BARRIERS TO TEACHER INVOLVEMENT IN ENVIRONMENTAL EDUCATION CURRICULUM DEVELOPMENT IN THE NORTHERN PROVINCE

by

FULUFHELO EDGAR NELUVHALANI

DISSERTATION

submitted in accordance with the requirements for the degree of

MAGISTER EDUCATIONIS

in

ENVIRONMENTAL EDUCATION

in the

FACULTY OF EDUCATION AND NURSING

at the

RAND AFRIKAANS UNIVERSITY

SUPERVISOR: PROF HG VAN ROOYEN

OCTOBER 2000
DECLARATION

I declare that this study,

entitled

BARRIERS TO TEACHER INVOLVEMENT IN ENVIRONMENTAL EDUCATION CURRICULUM DEVELOPMENT IN THE NORTHERN PROVINCE

Is my own work, that all the sources I have used or quoted have been indicated and acknowledged by means of complete references, and that this dissertation was not previously submitted by me or anyone else, to this university or any other educational institution, for degree purposes.

Signed: ................................ Date: 02 March 2001

UNIVERSITY JOHANNESBURG
# CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF TABLES</td>
<td>vii</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>ix</td>
</tr>
<tr>
<td>APPENDICES</td>
<td>ix</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>x</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>xi</td>
</tr>
</tbody>
</table>

## CHAPTER ONE

### INTRODUCTORY ORIENTATION

1.1 INTRODUCTION

1.2 STATEMENT OF THE PROBLEM

1.2.1 Research problem

1.2.2 Other research questions

1.3 AIMS OF THE STUDY

1.4 SIGNIFICANCE OF THE STUDY

1.5 DELIMITATIONS AND LIMITATIONS

1.5.1 Delimitations

1.5.2 Limitations

1.6 DEFINITION OF TERMS

1.7 PROGRAMME OF STUDY

## CHAPTER TWO

### THE ENVIRONMENT AND ENVIRONMENTAL EDUCATION PROCESSES

2.1 THE NATURE AND EXTENT OF ENVIRONMENTAL EDUCATION

2.1.1 The environment and nature of the environmental crisis

2.1.2 Responses to the crisis

2.2 PHILOSOPHIES REGARDING AN ENVIRONMENTAL
3.7.2 Critical approach to environmental education processes 46
3.7.3 Teachers as researchers 47

CHAPTER FOUR
RESEARCH METHODOLOGY 49

4.1 INTRODUCTION 49
4.2 JUSTIFICATION OF METHODOLOGY 49
4.3 DATA COLLECTION METHODS 52
4.3.1 The questionnaire as a research method 53
4.3.1.1 Population 55
4.3.1.2 Sampling 55
4.3.1.3 Data collection procedure 56
4.3.2 The interview as a research method 56
4.3.2.1 Focus group interviews 58
4.3.2.2 Interview data collection procedure 59

CHAPTER FIVE
PRESENTATION OF DATA AND DATA ANALYSIS 61

5.1 INTRODUCTION 61
5.2 REPORT OF QUESTIONNAIRE FINDINGS 61
5.3 ANALYSIS AND COMPARISON OF THE INTERVIEW REPORT AND QUESTIONNAIRE FINDINGS 83
5.3.1 Teachers' views on the broader process of curriculum change in South Africa 83
5.3.2 Teachers' understanding and knowledge of environmental education in the new school curriculum 86
5.3.3 Teacher involvement in the practice of environmental education and the place of environmental education in the school curriculum 89
5.3.4 Teachers' perceptions about involvement in environmental
5.3.5 Teachers' views about their own involvement in Curriculum 2005 development processes and government support 98

5.4 CONCLUSION AND SYNTHESIS 103

CHAPTER SIX
CONCLUSION AND RECOMMENDATIONS 106

6.1 INTRODUCTION 106

6.2 A SUMMARY OF RESEARCH FINDINGS 106

6.2.1 Teachers' perceptions on the need for change in education and the school curriculum in particular 106

6.2.2 Teachers' understanding and knowledge of environmental education in the school curriculum 107

6.2.3 Teachers' level of environmental education practice 108

6.2.4 Teachers' perceptions about their involvement in environmental education curriculum development processes 109

6.2.5 Teachers' perceptions about their own involvement in curriculum 2005 development, and implementation processes and the level of government support 110

6.3 POSSIBLE WEAKNESSES AND SHORTCOMINGS OF THE STUDY 111

6.4 RECOMMENDATIONS 112

6.4.1 Model for teacher involvement in environmental education curriculum development processes 116

6.5 CONCLUDING REMARKS 119

LIST OF REFERENCES 120
LIST OF TABLES

TABLE 1  Gender  61
TABLE 2  Marital status  62
TABLE 3  Age  62
TABLE 4  Professional qualification  63
TABLE 5  Previous occupation  63
TABLE 6  Rating of previous training institution  64
TABLE 7  Teacher's self-assessment  64
TABLE 8  Factors influencing self-assessment  65
TABLE 9  Understanding of environmental education  65
TABLE 10  Teacher's perception of environmental education  66
TABLE 11  Understanding of what environmental learning entails  66
TABLE 12  The importance of environmental education  67
TABLE 13  Involvement in environmental activities  68
TABLE 14  Knowledge of local environmental issues  68
TABLE 15  Awareness of local environmental problems  69
TABLE 16  Responsibility of dealing with environmental issues  70
TABLE 17  Knowledge or awareness of environmental organisations  70
TABLE 18  Extent to which teaching deals with environmental issues  71
TABLE 19  Use of local environment as teaching resource  72
TABLE 20  Possibility of teaching environmental issues across the curriculum  72
TABLE 21  Exposure to curriculum studies  73
TABLE 22  Involvement in developing learning programmes  74
TABLE 23  Competence in developing learning programmes  75
TABLE 24  Professional development needs  75
TABLE 25  Teachers' role in curriculum development processes  76
TABLE 26  Availability of cross-curricular teacher meetings  76
TABLE 27  Nature of teacher involvement in curriculum development processes  77
TABLE 28  Time for curriculum development meetings
TABLE 29  Awareness of curriculum decision-making structures in the Department of Education
TABLE 30  Area/s of preference in curriculum decision-making
TABLE 31  Teachers' perceptions on prescribed curriculum packages
TABLE 32  Need for change in current teaching approach
TABLE 33  Familiarity with Curriculum 2005
TABLE 34  Awareness of environmental education within Curriculum 2005
TABLE 35  Training received on Curriculum 2005
TABLE 36  Responsibility on the successful implementation of Curriculum 2005
TABLE 37  Extent of teacher involvement in Curriculum 2005 Implementation
### LIST OF FIGURES

<table>
<thead>
<tr>
<th>FIGURE</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIGURE 1</td>
<td>The environmental crisis: A wheel of interacting global concerns</td>
<td>11</td>
</tr>
<tr>
<td>FIGURE 2</td>
<td>The environment</td>
<td>12</td>
</tr>
<tr>
<td>FIGURE 3</td>
<td>Model for teacher involvement in environmental education curriculum development processes</td>
<td>117</td>
</tr>
</tbody>
</table>

### APPENDICES

<table>
<thead>
<tr>
<th>APPENDIX</th>
<th>Description</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPENDIX A</td>
<td>Questionnaire for grade 7 teachers</td>
<td>Separate</td>
</tr>
<tr>
<td>APPENDIX B</td>
<td>Interview guide</td>
<td>Separate</td>
</tr>
</tbody>
</table>
ACKNOWLEDGEMENTS

I begin my acknowledgements by thanking all the teachers who participated in this research project and took their valuable time to contribute with useful information when it was required.

My gratitude goes to Professor HG Van Rooyen, my supervisor, for having faith in me, and for creating opportunities in which I was free to learn. I also wish to thank him for his motivational statements and patience in helping me when I seemed confused.

