

However the researcher acknowledges a survey commissioned by Department of Education to Human Sciences Research Council (HSRC) to investigate factors that hinder effective delivery of education in South Africa. In this study poor qualification, lack of resources and non-attendance of school by both learners and teachers were identified. The researcher is quite aware about the issue and was also engaged in a similar study before findings were publicly announced. This factor is also linked to teacher qualifications and training, for if training is directed towards this issue, teachers will have a better understanding of the curriculum.

(b) Teacher qualifications and training

Research showed that teachers do not feel qualified to teach environmental education. However they attended training, which were general about the curriculum, but not focused on the environment. As indicated by Fullan (1991) and Taylor and Vinjevold (1999) teachers lack support and training to teach the new curriculum. However, some teachers are using the information acquired from secondary school to foster environmental education. These are teachers who have majored in Biology or Geography.

The researcher regards teacher qualifications and training as the most limiting factor. Curriculum facilitators seem to be incompetent due to insufficient training they have received. Teachers from all schools supported this conclusion by citing their concerns about the quality and content of training, as well as the capacity and level of interest of the trainers. Most of the facilitators are redeployed lecturers from colleges of

education that had been closed. These facilitators did not receive sufficient training to empower them to deliver the new curriculum.

The key reason why this factor is considered most limiting is because it is closely linked to other factors. Further, improvements in teacher qualifications and training can reduce the impact of each other factor. These linkages are further detailed below in resources, attitudes of teachers and learners, governance and the context.

(c) Resources

Observations related to resources reveal that teachers do not have sufficient quantity and variety of resources that fit their context. They rely on available textbooks, but these pose a threat as teachers find them difficult to understand because of the complex language used. Most teachers use English as second language therefore often making it difficult for them to understand. From the researcher's findings, most teachers consider textbooks as favoring the urban context compared to the rural one. To engage with the teacher's perceptions on the issue that textbooks include lessons on urban examples, like industries, is not supported by the researcher. Having checked the textbooks written by different authors, the researcher deduces that all contexts are catered for but the problem with teachers is in recontextualizing the information when planning environmental lessons.

Taylor and Vinjevoold (1999) support the above statement, as they state it clearly that when the government changed the curriculum, the context of practice for both advantaged and disadvantaged schools was not considered. Providing training for

teachers will impact on their understanding of relevant resources like learner and teacher support materials and also how to use them in their context. There is a critical need for appropriate material, which could be obtained by negotiating with institutions that have advanced environmental education units like Rhodes University and Wildlife and Environment Society of South Africa.

(d) Attitudes of teachers and learners

As mentioned earlier, two schools, Lower Mdumbi and Mkhundlu have some kinds of resources and are practicing gardening. From the researcher's assessment of the situation, three other schools, Gqira, Welese and Ngonyama have gardening facilities but are not interested in gardening. Teachers from these schools said they are not interested in gardening because of lack of co-operation from the communities who put their livestock inside school premises on rainy days. However it is not only availability of resources that can foster environmental teaching but the will that drives a teacher to engage in any role. One problem that changes teacher's attitudes is the availability and usability of resources that can be used to prepare for these activities.

Usher et al (1997) support this suggestion when they state that changing attitudes of people can be challenging as it involves time to accept change and also responsibility to change. Training teachers and communities can impact on their attitudes, which might install a sense of responsibility. There is need for intersectoral collaboration within government departments like agriculture, education, works, environmental affairs and health, to see education as their responsibility together with schoolteachers and managers (DoE, 2005). Teacher qualifications and training might

improve attitudes of teachers and learners so that they can feel confident and competent enough to implement the curriculum.

(e) Governance

Results showed that governance in schools is lagging behind primarily due to lack of capacity. Some of the school managers are not confident to supervise their staff because they lack confidence to support teachers. School Management Teams try to support teachers to keep the schools environmentally healthy but are discouraged by the communities who do not give them support.