I acknowledge gratefully the diligent editing work done by Dr. Liz Greyling on my entire dissertation.

I owe many thanks to other contributors such as Dr. Edward Nesamvuni who helped with my data analysis and other friends (personal and in the AUS-AID Links links project).

My family occupies a special place in my heart. My lovely wife, Elsie, has done the tremendous work of supporting and encouraging me throughout the duration of my study. I also wish to dedicate this work to my two beloved daughters, Thumi and Vhuyi, and wish them a prosperous future in education.

My special thanks goes to my parents, Aifheli and Mukondeleli Neluvhalani, for the great investment they have put earlier on into my education. Their support and commitment to education still continue in the family.

Most of all, I wish thank God Almighty for His outstanding grace and mercy, and for the ability and skills He gave me to complete this work. May His name continue to be praised.
ABSTRACT

This study was influenced deeply by among other issues the current socio-political reforms in South Africa, an overt paradigm shift in education and educational practices, growing concern for the environment and the need to empower teachers with environmental education knowledge, action competencies and skills through participation in curriculum development activities at both local and national level. The main aim was to uncover barriers towards the meaningful involvement and subsequent participation of teachers in environmental education curriculum development processes. This was done by determining teachers’ perceptions about involvement in environmental education curriculum development processes.

The literature review in this study revealed that teachers have been passive recipients and implementers of externally developed curricula both in South Africa and world-wide. No significant open-ended strategies have been formulated to involve teachers in curriculum development. The use of both the questionnaire and group interviews for this study proved to be very useful for providing insights into teachers’ perceptions about the issue of curriculum development and their involvement in such processes. Several obstacles towards successful environmental education curriculum development and the subsequent involvement of teachers have been highlighted.

The findings and recommendations of this research are expected to help elevate teachers’ interest and awareness on issues of curriculum development for environmental education and to enable them to realise the need to engage in collaborative participatory curriculum initiatives. Based on the findings of this study, it can be argued that networking among environmental educators from various schools at local, provincial and national level, as well as with other informal environmental education providers should be encouraged by establishing appropriate policy and structural support systems in the Department
of Education and Training. An appropriate model which highlights this idea, has therefore been developed.
CHAPTER ONE

INTRODUCTORY ORIENTATION

1.1 INTRODUCTION

Educational reform, including curriculum development, is taking place in a context of radical socio-political change in South Africa. While teacher driven curriculum development processes are not common in South African schools, the decentralisation of curriculum development now forms part of an educational transformation process currently in progress in the country. Policy documents also indicate a decentralisation of many school activities and the surrender of curriculum functions to local control (Reddy, 2000: 2). A wide range of studies in curriculum development have raised questions on the roles of various curriculum stakeholders, e.g., curriculum experts, teachers, communities, etc, in processes of curriculum development. One of the most significant issues is whether teachers should merely be implementers of 'pre-packaged' curriculum or active participants in both the development and implementation of curricula, (Carl, 1995; Bayona, 1995; Oliva, 1988; Robottom, 1987; Tanner & Tanner, 1980). These and other similar issues seem to come up in the light of failed efforts towards the final execution or implementation and actualisation of the intended curriculum outcomes. Bayona (1995: 1) acknowledges the fact that in most African countries the role of teachers is described in terms of narrowly circumscribed curriculum implementation. Teachers are not empowered to change curriculum components to meet local needs. In this regard, Oliver (1988: 38) clearly suggests that curriculum developers should begin with an attempt to change the people who will ultimately effect curriculum change by involving them in the process of curriculum development. This will gain their commitment to change.
The 1995 White Paper on Education and Training indicates that environmental education involving an interdisciplinary, integrated and active approach to learning, is to become a vital element of all levels and programmes of the education and training system (Department of Education and training, DET, 1995: 18). In a statement made by the Environmental Education Curriculum Initiative (EECI), Curriculum 2005 was announced as the first South African curriculum to include environmental concerns as part of teaching and learning (EECI, 1997). In 1993 the Southern African Development Community’s Environment and Land Management Sector (SADC ELMS) also initiated a programme to support environmental education processes in the Southern African region with the main task of developing, producing and distributing a curriculum framework for environmental education practitioners throughout the region (Lotz, 1999a: 1).

The introduction of environmental education, as well as new approaches to teaching and learning in South African schools poses many challenges to teachers. Critically significant, however, is the lack of environmental education and cross-curricula teaching in the past: “Although the practice of environmental education in South Africa has a history of about 14 years, past policies for its inclusion in formal curricula were limited by lack of broad participation and top down fragmented curriculum development approaches followed by the previous education departments prior to the 1994 elections” (EECI, 1997: 1). The teaching of environmental education calls for deeper commitment on the part of the teacher, as it should deal with local, national, as well as global environmental issues. It is therefore essential that teachers become fully involved in the development of environmental education in the school curriculum. Schreuder (1995b: 24) supports this statement by claiming that the development of environmental literacy and values supporting sustainable lifestyles can hardly be achieved through pre-packaged content ready to be used by teachers (without teachers being involved in the development of such material). The EECI (1997: 3) has expressed determination to support teachers and ensure their full
involvement in environmental education curriculum development processes. The challenge, which is the main focus of this study, is to determine if teachers are ready and willing to participate in such curriculum development processes.

In many ways the success of any education system, curriculum or education programme, finally seems to depend on its primary implementers (teachers). An environmental education curriculum is no exception to this norm, as Fien (1993a: vi) emphatically states: "...if environmental education is one of the social agencies through which the transformation to an ecologically sustainable society is to be achieved, then the role of teachers as change agents is vital". Barriers towards the meaningful adoption of such a role by teachers needs to be uncovered through research, in order to pave the way for deeper understanding and planning as part of an effort towards the involvement and subsequent participation of teachers in the development of environmental education in the school curriculum.

The new Outcomes-based education (OBE) curriculum in South African schools places greater emphases on a complete move away from a teacher centred approach to one in which the teacher is seen as a facilitator of learning. According to Lotz (1997:4), teachers and learners in the OBE curriculum will have opportunities to select appropriate knowledge and ways of teaching in specific contexts. The description of environmental education as a broad approach to education where the teacher is a facilitator, who allows learners to freely experience environments and decide on what they want to do and how they are going to manage a project, is further evidence of an amplitude of expectations of environmental educators within an OBE curriculum framework. Expectations of this nature could, however, prove to be futile or misconstrued if teachers are merely expected to adopt new change and implement it congruent with the intents and demands of environmental education in an OBE curriculum framework. More groundwork in terms of teacher preparedness and the need for teacher empowerment for these new challenges still needs to be done.
Teachers' perceptions about reform in education and the development of environmental education in the school curriculum in particular, needs attention and scrutiny through appropriate research, in order to provide clear ground for the development of appropriate strategies to facilitate a smooth transition from top-down approaches towards participatory based approaches to education provision and decision making in South Africa.

This study is therefore influenced deeply by among other issues the current socio-political reforms in South Africa, an overt paradigm shift in education and educational practices, growing concern for the environment and the need to empower teachers with environmental education knowledge, action competencies and skills through participation in curriculum development activities at both local and national level.

1.2. STATEMENT OF THE PROBLEM

Teachers have been passive recipients and implementers of externally developed curricula. No significant open-ended strategies have been formulated to involve teachers in curriculum development. Attempts to inform and train teachers in curriculum development activities, skills and knowledge have not been significantly fruitful. Moreover, this status quo has impacted negatively on the ability of teachers to produce the expected teaching and learning outcomes, as they often fail to interpret and identify with externally developed teaching and learning packages. This has robbed teachers of opportunities to judge situations and effect decisions in response to real life teaching and learning environments.

1.2.1. Research problem

What are teachers' perceptions on involvement in the process of environmental education curriculum development?
1.2.2. Other research questions

The following are a sample of questions this study will be pursuing:

- What is the meaning of environmental education?
- To what extent are teachers aware of local and/or global environmental problems?
- What is the status of environmental education in the Grade 7 school curriculum?
- What strategies have already been put in place, in attempt to ensure teacher involvement in environmental education curriculum development?
- What is the current policy on decision making and teacher involvement in curriculum development?
- Are teachers in their own opinion capable of making viable decisions on curriculum development?

1.3 AIMS OF THE STUDY

- To investigate and identify perceptions, views and concerns of teachers on their involvement in the process of curriculum development for environmental education.
- To reveal barriers to teacher involvement in curriculum development.
- To examine ways in which teachers can bring about maximum improvement into their classrooms by engaging in action research projects on environmental education curriculum development.
- To reveal strategies of empowering teachers to identify and change curriculum components to meet local environmental needs.
- To propose ways through which teachers can engage in developing skills, research and grapple with problems inherent in the process of curriculum development relevant to teaching and learning in the South African context.
1.4. SIGNIFICANCE OF THE STUDY

This study aims to be significant in alerting both the national and provincial departments of education on the need to move away from prescriptive and directive curriculum practices to more participatory approaches seeking to engage teachers in a meaningful way. The findings of this research are expected to help elevate teachers' interest and awareness on issues of curriculum development for environmental education and to enable them to realise the need to engage in collaborative participatory curriculum initiatives. The study also hopes to propose ways and strategies that curriculum developers, teacher training institutions and in-service providers can use in order to prepare teachers thoroughly in curriculum development.

This study further wishes to reiterate statements by various scholars of the curriculum on the importance of eradicating barriers to teacher involvement.

1.5. DELIMITATIONS AND LIMITATIONS

1.5.1 Delimitations

This research, however, will hopefully result in involving the whole of South Africa, due to the time constraints and limited resources the study will focus on the Northern Province, in particular Region 3, Sibasa Circuit of the Thohoyandou Inspection area. This will involve all Grade 7 schoolteachers in the area.

1.5.2 Limitations

The following are some of the constraints the researcher might encounter during the research process:

- the fact that most teachers are not familiar with the concept of environmental education;
feelings of suspicion amongst teachers that they are being evaluated due to changes in the Department of Education e.g. redeployment;

- contact persons (principals or selected teachers) forgetting or misplacing questionnaires; and

- lack of knowledge and skills in curriculum development.

### 1.6. DEFINITION OF TERMS

**Involvement** implies belongingness, an association, it presupposes a willingness, an urge to participate. It is not a passive concept but one that is accompanied and precipitated by action.

**Environment** entails interaction amongst the socio-cultural milieu, living things and life support systems (people and history in nature), all of which have contributed to the modern world we experience and the issues that it presents i.e., socio-ecological problems.

**Environmental education** can be defined as a process that seeks to develop the necessary knowledge, understanding, values, action skills and commitment to allow people (teachers, learners & community) to be proactively secure a healthy and properly functioning sustainable environment.

**A sustainable environment** is one in which the natural environment, economic development and social life are seen as mutually dependent and the interaction between them contributes to the sustainability and enhancement of the quality of people’s lives within the natural environment.

**Curriculum** involves all planned opportunities and experiences that occur between learners and teachers in schools, in order to achieve broad outcomes and related specific outcomes.
Curriculum development involves all processes necessary to create the curriculum and sustaining it in schools.

Grade 7 is year seven of the compulsory general education and training band in South Africa and comprises the Foundation Phase (grade 1-3), the Intermediate Phase (grade 4-6) and the Senior Phase (grade 7-9).

Outcomes-Based Education (OBE) approach in South Africa is driven by outcomes demonstrated by the learner at the end of the educational experience (process). It is based on the philosophy that all learners can learn by focusing on knowledge, understanding, skills, attitudes and values.

1.7. PROGRAMME OF STUDY

In order to foster understanding, this study has been demarcated into six chapters, as follows:

- The first chapter serves the purpose of providing a comprehensive background orientation to the study, with a detailed introduction.
- Chapter two provides a critical investigation of the literature on the theoretical background of environmental education, environmental education curriculum philosophies and, curriculum models for an environmental education curriculum, culminating in in-depth research on the current status of environmental education in an Outcomes-based education curriculum.
- The third chapter provides an in-depth critical analysis of literature pertaining to curriculum development, the role of teachers in curriculum development in general, and environmental education in particular according to some of the barriers identified in other studies.
- The next chapter (4) focuses mainly on an outline of the research methodology including a brief description and motivation for the methods and instruments used during the research process.
Chapter five details a critical look into the findings of the research, as well as the interpretation of results. A comparative analysis of the questionnaire and case study results will also be conducted.

The final chapter (6) summarises the entire study with a detailed outline of recommendations and concluding remarks.
CHAPTER TWO

THE ENVIRONMENT AND ENVIRONMENTAL EDUCATION PROCESSES

2.1 THE NATURE AND EXTENT OF ENVIRONMENTAL EDUCATION

2.1.1 The environment and nature of the environmental crisis

The development of both global and local environmental education seems to be significantly influenced and shaped by the dynamic state of the 'environment crisis' (Gough, 1997; Lotz, 1996; O’Donoghue, 1993; Janse Van Rensburg, 1995). Man's earlier understanding of the concept environment also played a major role in how the extent of the environment crisis was understood. When awareness of a possible environmental crisis first developed, the concept 'environment' was mostly used to refer to nature or the biophysical elements of our surroundings. Later, the concept of environment included urban and built surroundings. An even broader view includes four related dimensions, namely: the biophysical, economic, social and political environment (O'Donoghue & McNaught 1989; O'Donoghue, 1990).

Gough (1997:2) asserts that the field of environmental education resulted from the growing awareness of the threat of environmental degradation in the 1960's. Warnings about the magnitude and nature of the environmental crisis grew over the years and in the 1980's it became clear that attempts to overcome the economic limits to growth made certain physical and ecological limits explicit (Huckle, 1991:45).

Janse Van Rensburg (1995:20) claims that much of the earlier efforts to address the environmental crisis in the arena of education seemed to be characterised by rather limited conceptions of the environment, the nature of the crisis and the
actions to take towards a solution. The ensuing environmental crisis was manifested as global problems ranging from: increasing contamination of land; air and water; the growth in world population; and the continuing depletion of natural resources (Gough, 1997). Fien (1993a: 3) also indicates growing recognition of the fact that environmental problems cannot be understood without reference to social, economic and political values. An even broader view of the environmental crisis was accepted, as illustrated in figure 1:

Figure 1: The environmental crisis: A wheel of interacting global concerns (Janse Van Rensburg, 1994:2)

Adapted from Ekins (1993)
Van Rooyen (2000) has recently argued that in our endeavour to develop a better and reliable perceptive on the environment and the nature of the environmental crisis, we should not lose sight of the fact that the biophysical should remain our central point of focus. He explained that the biophysical should be our starting point in relation to the other dimensions (political, social, scientific-technological, & economic) of the environment and the environmental crisis. Van Rooyen warns that any attempt to ignore the biophysical would distort our understanding of environmental issues and result in a human-centred and biased view of the environment. A detailed illustration (Figure 2) of the 'environment' brings to light the fact that the meaning of the concept environment is constructed from a personal point of view influenced by different contexts.

Figure 2: The environment (Van Rooyen, 2000)
2.1.2 Responses to the crisis

The growing crisis and other concerns for the state of the environment resulted in early calls for an educational response. Gough (1997:3) reveals that most such calls originated from scientists who wanted more information and education about the environment. One of the global responses to environmental issues has been the defining of environmental education through a series of landmark conferences, viz. The 1977 Tbilisi declaration revisited at the Moscow conference in 1987 and the 1980 IUCN World Conservation Strategy revised in 1991 for the Earth Summit (O'Donoghue, 1993:29). Educational responses where, however, varied and somewhat misguided. They generally consisted of firstly, the transmission of knowledge about the environment (usually reduced to the biophysical) and secondly, the provision of 'nature experiences' aimed at developing appreciation and concern for the environment (O'Donoghue, 1993).