Making schools grounds kraals for herds of cattle can discourage teachers from carrying on with their environmental activities. What makes things worse from the researcher's personal observations is that some pets that come and stay in school premises are dangerous to both learners and teachers as they are disease carriers and transmitters. School Governing Bodies (SGBs) seem to lack responsibility as they fail to attend school meetings and give support to learners and teachers. Teachers regard communities as irresponsible because they do not want to be elected as committee members and that also discourages SGBs to call parents meetings.

Department of Education officials also fail to support schools for better environmental teaching because of lack of capacity, which also results in a lack of responsibility. Sometimes departmental officials do not have access to transportation so that they can visit schools to give them support. DoE (2005) supports this statement that most

teachers and principals lack the capacity to teach or run schools effectively. School governance can also be linked to attitudes of both teachers and learners. For example all the schools have environmental policies but in most schools these policies are inactive. Lack of co-operation can be related to a lack of responsibility and improperly erected fences in some schools. Considering those schools with resources, this can be linked to a lack of will or interest in environmental education.

The above discussion on environmental policy in schools does not support Le Roux's (1999) recommendation about usefulness of environmental policies to teach environmental education and also to get schools organized. Policies can guide us, but they are not enough to make change if other factors are missing. Providing training to school governing bodies might change their attitudes and that can also lead to effective implementation of policies.

(f) Context

Although no school considered the context as the first limiting factor during the discussion, evidence shows that all the other factors discussed are linked to the context. What the researcher has observed is that teachers have problems to contextualize knowledge from textbooks when preparing environmental lessons. This is exacerbated by the fact that teachers struggle to get local resources to use in preparing environmental lessons. Context cannot be changed, but adjustments might be made to fit in the context. Providing sufficient environmental training about how to care for the environment in all contexts to teachers and governing bodies might

change their attitudes, way of understanding the curriculum, and resource use to fit the context.

RECOMMENDATIONS

Recommendations provided for this study focus on the schools involved in the case study. This will help to avoid generalizations, as only few schools in the Eastern Cape were part of the study. Teachers need to be included during the curriculum planning process together with curriculum experts from the Department of Education. They also need to be assisted during the implementation phase of the curriculum through follow-ups by curriculum experts or well-trained subject advisors. Before curriculum change takes place, an assessment must be done in all schools to find out if teachers are in support of the proposed curriculum. This can be helpful, as it might inform the decision-makers about the various issues and contexts before decisions are made. There is also a need to support educators to ensure that sufficient scope and depth is provided in the development of lesson plans and to interpret the outcomes-based curriculum meaningfully (NEEP-GET, 2005).

Teacher training colleges and universities need to develop context specific case studies that can be used by students and teachers so that newly qualified teachers can be confident enough to implement the new curriculum (DoE, 2005). The Department of Education needs to plan for teacher training and extend the training period for teachers. Teachers need to be supported to feel more confident to be in a better position to deal with curriculum challenges and also to manage educational change processes. Teachers need to make use of opportunities that explore

understandings of learning in more depth, like going out for fieldtrips. Teachers can also take initiatives themselves, such as going to the local hospitals to see what malnourished children are and also how they are being treated. Selecting special teachers from each school to attend training can facilitate the above-mentioned initiative. Substitute teachers can be appointed during the training phase so that learners are not left unattended. Trained teachers in return can conduct ongoing onsite training for their colleagues to reduce costs and also save time. A buddy system in which schools form environmental support groups might be helpful to keep on developing local experience and capacity at the local level.

Teachers need to be part of the publishing process to ensure relevance of resource materials to their contexts by including them during the writing process of resource materials, so as to understand the context of learning and learners in more depth. Another need is to support teachers to select and adapt teaching and learner support materials in the context of Learning Outcomes, for lesson development and use with learners (Timmermans and Gon, 2003). This includes in-depth engagement with the conditions of schooling, classroom relationships and practices, as well as an understanding of contextual challenges facing learners in the education system (e.g. impacts of HIV/AIDS, poverty and safety issues). This can be achieved through individual schools selecting teachers to be their representatives during the above-mentioned process. Government must make follow ups to check if resources provided to schools fit the context and are useful for learners and teachers. There must be equal distribution of resources between urban and rural schools.