In South Africa, early movements of environmental education were known as 'conservation education', which tended to concentrate on education as the wise use of resources with its bases on ecology, as well as 'outdoor education', based on nature experiences (Irwin, 1990:4). It would seem that earlier environmental education movements in South Africa lacked a focus on the socio-political aspects of the environment, which could equally be attributed to the socio-political context of the time. Schreuder (1995a), however, believes that the environmental crisis and educational crisis in South Africa are closely linked. He blames most of the crisis to either poor education to disadvantaged communities and miseducation to the advantaged communities. This observation by Schreuder supports the fact that the environmental crisis undoubtedly has a socio-political dimension that needs appropriate educational responses.

It is mainly because of dissatisfaction with the above approaches to environmental education that wide-ranging debates on the actual nature of environmental education continuously surfaced in the educational arena.
Growing awareness of the manifestation of developmental and other social problems in the biophysical environment has been accompanied by a deeper understanding of socio-ecological issues (Janse Van Rensburg, 1994:1). This way of understanding of environmental problems has subsequently led to a broader understanding of the concept of environmental education.

Environmental education is now understood as being more than mere knowledge transmission and awareness-raising about environmental issues. Many environmental practitioners and educators describe it as a process that challenges the predominant power relations in society (Fien 1993a, 1993b; Huckle 1991; Robottom 1987; Spork 1992). According to Irwin (1990:3) environmental education is now seen as embracing two complementary concepts: on the one hand, it is about understanding political processes and creating political structures in order to be able to participate actively in decision making about environmental issues on a local, national and global scale. On the other hand, it is about acquiring the necessary knowledge and critical understanding of ecological principles and processes needed to make properly informed decisions about environmental issues.

The notion of education for sustainability has also come to light recently. Fien and Trainer (1993: 13-17) note the fact that environmental educators in a number of countries around the world accept the challenge of education for sustainability. They caution, however, that education for sustainability is not a simplistic notion to be adopted blindly, and that, an overview of current debates surrounding sustainability and sustainable development, is based on:

- unproblematic assumptions about education and social change;
- unproblematic views of social change;
- the failure to provide moral or political direction for pathways to sustainability;
- the simplistic assumption that environmental education about global environmental problems and strategies for sustainable development will change global development;
unrealistic expectations of schools and teachers; and
the emergence of approaches to environmentalism that emphasise the personal transformation of individuals (individualism) (Lotz, 1996:31).

Attempts to promote a good understanding of environmental education in school curricula will not be easy. Jickling (1997) cautions against attempts to be emphatic and conclusive in trying to define environmental education. He argues that the definition of environmental education for any individual will be that which squares with their idea of ‘education’ and which is operational in their setting. He further cautions that practitioners will resist the imposition of alien conceptions of environmental education.

Schreuder (1995a: 10) argues that in South Africa, changes to an education system that promotes unsustainable lifestyles could be met with suspicion from a community that had been denied access to economic growth and the most basic forms of material wealth for many years. The aim of most of those who are in schools (teachers & learners) seem to be influenced by the desire to become financially independent rather than to promote social justice and make meaningful contribution to environmental problem-solving. This poses a challenge and obstacle for environmental education in schools. Stevenson (1987:69) further argues that the problem solving, critical thinking, decision making, quality of life and active involvement prescriptions of the Tblisi principles and the socially critical and political action goals of environmental education are contradictory to traditional social reproduction purposes and practices of schooling. It describes the inherent tensions as a rhetoric-reality gap. In South Africa the challenge is to attempt to bridge this reality-rhetoric gap through collaborative and ongoing curriculum development processes. Schreuder (1995b: 25), however, cautions that it would not be wise to denounce orientation to and practice in environmental education not fully in accord with recent theory. Environmental education should be understood as an agent of educational change because of its dynamic nature. Jickling (1997:100) supports this notion
by asserting that environmental educators could be participants in furthering educational reform through observing the following:

- Stop using emphatic words such as 'the', 'only' and 'ultimate' when defining environmental education and its goals.
- Stop thinking of definitions simply as products, but as processes in which teachers, administrators, academics and scholars participate.
- Start placing more emphasis on the educational characteristics of environmental education — putting the 'education' back into environmental education. In order to do this, a common understanding of environmental educators and the educational community should be sought.
- Practitioners and scholars should advance their understanding of environmental education based on the above common understandings, as tentative or working, definitions and invite others to participate in their adoption, implementation and/or revision.

Jickling's proposals should bring to light the fact that environmental education ideas are too complex to be viewed as simplistic. A challenge therefore exists for all involved in environmental education to participate in continuous debates and attempts to develop a better understanding of environmental education, relevant to various educational settings.

2.2 PHILOSOPHIES REGARDING AN ENVIRONMENTAL EDUCATION CURRICULUM

Peoples' understanding and perception of the environmental crisis and the way they respond to it educationally contributed to the shaping of environmental education processes in both formal and informal settings in many ways. Environmental education could therefore be seen as a product of both the older and emerging worldviews. To some extent it reflects the contradictions and conflicts that accompany a major paradigm shift (Gough, 1987:52). The theoretical basis of various environmental education school curricula world-wide largely depends on different philosophical orientations that underpin societies.
Fien (1993a: 5) points out that the study and practice of 'curriculum' has been approached in many different ways of educational enquiry, because of the different epistemological and ideological orientation of educational researchers. In turn, such differences give rise to distinct approaches to curriculum theorising.

Based on differing ideological perspectives, three different forms of environmental education can be identified, described and critiqued by environmental educators in diverse ways (Fien 1993a, 1993b; Huckle 1991; Lotz 1996; Robottom 1987; Robottom and Hart 1993; Schreuder, 1995a; & Spork 1992). These discrete forms of environmental education include:

- Education **about** the environment which emphasises knowledge about the natural systems and processes and the ecological, economic, and political impact of human decision making in the use of the environment.
- Education **through or in** the environment which emphasises students' experience in the environment as a means of developing learner competencies and value clarification capacities.
- Education **for** the environment that has an overt socially critical agenda of values education, social change and transformation through action-based exploration and involvement in the resolution of environmental problems (Fien, 1993a: 15-16).

The educational orientation of this study is located in the theoretical assumptions and ideological position of education for the environment, as described by Fien (1993a) and Robottom and Hart (1993).

According to Schreuder (1995a: 5), historical development of the concept of environmental education reflects mainly three different discourses which correspond to education **about**, **in** and **for** the environment respectively: **positivist** (also behaviourist), **interpreteivist** (also constructivist) and **social critical**.
The positivist/behaviourist approach is based on traditional educational practices, which asserts that social reality is objectively constituted, the view that education could be value-free, and the bureaucratic rationality of RDDA (research, development, dissemination, adoption) curriculum development practices (Di Chiro, 1987:42). The intention is basically to increase environmental awareness through factual knowledge and predetermined curriculum content. The ultimate aim is behaviour modification for positive environmental behaviour (Robottom & Hart 1993). O'Donoghue (1993: 30) argues against the notion of environmental education as a message communicator merely aimed at causing behaviour modification towards the love of nature and environmental awareness. Emphasis is placed on learning facts about the environment, e.g. biological, geographical and scientific facts based on traditional disciplines.

A major disadvantage of the above approaches to the process of environmental education and curriculum development is their technocratic orientation to education. According to the behaviourist approach, curriculum materials, if properly prepared, can bring pre-existing, positive solutions to classroom practitioners; centrally developed solutions have universal effectiveness; and there is a 'passive' consumer in schools (teachers and learners alike) at the end of the delivery system (Robottom, 1987:98). The teacher's role is perceived as that of a 'technician' implementing education values determined by others.

Interpreteivist/constructivist approaches involve the encouragement of learners' experiences in the environment as a medium for environmental education, popularly known as education in or through the environment (Schreuder, 1995a: 6). Gough (1987:59) argues in favour of nature experiences through 'earth education': "My experience satisfies me that Earth education techniques are effective in developing learners' perceptual skills regardless of the subject matter". It is argued that school-based curriculum development seems to form part of this paradigm. The interpretive approach to environmental education is essentially based on four assumptions:
1. The best source of environmental knowledge is the environment itself.

2. The best form of environmental inquiry is the experience gained through interaction with the environment.

3. Subject matter to be gained through this kind of interaction is empathetic insight, emotional commitment and understanding of particular environmental situations.

4. The important outcome of environmental education is not the development of generalisable, systematic knowledge about the environment, but an increased capacity to act morally and effectively in preserving the environment (Robottom & Hart, 1993:23).

**Socially critical approach** to environmental education involves learners, teachers and community agencies in collaborative investigations of real environmental issues in their local environment (Hart & Robottom, 1993:24). A socially critical curriculum encourages participants at all levels to adopt a research stance towards their own environmental education activities. Proponents of a socially critical approach to environmental education argue against uncritical curriculum theories and practices that only serve to reproduce values of the dominant social paradigm and of political agendas (Fien 1993a, 1993b; Lotz 1996; Janse Van Rensburg 1995). A socially critical approach has implications on the way in which teaching and learning should take place in schools, and on the content of the curriculum. Fien (1993a: 12) identifies and explains five characteristics of critical pedagogical practice in an environmental education curriculum, or as **education for the environment**, emphasising the following:

1. Development of a critical environmental consciousness, based upon:
   - a holistic view of the environment as a totality of the interdependent relationship between natural and social systems;
   - a historical perspective on current and future environmental issues; and
the study of the causes and effects of environmental problems and alternative solutions through an examining:

(i) the relationship between ideology, economy and technology, and
(ii) the linkages between local, regional, national and global economies and governments.

2. Development of critical thinking and problem solving skills through a variety of practical and interdisciplinary learning experiences that focus on real-world problems and involve the study of a wide range of sources and types of information.

3. Development of an environmental ethic based upon sensitivity and concern for environmental quality.

4. Development of environmental understandings, attitudes and skills of political literacy, which promote participation in a variety of forms of social action to help improve and maintain environmental quality.

5. It also requires teaching strategies that are consistent with its goals.

Education for the environment therefore constitutes a challenging critique of the way that uncritical curriculum theories and practices reproduce values of the dominant social paradigm (Schreuder, 1995a).

The failure of environmental education to take its rightful place in the school curriculum has been blamed largely on the modernist view of society and the environment. Modern and advantaged communities are characterised by wasteful consumerist lifestyles and environmental illiteracy resulting in miseducation (Schreuder, 1995a). He further adds by identifying some typical manifestations of these modernistic mindsets that include:

**Anthropocentrism** – human beings are at the centre of all significant concerns.

**Scientism** – a predominant belief in the power of science and technology.

**Reductionism** – reducing reality to its simplest elements in order to understand the functioning of the whole.
**Technisism** – an uncritical belief that every problem has a technical solution.

**Materialism** – the earth is a machine, and nature may be manipulated and exploited without reverence for its intrinsic value.

**Individualism** – fostering the idea of an isolated, independent individual.

The issue of curriculum development and theorising will remain unresolved if the actual practice does not fulfil the expectations of critical curriculum theories. Stevenson (1987: 75) mentions the gap that still exists between the theory and practice of environmental education within the school curriculum: "...whereas a curriculum in environmental education is emergent and problematic in that the content arises as students are involved in specific environmental problems, most school curricula are predefined since they are designed to serve predetermined behaviourally specific needs". Hart (1993:118) notes that such contradictions manifest as fundamental pedagogical contradictions between environmental education and schooling and argues for teacher participation to improve environmental education in schools. A challenge to South African curriculum development processes is to strive towards adopting a more critical stance involving those who need to implement curriculum at grassroots level. The fact that most school systems are still comfortable with developing skills that are not overtly value based and often uncritical is cause for concern (Sterling, 1993).

It would, however, be unrealistic to expect teachers and schools to involve their learners in active thinking, knowledge generation and problem solving activities when they (the teachers) do not engage in critical and collaborative curriculum development processes. Schreuder (1995a: 10) cautions that the opportunity to contribute towards the development of acceptable and practicable curricula that also reflect contemporary international discourses of environmental education, in the formal education school curriculum should be approached with circumspection and wisdom.
Given the socio-political moves towards democracy and social change in South Africa and the development of participatory, learning and learner-centred approaches to environmental education (Lotz, 1995), this study represents an exploration of the praxis of socially critical environmental education in participatory curriculum development processes.

2.3 CURRICULAR ALTERNATIVES FOR ENVIRONMENTAL EDUCATION

Throughout the development of environmental education, its relative importance of being a separate subject, or 'an orientation' within the whole curriculum has been actively debated (Gough, 1997: 74). More recently, the debate has resurfaced in arguments in support of a socially critical approach to environmental education. This could offer a holistic alternative to the knowledge-based approaches of both the separate subject and orientation across the curriculum approaches.

2.3.1 Environmental education as a separate subject

The notion of environmental education as a subject has been much debated. Gough (1997:75) reveals that during the 1970s, the vast majority of people (practitioners) involved in environmental education opposed the establishment of a new separate subject not only for strategic reasons (because it would overlap or compete with existing subjects), but also for epistemological reasons. The concern is the fact that the current curriculum is already overcrowded. A disciplined-centred approach for environmental education is also seen as positivist and technocratic, aiming at compartmentalising knowledge (Robottom, 1987: 100). It is argues that the discipline-centred curriculum implies fragmentation of knowledge consistent with the specialised nature of technological processes in the wider community to the extent that environmental education is associated with the science discipline.
Environmental education has existed as a separate subject in school curricula worldwide albeit in different formats. Gough (1997:75) reveals that environmental education has been existing in Australia as a separate subject for some time, generally entitled 'environmental science' or 'environmental studies'.

2.3.2. An interdisciplinary approach to environmental education

A primary aim of environmental education is to enable human beings to understand the complex nature of the environment, including interaction of its biological, physical, social, economic and cultural aspects (UNESCO, 1980). Environmental education thus represents an educational approach that incorporates considerations from the environment and environmental issues rather than being a separate part of education (Neal & Palmer, 1990:6). Attempts to classify environmental education as a 'science subject' therefore implies that the scope of environmental education is limited. Robottom (1987:100) adds that environmental problems mainly concern the quality of life issues — they have a conceived social component and such problems can therefore not be resolved by applying any one discipline.

A great concern about the interdisciplinary nature of environmental education in the school curriculum is that teachers are not ready to teach across the curriculum. Many teachers are used to the traditional set-up of separate subjects. According to UNESCO (1980:78), the interdisciplinary approach of environmental education cannot be achieved without the active participation of teachers. Simmons (1988:17) recommends that teachers need to be shown that a strong scientific background is not a prerequisite for teaching environmental education. The involvement of teachers in curriculum development processes implies that teachers are able to work collaboratively across disciplines.

In South Africa the Environmental Education Curriculum Initiative (Janse van Rensburg & Lotz, 1998) has as one of its main aims, to support a cross-curricular
and integrated approach to environmental education in the curriculum. The new Curriculum 2005 recognises environment as a cross-curricula phase organiser and the implications of this are that all learning programmes at all levels of the education system should integrate an environmental focus to a particular learning programme where appropriate (Lotz, 1999b). This study supports the principle of environmental education involving an interdisciplinary, integrated and active approach as a vital part of every level of education (Department of Education and Training, DET, 1995).