There is also need to support teachers and learners to understand environmental issues and risks from local, national and global perspectives to change their attitudes by providing them with well-planned and environmental focused training (NEEP-GET, 2004). Contributions from other government departments and partner groups provide important knowledge that can be used in exploring environmental issues (NEEP-GET, 2005). This is made available sometimes through available materials, access to resources such as Parks and other people who can be willing to share their knowledge with learners and teachers.

The Health Promoting School Programme strategy seems to be working, therefore the researcher would suggest all schools be part of this programme. A traveling resource centre with DVD for example for showing different contexts beyond local level might be helpful. This kind of road show can form part of a yearly competition to develop best practice and a reward system for schools. Further training of teaching staff and trip for the best classes of pupils might also motivate learners and teachers. The government is responsible for inclusion of all schools in the programme.

CONCLUSION

Several factors with regard to environmental teaching have been identified and discussed above. The researcher has discussed the findings of other researchers too in an attempt to explain the challenges and also to recommend how to improve environmental education. The study shows that teachers are trying to deliver the

curriculum with an environmental focus, but there are still gaps between theories on environmental teaching and practice.

Without overriding teacher's perceptions about factors that influence environmental teaching, based on the researcher's observations, reviewed literature and teacher's responses, the researcher concludes that if attention can be given to teacher qualifications and training, teachers might better understand the curriculum and use available resources to suit their context, and that might change teacher and learner attitudes. Furthermore teacher qualifications and training might influence governance in schools. This factor is the most limiting, and in addition to this, addressing it has the potential to alleviate other challenges. Therefore, it is recommended that the teacher qualifications and training be the focus of future efforts to improve environmental education in rural schools.

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APPENDIX 1 Map showing the study area

APPENDIX 2: Guidelines for Contributors of Southern African Journal of Environmental Education

APPENDIX 3: Field notes- Focus-group discussion

07 November 20005

School 1

Number of teachers 3

The group assembled at 11h00 in one of the classrooms. The researcher started by introducing her and also gave a brief background about the study. Then the discussion started following questions from the questionnaire.

Teachers from this school feel that then have no clear understanding of the term environment. The researcher had to clarify the concept first before carrying on with the discussion. Teachers say the curriculum is not environmental focused but they just use their background knowledge to deliver it. Planning of lesson is still difficult because they were trained for a short period.

Teachers also regard facilitators conducting trainings workshops as incompetent to train them. Textbooks prescribed are considered not relevant to environment. They also have problems with ordering of books from publishers. Most of the time they order books because they are convinced by publishers that they are good and at the end discover that they are not rich in information. Portfolios are not considered to a problem that much because both teachers and learners use what they have to construct portfolios.

Support from the community and also learners is a big problem. The community is not responsible for what is taking place in the school. After school hours it is easy to find livestock moving inside the school premises, destroying the small projects like tree planting the teachers are practicing. The context in which the environmental curriculum needs to be practiced is very challenging. It is therefore advisable that the government install the role of responsibility to communities by making them environmental aware.

08 November 2005

School	2
Number of teachers	4

The group assembled at 11h00, the principal gave a warm welcome. Then the researcher introduced her and gave a brief background about the study. Teachers also asked the researcher to explain in detail about what was expected from them. The discussion then started in a very positive and friendly manner.

Teachers voiced their views about the curriculum that is not environmental focused. The curriculum is considered to be complex and difficult to understand by both teachers and learners. The curriculum is designed on the same levels for both rural and urban contexts and that make things difficult for teachers. Teachers claim that change affect them a lot because the instability of curriculum in South Africa is also a

big problem. One teacher says when you try to grasp the principles of one curriculum you have to change to another.

Resources are also a problem; teachers have the will to implement the curriculum but resources a hindering factor. One teacher even possesses a certificate on environmental management but cannot practice environmental management in her school context.

"Poverty in this area is a big problem, for example the community depends on the resources that we are telling them to conserve" one teacher said. "Qualifications are not a big problem we have background knowledge. The problem is the time allocated to us for training about the curriculum" another teacher said. Another teacher suggests rangers to come back and look for conservation of our forests.

Environmental policies have been drafted but are not easy to implement because of lack of co-operation from the communities. There is no support from the governing structures but are not blamed for that because probably is due to lack of environmental awareness. Teachers then recommend that the government must work hand in hand with schools and communities so as to install the spirit of responsibility.

09 November 2005

School

3

I tried to arrange the meeting with teachers on the 7th November but due to rain problems was not possible. On the 9th the meeting was scheduled for 13h30 because teachers were busy because of the examinations. The principal of the school introduced me to his staff members and then I had to reply in return to give a brief background of my study. The discussion then started following the procedure of the questionnaire.

Teachers from the school are experiencing problems from the other schools about the curriculum. There are no specific guidelines about the environmental curriculum teachers just take for granted that now you are dealing with environment. One teacher said the curriculum is not useful because it demands a lot of time and resources. Classrooms are not meant for this kind of learning that needs groups. Again learner enrolment is another issue because classrooms are overcrowded. This makes it impossible even to practice safe and healthy environment from the classroom level.

Workshops are not enough to make understand the curriculum because of the time allocated for them. Again facilitators seem to struggle about the content during workshops and as a result teachers leave workshops still being empty vessels. Teacher and learner attitudes are positive but the context plays a lot.

There are different kinds of resources in this school to foster environmental curriculum like a school vegetable garden, safe and clean grounds. They also have properly maintained pit system toilets. The community is not a big problem because they take care of their livestock. The school is well fenced by assistance from Section 21 funds. The principal is very supportive about environmental curriculum. He is the initiator of the school garden project.

10 November 2005

School	4
Number of teachers	3

The discussion was scheduled for 10h30 and the principal and staff gave me a warm welcome. The researcher also introduced her and gave a brief background about the study. All the teachers involved were senior teachers of more than twenty years experience in teaching

Teachers consider the curriculum as a threat and a monster to destroy the quality of education. The curriculum content is considered as unclear, unfocused and confusing. Teachers prefer the old methods of teaching to be more powerful than the present curriculum. They also confessed that most of the time they switch to the traditional ways of teaching so that at least learners have a better understanding progress to another grade.

Qualifications are not a big problem as they use their background knowledge to deliver environmental curriculum. Training is insufficient and for example now they were trained last year but up to now no follow-ups have been made. Textbooks that are used are not relevant and we end up using old books that are not designed for this kind of curriculum. "We are victims for publishers who convince us to order books from their bookshops and at the end stay in shelves because they are irrelevant" one teacher said.

Teachers are not given opportunities to practice their skills. For example there are many teachers who are qualified to deliver the environmental curriculum to other teachers. Teachers end up having negative attitudes about the curriculum because they are not given enough chances to preach the environmental curriculum to other schools. Lack of co-operation from the community makes the process even worse. Their livestock destroys whatever activities teachers try to implement.

The context in which the curriculum is supposed to be delivered is not suitable first of all in terms of the geography, poverty related issues and high illiterate rate of the communities. I would be better if the government can provide jobs for all communities for better environmental curriculum delivery in school. One teacher said that the policymakers must involve teachers from all contexts during draft of policies for better environmental curriculum delivery.

14November 2005

School

5

The meeting started around 11h00 and the principal took her opportunity to welcome the researcher. The principal was also part of the discussion group as she teaches Grade 4. The researcher gave a brief background about the study and then the discussion started.

The curriculum is considered as not useful, too complex without proper guidelines. Teachers in this school find it difficult to prepare environmental lessons because of insufficient training. The principal preferred the old method of teaching because it is rich in content. Syllabus method used before is considered effective compared to this new curriculum. Teachers construct portfolios but difficult for learners to construct because they don't have the money to buy files to use as portfolios.

From the lessons learned teachers reveal that they are not confident about the curriculum but use their background from Biology and Geography to deliver the environmental curriculum. Textbooks are available but not useful and teachers end up resorting to the old textbooks. Textbooks are also written in complex language. Teachers are very keen to deliver the environmental curriculum but change of curriculum also affects them. There is an environmental policy but difficult to implement because the school is not well fenced. Lack of co-operation from the community also affects the way teachers deliver the curriculum.