2.4 ENVIRONMENTAL EDUCATION AND AN OUTCOMES-BASED CURRICULUM FRAMEWORK

The process of democratisation and a concerted effort to address political injustices in South Africa's past through the transformation of the national education system has resulted in a shift to an outcomes-based curriculum (Janse Van Rensburg & Lotz, 1998:11). This implies a move from traditional methods of teaching and learning to learner-centred approaches, with the teacher becoming a learning facilitator. Learner outcomes (what learners know and can demonstrate) are emphasised instead of teacher inputs (what teachers do) (Le Grange & Reddy, 1997:13). Outcome-based education also implies defining, identifying and describing specific outcomes in order to ensure that both the learning process and the assessment of learning are overt, integrated and continuous. In South Africa, outcomes-based education is intended to be a vehicle for achieving the integration of education and learning as well as access to life-long learning. Le Grange and Reddy (1997) argue that issues such as development, equity, participation and redress should therefore be central to an outcomes-based system. The implication that this system has on the process of curriculum development is that it should be inclusive and participatory.

The outcomes-based curriculum framework for education and training in South Africa provides a range of opportunities for extending specific outcomes to
include environmental concerns which can be included in learning programmes and thus be translated into teaching and learning activities (Janse Van Rensburg & Lotz, 1998:11). The inclusion of ‘environment’ as a phase organiser in the school curriculum implies that environmental education is a cross-curricula concern within all learning areas. This will provide context and focus through which specific outcomes can be achieved at all levels of general education and training. The practical aspects of environmental education in an outcomes-based, cross-curricular framework have, however, not been explored sufficiently in South Africa. Parallels between environmental education and outcomes-based education include the following:

- In theory, both outcomes-based education and environmental education focus on relevance to the needs of society as well as relevance to learners’ current and future needs.
- Both focus on a holistic approach to curriculum development and emphasise the importance of integration and a cross-curricular approach.
- In both approaches the development of the whole person (learner) is of paramount importance.
- Outcomes-based education and environmental education are value-oriented with integration of knowledge, skills and values.
- Both approaches are learner-centred and encourage active learning on the part of learners, by involving them in real and simulated actions.
- The importance of life-long learning is emphasised.
- Critical thinking plays a central role in both approaches (Le Grange & Reddy, 1997: 14).

There is a need for links between outcomes-based education and environmental education to be actualised in practice through rigorous curriculum development processes that involve teachers. 'Adopting a socially critical' stance in environmental education would therefore ensure that the all stakeholders are involved in the process of implementing environment education across curricula.
According to Janse Van Rensburg and Lotz (1998), environmental education would also reflect the theory of education for the environment because of its critical stance in an outcomes-based framework. They also identified some action competencies or citizen action skills, which all learners will need to develop, as follows:

- An understanding of social, economic, political and biophysical systems and their interactions;
- the nature and effects of environmental issues;
- the nature of and the need for sustainable resource use; as well as
- the capacity to address environmental problems and develop ways to move the society towards sustainability, thus ensuring the well being of its citizens and its place as a contributor to, and not recipient of, the international economy.

2.4.1 Concerns about environmental education in an Outcomes-based Education framework

Significant implications and challenges are posed by the introduction of an Outcomes-based education approach for environmental education.

A blind and rigid focus on learning outcomes may also be problematic because it will be deterministic and limiting towards achieving broad and socially critical goals of environmental education. Hughes (1996: 58) argues that as a result of policy makers in central government determining outcomes, level standardisation will result, and educational quality would thus become questionable. Political leaders may prescribe valued outcomes with the exclusion of other cultural minorities. To determine learning outcomes centrally is in itself problematic. Le Grange and Reddy (1997: 15) reveal that the first set of specific outcomes with an environmental education focus were removed from many of the learning areas by a centrally controlled committee of twelve ‘experts’. The issue of the
centralisation of curriculum development processes contradicts the critical orientation and focus on local context of environmental education processes. Lotz (1997:5) argues: "...if our education system aims to encourage our learners to use knowledge creatively and solve environmental problems and risks in complex and diverse environments, then confining ourselves to measuring the behaviours specified by the outcomes may leave us with a narrow, behaviourist orientation to education in South Africa". Curriculum development processes therefore need to focus on how outcomes can best be used in teaching and learning to the benefit of environmental education.
3.1 DECISION-MAKING STRUCTURES AND TEACHER INVOLVEMENT IN CURRICULUM DEVELOPMENT

The distribution of decision-making powers and degree of involvement and participation amongst national and local stakeholders has changed over time in curriculum development processes. It largely depended on the traditions of curriculum planning and political orientations of a given country. Grundy (1987:41) asserts that traditional curriculum theories divide curriculum processes into design, dissemination, implementation, evaluation and innovation. Important aspects of curriculum development are thus portrayed as taking place away from the sites of classroom practice, and only penetrate such sites as prescriptions to be put into effect at the chalk face. Grundy's assertions raise important questions around curriculum development and how decision-making structures influence these processes in various education systems.

Lewy (1991:22) claims that in emerging educational systems of the third world, priority was given to establishing a national curriculum, was expected to strengthen national identity, contribute to modernisation of the education system and hasten provision. O'Donoghue and McNaught (1989:17) argue against 'social engineering' and 'centre-to-periphery' models of change, which have dominated the politics of curriculum development movements, especially in developing countries. A clear example of the above is cited by Leung Yat-Ming (1991:81), stating that "...from a comparative perspective, it can be seen that the pattern and problems of curriculum in post-1976 China bear resemblance to those experiences of other developing countries in Asia, Africa and Latin America on the following feature: there is a highly centralised and confined system of
curriculum development". There is, however, also an absence of an effective coordinating mechanism furthermore, the required institutional supports:

- are not adequately developed;
- have a high degree of elitism in the decision-making process about appropriate forms of knowledge and participation in curriculum planning;
- have an abundance of curriculum changes aimed at achieving immediate political or economic impact;
- reflect changes that are mainly applied to an academic, subject-centred curriculum; and
- transplant the façade of foreign trends is viewed as a shortcut to modernisation.

A major deficiency with highly centralised decision-making structures is that the functions of curriculum development are narrowly vested in central curriculum development agencies with minimal or no local initiatives. Reliance on centralised educational decision-making could, prohibit democracy from developing within the education system. The result could be teacher passivity and decreased teacher professionalism (Shin & Huh, 1991:176). Past governance in South Africa also promoted a highly centralised system of decision-making in both political and educational spheres. Clacherty (1993:4) reveals that South African education structures presented a system with a top-down, expert-driven approach that did not allow for consultation, and excluded the voices of those outside the circle of experts. Consequently, principals and teachers have been implementing policies and decisions taken by education authorities at central and provincial level (Steyn & Squelch, 1997:1).

After the 1994 elections, change in government and political orientation towards a more democratic system of governance resulted in calls for participatory and consultative forms of decision-making in South African education. In this regard, the White Paper on Education states that "...the principle of democratic governance should be increasingly reflective of every level of the system" (DET,
Lotz (1996:46) adds that education policy documents that were developed as South Africa moved towards a new democracy, all emphasised the importance of teacher participation in curriculum development and educational decision-making. However, evidence of participatory approaches to decision-making still remains to be seen.

In contrast to developing countries with highly centralised curricula, full authority for curriculum decisions in the United States of America and Britain was delegated to the local authorities, thus empowering schools to exercise autonomy in curriculum issues (Lewy, 1991:23).