The context is also another factor because in many cases rural schools are taken aside. This starts during the design of the curriculum, visits to school and also sourcing them. Teacher voices from rural schools are not taken into consideration for reasons unknown. Poverty is the main challenge facing rural schools and therefore need to be solved for better environmental curriculum delivery.

15 November 2005

School	6
Number of teachers	4

The meeting was scheduled for 11h30 and the principal welcomed the researcher. The principal was also interested to join the discussion as she felt she is also affected as the manager. The researcher allowed her to join and the discussion started.

Teachers feel that the curriculum is still confusing starting with the training provided, textbooks supplied by publishers and also the context. Teachers confirm that to change for them is not easy because they are still happy with the traditional way of teaching. Research by learners from rural context is not easy because parents do not give learners information as required by the environmental curriculum. Incompetence of facilitators makes the situation worse because they lack knowledge. Sometimes are not announced so that teachers in rural area can get the information on time. For example if the workshop is scheduled for a week you will find that rural schools get the information on the second day of the workshop.

The schools have learner and teacher support materials but are not helpful to rural schools. Classrooms are big enough form groups but what the learners to do are not clear even to teachers. The school has well maintained classrooms built by the Canadian Foundation Project. Toilets are still in good condition for healthy and safe environment.

The principal is trying to give support to teachers to deliver the environmental curriculum through a gardening project but the problem is theft. They have an environmental policy but not fully implemented because of lack of co-operation from the community members. Support from the Department of Education is minimal because of the agreement with teacher unions not to visit schools.

The principal voiced out that for the context of their school there are surrounding forests, rivers and caves that need to be conserved. The problem in the area is that because people are poor and hungry they hunt illegally so that they can have food to survive. People also need to be made aware of the environment so that they can be responsible.

16 November 2005

School	7
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Number of teachers	6
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The meeting was scheduled for the 14th but teachers were going to be available on the 15th. The principal welcomed the researcher and also asked for clarity about the

study before she left her with the involved staff. The discussion started at 12h00. Lessons learned reveal that teachers are still not clear about the curriculum and the content is not relevant to environmental curriculum. Teachers use their experience to prepare lessons. They prefer the RNCS compared to C2005 the traditional methods of teaching are considered to be the best. Teachers are not qualified but use their knowledge from Biological subjects and Geography to deliver the environmental curriculum.

Resources in this school are not a problem because they get some resources from the Department of Health and Agriculture to green their curriculum. Department of Agriculture supplies them with trees to plant around the school. The school was fortunate to be selected as a Health Promoting school. Department of Health makes them aware of the environment.

Teacher and learner's attitudes through support from the nearby hospital make things easier for this school. The community is also very active and supporting the school. Parents are also involved in the school garden project and help those people affected by HIV/AIDS in the area. Theft is not a problem in the area because the community is responsible.

Teachers are happy that most of the activities taking place in the school are relevant to the rural context. Teachers consider the area to have fertile soil that is good for agriculture. Teachers in this school believe that the curriculum must be designed so as to cater needs of rural areas like these that can promote agriculture. "Theory and

practice must go together. It is high time now for learners to be taught about Agriculture both in theory and practice it to reduce poverty which causes Aids" one teacher from the school commented.

17 November 2005

School	8
Number of teachers	3

This was a very hot morning when the meeting was held. The principal was very delighted with my presence to come and conduct the study in her school. The principal introduced me to the team that formed part of the discussion. I had to wait for an hour to finish their activities that day, as the learners were busy writing their examinations. The discussion started in a positive atmosphere and teachers willing to give me the information.

Lessons from the discussion show that teachers from this school have negative attitudes about the curriculum. Reasons are that it is not clear, confusing, wastes time, demanding a lot which is impossible for the context. Teachers consider planning of lessons a great challenge because even the available textbooks are not relevant to the environment. Teachers use their background information to deliver the environmental curriculum effectively. No well maintained classrooms and the available ones are not good for rainy days because roofs are leaking.