3.2 TEACHER INVOLVEMENT IN ENVIRONMENTAL EDUCATION CURRICULUM DEVELOPMENT

From a literature study it seems clear that teacher involvement in curriculum development processes is fundamental to successful curriculum implementation. Carl (1995:268) argues that teacher involvement is essential for successful and meaningful curriculum development as teachers will be the eventual implementers and will experience the problems first hand. Participatory orientations to curriculum development have been influenced by global trends towards the democratisation of institutional and social life (Lotz, 1999a: 23). However, teachers are expected to play different roles during curriculum development processes. Perceptions, on which role teachers should assume, differ on the basis of educational policies that are influenced by different educational values and philosophies. Ben-Peretz (1990:57) identifies three different roles teachers could assume in curriculum development and implementation, namely:

(i) Teachers may be treated as transmitters of curricular ideas through ‘teacher-proof materials. Curriculum development here is based on ‘positivist’ notions of control and Research, Develop, Disseminate and Adopt (RDDA) model (Robottom & Hart, 1993:21). The assumption here is
that a central curriculum agency develops a set of environmental education materials and ensures quality of the end product by excluding teachers in the process of development. This deterministic model (RDDA) creates a situation where research teams or ‘experts’ are creators of material or curriculum packages and teachers are viewed as technicians who implement the materials in schools (Lotz, 1996:43). Lotz further claims that the deterministic and technisist nature of this model has been compounded in South Africa by political issues of control and management to ensure ‘order’ and ‘structure’ to the divided education departments of the apartheid regime. She further summarises the challenges levelled against RDDA strategies in South Africa and elsewhere as follows:

- the inherent social engineering, assumptions and the view of social change through rational management and innovative diffusion;
- the managerial-hierarchical outlook (top-down and centre-out approach);
- the reductionist and rationalist assumptions of the centre to periphery concept of change;
- the lack of participation by end users of the materials and the view of teachers as technicians;
- the disregard for the contextual variation of users (teachers);
- the tendency to obscure the actual conduct of the situations in which the changes are being applied; and
- the symbolic and functional relation to the technicisation of everyday life.

(ii) Teacher impact on curriculum implementation is recognised, however, attempts are made to convert teachers to the ideas and practices embodied in curriculum materials by way of workshops and other training activities. The thinking is that externally developed curriculum materials will help teachers to promote environmentally responsible behaviour, by adopting the principles embodied in such materials. This is behaviourist organisation that seeks to control the teaching of environmental education
by a set of externally developed materials (Robottom, 1987). In most cases, teachers are invited to professional development workshops for the purpose of helping them implement new curriculum in congruence with the intent of its developers. According to Oliva (1988:39), no persons (teachers) should be involved in the planning process for window dressing when it is a foregone conclusion that curriculum change will be implemented whether they like it or not. O'Donoghue and McNaught (1989:20) argue that contrived and manipulative participation does not depart from centre-to-periphery ideology. They also criticise the development of curriculum development workshops around contrived problem solving situations aimed at enabling teachers to construct what had already been determined the external and rational processes which produced the kits.

(iii) Teachers are assumed to participate in the curriculum development process as 'user-developers'. This view assumes that both teachers and curriculum specialists form the professional core of curriculum planners (Oliva, 1988:40). The notion of teachers being full partners in curriculum development clearly departs from the managerial-hierarchical and teacher as technician approaches to curriculum development, towards participatory forms of curriculum development.

Some advantages of teacher involvement in curriculum development processes are discussed as follows:

3.3 TEACHER PROFESSIONALISM AND INVOLVEMENT IN CURRICULUM DEVELOPMENT

The issue of whether teachers are true professionals has been debated much over the years. The focus of this discussion is on teacher professionalism in congruence with curriculum development. Oliva (1988:40) equates the role of
curriculum specialists with that of teachers when stating that they form the professional core of curriculum planners.

3.3.1 Concerns about teacher professionalism in curriculum development

Perceptions about teachers' ability, knowledge and professional capability have to a large extent contributed to level or degree of teacher involvement in curriculum development processes. According to Lewy (1991: 67) curriculum reform of the 1960's viewed the process of curriculum development as a highly professional activity to be carried out by teachers. Curriculum development experts have shown sensitivity to teachers' lack of ability to use their sophisticated curriculum (curriculum developed by outside experts) rather than to their own (experts) lack of experience in dealing with classroom situations.

The notion of 'teacher as technician' where the teacher's duty is only to execute prepared curriculum materials has also been cause for much criticism. There is widespread agreement that the 'teacher as technician' approach denies teachers the right to participate meaningfully in curriculum development (Tanner & Tanner, 1980; Bayona, 1995; Carl, 1995; Robottom, 1987). Tanner and Tanner (1980:625) specifically state that, "...the teacher as technician is an antithesis of the teacher as professional". Teachers' roles in the educational arena are thus reduced and undermined. They are viewed as classroom bound and as mere parrots of externally developed curricula. According to Wade (1996:14), the 'teacher as technician paradigm' separates research from practice and reduces teachers' roles to that of classroom automatons. The question is whether professional teacher autonomy is a myth or slogan only. Teachers who tend to follow their textbooks page by page, is also a cause of concern for the success of many curriculum development processes (Ben-Peretz, 1990).
3.3.2 The involvement of teachers in curriculum development and professionalism

Teachers are knowledgeable specialists in their own fields of teaching. This implies that their ability to contribute to any curriculum development process is worth considering. Tanner and Tanner (1980:630) believe that a true professional is involved in building the knowledge base for his or her field. When teachers are limited to classroom practice their ability to contribute meaningfully to knowledge construction will not be realised. According to the findings of Saber and Shafriri (1980: 208) the aim for involving teachers in curriculum development in Israel was to bring about a greater appreciation of teachers' experience in the field and a desire for independence and professional advancement. Teachers' professional ability to handle environmental education in practice seems to be influenced by the degree to which they are involved in the construction and development of environmental education processes. Shin and Huh (1991:176) argue that, by giving teachers the opportunity to take charge of determining the curriculum, professionalism will be stimulated, because teachers are the professionals who implement the curriculum. Educational principles such as autonomy, individuality and creativity can only be realised when teachers are viewed as professionals and encouraged to enhance their professionalism.

It should not be assumed, however, that all teachers are automatically professional in their practices by virtue of their certification as qualified teachers. Hagreaves (cited Lewy, 1991) argues against exaggerated hopes with regard to professional teacher capabilities by claiming that teachers are present-oriented and conservative, experience difficulties in incorporating continuous collaboration with others in their daily work and often revisit involvement in whole school decision-making. A number of professional competencies from which objectives and content for teacher education can be developed and which should be expected from a concerned and innovative environmental educator, are outlined by Fien and Tilbury (1998: 8) as follows:
- an appreciation of the urgency of integrating issues of sustainability into the curriculum;
- an awareness of the historical development of environmental education;
- an appreciation of education for sustainability as a cross-curricular theme;
- an understanding of the philosophy, characteristics and goals of contemporary education for sustainability;
- an understanding of the differences between environmental studies/sciences and education for sustainability or environmental education;
- an awareness of a variety of child development and learning theories and the ability to use these theories;
- the ability to utilise appropriate theories of moral reasoning and political socialisation in selecting, developing and implementing teaching and learning strategies to achieve the goals of education for sustainability;
- the ability to identify the relevance of subject specialisation to education for sustainability and to enrich their subject teaching through developing this link;
- the ability to employ a variety of teaching and learning styles, including individual to whole class learning; active to passive learning; co-operative to competitive learning, disciplinary to interdisciplinary learning, and including activities such as games and simulations, fieldwork, issue investigations, case studies and action research activities;
- the ability to plan, facilitate and assess issue based learning;
- the ability to develop values clarification and analysis skills with students and to assess them appropriately;
- the ability to discuss environmental fears and feelings with students;
- the ability to develop and assess conflict resolution skills;
- the ability to plan, facilitate and assess the action-oriented component of environmental education;
- the ability to teach and assess learning in outdoor settings;
- an awareness of the contributions and impacts of the hidden curriculum in achieving the goals of environmental education;
- the ability to critically evaluate environmental education teaching and learning through the use of a variety of assessment approaches; and
- the ability to carry out an environmental audit in a school setting.

It would, however, be unrealistic to expect teachers to have developed all the above competencies in the South African context and worldwide. These competencies would rather serve as a planning framework for curriculum development processes and not as pre-requisites for teacher involvement (Fien & Tilbury, 1998). Doll (1992) argues that the curriculum can be improved if teachers acquire the necessary insights, skills and attitudes for planning and implementing curriculum change through in-service education and staff development programs.