The principal is struggling to organize activities within the school because the School Governing Body is not co-operative. Teachers feel so stressed by this situation but are trying to do their best so that learners don't suffer at the end of the day. Learners from that area are victims of drugs but teachers have no say that much because there is lack of support from the community. Drug abuse is also one of the factors caused by poverty. Many learners drop out of schools because they are frustrated by the conditions at home. Teachers feel that at this stage the government must also intervene because they are also under threat of being injured by these learners.

21 November 2005

School	9
Number of teachers	04

The meeting was scheduled for the 18th November but was cancelled as teachers were having a meeting in town. On the 20th the meeting started at 10h30 after a warm welcome from the school principal. The principal showed appreciation about the study as she hopes it will bring change. Teachers also felt that the meeting was a kind of workshop to motivate them not to loose hope but to deliver the environmental curriculum effectively.

Lessons learned show that teachers are still battling with the new curriculum. Change in terminology confuses them on how to prepare environmental lessons. These teachers show that they are trying to use their local context like surrounding rivers,

mountains and forests to deliver environmental curriculum. They believe that learners must first know their local environment before learning other environments.

Poor training provided by incompetent facilitators is considered insufficient. Teachers from this school use their knowledge from Environmental Studies so that they can have a better understanding of what is happening around them. "We try to improvise means of getting resources that are environmentally focused from the nearby clinic" one teacher said.

Resources also pose a big problem in this school, as there are few textbooks for all the learners, and therefore learners are forced to share. Learner and teacher support materials not relevant to deliver the curriculum. Classrooms are small and not suitable to form groups as required by the OBE approach. Teachers are not familiar about ordering of books but order books from well-known publishers which end being useless. Gardening has been tried but not successful because of livestock from the community destroying everything. Now teachers have resorted to planting trees that are not eaten by livestock.

Governance is also a problem because members of the community don't want to attend meetings because they don't want to be elected for school committees. These people lack the responsibility to support the school for their children education. Besides that some parents are illiterate and therefore not interested to involve themselves in school matters.

“The curriculum is not possible for the rural contexts unless it can be planned to suit it. Teachers are sick and stressed because of the bad conditions they are working in” one teacher commented. Rural contexts need consideration for better environmental curriculum delivery and integration of all subjects. One teacher said how is the possible to deliver the curriculum effectively if most interesting environmental activities by the Department of Education are held in better resourced schools Teachers from this school feel that in most cases ceremonies hold are not a true reflection of what is happening in all schools.

School	10
Number of teachers	4

The discussion started with an introduction from the principal, the researcher then gave a brief background about the study. Teachers showed an interest about the study to such an extent that they asked me to give me a report after the whole process of my study.

Teachers are dissatisfied about the curriculum because it lacks environmental focus and also not rich in content. Teachers prefer the traditional methods of teaching that transmit knowledge to learners. Problems facing learners are that they cannot understand English that is the medium of instruction. Teachers who have a better understanding are Foundation teachers because at least for them workshops were conducted in a proper manner. Training provided is not enough but Foundation teachers try to assist sometimes when they have time.

"We have insufficient resources, no classrooms, as you can see, no well-fenced yard. So what does the government expect us to deliver in terms of environmental curriculum?" one teacher from the school responded.

Teachers seem prepared and interested to deliver the environmental curriculum but no attention is paid for their local context. "We don't have industries here, so this makes it difficult for our learners to understand the environmental curriculum unless we take them out for tours. Where are the funds to take them out because parents are poor?" said an angry teacher who seemed to be touched about the discussion.

Governing structures have problems about the environmental curriculum because they are not clear. Again lack of responsibility contributes to ineffective environmental curriculum delivery. Parents do not consider the case of their involvement in the curriculum as important. Teachers are still regarded as agents who are to deliver the curriculum effectively. Environmentalists are needed to visit communities and make them aware of environment with greater attention to their local context.

**Factors that influence environmental teaching:
A case study of Ngqeleni District, Eastern Cape.**

by:

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Submitted in partial fulfilment of the academic requirements
for the degree of

Master of Environment and Development

in the

Centre for Environment, Agriculture and Development,

School of Applied Environmental Sciences,

University of KwaZulu-Natal

Pietermaritzburg

2005

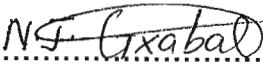
PREFACE

This study has two components, Component A and Component B. Component A provides the theoretical background for the study. It includes, amongst other things, an introduction to the topic of environmental teaching and the factors that impact its effectiveness in rural schools. Component B is a paper written in the format of the **Southern African Journal of Environmental Education**.

DECLARATION

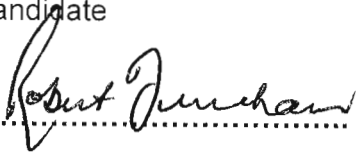
The study described above was carried out in the Centre for Environment, Agriculture and Development, University of KwaZulu-Natal, Pietermaritzburg, under the supervision of Professor Rob Fincham and Miss Mary Lawhon.

This thesis represents original work by the author and has not otherwise been submitted in any form for any degree or diploma to any other university. Work extracted from other authors has duly been acknowledged.


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ABSTRACT

This study investigates factors that influence environmental teaching in rural schools in the Ngqeleni District, Eastern Cape Province of South Africa. Focus-group interviews at selected schools for Grade 4 to 6 teachers were held between 7th and 22nd November 2005. The study shows that the environmental curriculum, teacher qualifications and training, resources, attitudes of teachers and learners, governance and the context, influence the implementation of environmental teaching. The study reflects that teacher qualifications and training are the most limiting factors and need to be addressed immediately because environmental curriculum is not effectively delivered.

Recommendations provided entail that teachers need to be included during the curriculum planning process together with curriculum experts from the Department of Education. The Department of Education also needs to effectively plan teacher training and extend the training period for teachers. Intersectoral collaboration within government in terms of how teachers are trained might also be helpful for better environmental teaching. A buddy system in which schools form environmental support groups might be helpful to keep on building local experience and capacity at the local level.

Teachers are supposed to be part of the publishing process of resource materials to ensure relevance of resource materials to their contexts. A traveling resource centre with DVD's, for example, for showing different contexts beyond local level might also be helpful. Further training of teaching staff and the use of study trips for the best classes of pupils might also motivate learners and teachers.

ACKNOWLEDGEMENTS

I would like to thank Prof. Rob Fincham and Miss Mary Lawhon for their guidance and supervision for this study. I would also like to thank Prof. Heila Lotz-Sisitka, Dr. Jim Taylor, Dr. Nyambe and Miss Ingrid Timmermans for their advice and guidance during the research process.

Thanks to my family for their encouragement and support during this study. Successful completion of this project would not have been possible without the selected ten Nqeketo zone schools from Ngqeleni. Thank you very much to principals and teachers of these schools for their great support.

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ACRONYMS

C2005	Curriculum 2005
CEAD	Centre for Environment, Agriculture and Development
DEAT	Department of Environmental Affairs and Tourism
DoE	Department of Education
DoL	Department of Labour
EDOs	Education Department Officials
EEASA	Environmental Education Association of Southern Africa
EEFSD	Environmental Education for Sustainable Development
EEPI	Environmental Education Policy Initiative
GET	General Education and Training
IUCN	International Union for the Conservation of Nature and Natural Resources
LA	Learning Area
NCS	National Curriculum Statement
NECC	National Education Co-ordination Committee
NEEP	National Environmental Education Project
NEEP-GET	National Environmental Education Project for General Education and Training
NEMA	National Environmental Management Act
NEP	National Education Policy
NGOs	Non- Governmental Organizations
OBE	Outcomes- Based Education
RDP	Reconstruction and Development Programme
RNCS	Revised National Curriculum Statement
UKZN	University of Kwa Zulu-Natal
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environmental Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WCED	The World Commission on Environment and Development
WESSA	Wildlife and Environment Society of South Africa
WWF	World Wide Fund for Nature