The previous political dispensation in South Africa has influenced the views and understanding of the professional abilities of teachers, with regard to curriculum development through a philosophical view of education. Baxen and Saudien (1999:131) claim that the system of teacher education in South Africa is influenced by fundamental pedagogics and its philosophical position. This seeks to construct teachers simply as practitioners who are subject to specialists or pedagogues. It contributed to the training of teachers who lacked the ability to exercise their professional autonomy. It is argued that the authority and curricular competence of teachers were undermined to such an extent that they were prevented from developing an understanding of the relationship between education and the context in which knowledge and understanding are created and shared. It would be naïve to conclude that the long-term effects of past perceptions on teachers and the nature of teacher education have simply disappeared with the ushering in of the new curriculum. Against this background, the history of South Africa's fractured and heirachalised system towards teacher education and professionalism becomes clear. Teacher involvement in curriculum development processes should be a matter of profound concern.
3.4 THE INVOLVEMENT OF TEACHERS IN CURRICULUM DEVELOPMENT AND PROFESSIONAL DEVELOPMENT

Lotz (1996) argues in favour of an interaction and interdependence between curriculum development, materials development and in-service training (INSET) or continuing professional development programmes. It is argued that teachers are able to, and interested in, developing curricula if given the opportunity and provided with an appropriate INSET process to enable authentic teacher participation and the development of reflective practice. In South Africa, the current (Outcomes-based education) understanding is that good teachers are self-motivated learners whose professional development occurs through informal means such as reading, curriculum development activities, research etc. (Department of Education & Training, DET, 1998). According to the Department of Education’s document on the norms and standards for educators (DET, 1998:131), the involvement of teachers in curriculum development activities will be recognised for compulsory re-licensing and appraisal after every five years. However, the document does not spell out how the Department of Education and Training intends to support teachers or to promote teacher involvement in curriculum development activities. The document categorises curriculum development as an informal professional development activity, and mentions that informal INSET will be formalised. One could argue that there should be a clear commitment by government towards supporting teachers as curriculum developers. This would ensure that changes in orientations about curriculum development are made practical.

Problems of marginalising teachers during curriculum development processes are common to many professional development programmes. Robottom (1987) argues against the conventional construction of professional development programmes in environmental education, which creates and maintains a gap between theory (researchers or curriculum experts) and practice (teachers). According to him this ‘conventional instrumental research’ tackles the problem of
how to bring the 'practice of teachers into line with the theory of the academy'. This view of professional development assumes that teachers' activities are purely practical. Therefore, their role in professional development is that of a recipient of external and well researched educational theories about their own environmental education practice.

As much as curriculum development, professional development should recognise the theories of environmental education practitioners, including their presuppositions about curriculum and teaching practice (Robottom, 1987). Robottom argues for action research as an appropriate inquiry base for professional development. It is a form of inquiry undertaken by participants (teachers) in educational and social situations in order to improve the rationality and justice of their own practices, their understanding of such practices, and the context in which they occur. Professional development should therefore offer opportunities for teachers to reflect, critique and make decisions about their own environmental education practice.

3.5 CURRICULUM DEVELOPMENT AND LOCAL CONTEXTS

Combleth (1990:13) distinguishes two curriculum development approaches as follows:

(i) The technocratic approach to curriculum decontextualises curriculum both conceptually and operationally and views it as a product or document. The teacher is cast as a manager or passive implementer of expert designs.

(ii) Curriculum contextualisation implies that curriculum is a social process, and is created and experienced within multiple, interacting contexts. This view of curriculum as essentially contextualised is clearly different from technocratic conception of curriculum development which tends to be more 'participatory and socially critical' (Robottom, 1987; Lotz, 1996).
According to (Fien, 1999: 23) local control of the curriculum has diminished over the past years due to major educational reforms to centralise curricular and mandate standards of students' performance. Fien suggests that two major changes to curriculum development and implementation are needed in order to reorientate curricular for sustainability. These are first, the need to decentralise many aspects of curriculum decision-making to local level, especially to individual schools and teachers. Secondly, there is a need to establish processes of monitoring and moderation so that assessment and certification can be managed at local school level. The relevance of any curriculum to local needs and context is a crucial issue that needs to be considered in any curriculum development process. Ideals to be achieved by an environmental education curriculum should therefore not be prescriptive but should allow for relevance, flexibility and local emphasis (EEPI, 1995). According to Gough (1992), both natural and built local environments, should be used as an inspiration for learning experiences in as many curriculum areas as possible, making use of every opportunity to study local environmental issues and acting upon local problems, while critically examining local environmental policies and practices.

Consideration of local contexts in environmental education curriculum development processes will not be possible if teachers do not participate in the process. Conbleth (1990:6) argues that curriculum is shaped contextually. Teachers are therefore well suited to bring local perspectives into the curriculum. It is unrealistic to expect intentions, materials and methods for a given curriculum package to be relevant or applicable to every school, classroom or student without teacher or local inputs (Bayona, 1995:42). Complete reliance on centrally based curriculum experts would also mean that the curriculum remains independent of teachers and ignorant of local environmental settings and issues.

Robottom (1987) argues against conventional (RDDA-type) perspectives of educational reform which seeks to separate theory from practice by assuming that 'educational theory' resides in the language of researchers in the academy;
that teachers are 'atheoretical', and that their activities are purely practical. This way of thinking technocrisis education and seeks to divorce practical local environmental issues and experiences from educational theory. Grundy (1987:50) echoes this statement by stating: "Teachers are often denigrated for having scant regard for theory, yet the technological consciousness which places theory in authoritative, hierarchical relationship with practice has so often left teachers feeling betrayed".

Grundy further explains that the implication is that theory comes from elsewhere, and is 'put in practice' by the 'artisans' (teachers) in the teaching context. Teachers know their learners, classrooms and school milieu in a way that central curriculum developers can never know (Ben-Peretz, 1990:8). According to Robottom (1992), the ignorance of teacher participation in environmental education is behaviourist and results in environmental education practices being shaped by research activities and educational decisions conducted elsewhere, away from the actual context of the struggle to reconstruct the curriculum. Teachers have personal experiences, practical knowledge, close contact with the local environment and an understanding of local environmental issues which could form the basis of the environmental education curriculum. Lessons gleaned from business, professional and social organisations suggest that teachers should be treated with respect, that innovative ideas originating from grassroots level should be given full consideration, and that teachers' readiness to do curriculum work should be handled gracefully (Doll, 1992:292). Curriculum development should therefore be an ongoing social activity shaped by various contextual influences within and beyond the classroom and accompanied primarily by teachers.

Curriculum 2005, which focuses on outcomes-based education in South Africa, enables school-based learning programme development around local environmental issues (Lotz et al, 1998:5). At local school level, learning programmes should therefore be contextualised to cater for the needs of
learners, available resources and the local environment. This is a complex process that could be confusing to teachers, given the number of new concepts and challenges within the process of transforming an education system. Support and opportunities for teachers to engage in meaningful debates around these curriculum issues will therefore be needed.

3.6 TEACHER EMPOWERMENT THROUGH CURRICULUM DEVELOPMENT

The clarification of teachers' commitment to environmental education, together with their willingness and capacity to adopt new roles as curriculum developers, facilitators of learning and assessors, make teacher education, a vital aspect of the reorientation of environmental education curricula at both the pre-service and the in-service levels. It is, however, common to blame curriculum failure on teachers who in many cases had been excluded from curriculum development processes. Robottom (1987:99) asserts that the teacher's role is perceived as that of a technician implementing educational values determined by others, while the failure of innovation is accounted for in teacher-deficit terms.

The process of curriculum development should however be considered as a form of teacher empowerment in their professional practices (Doll, 1992). In this study, the empowerment of teachers is not seen as, "...an interaction but a transaction in which A provides opportunities for B to use power, while B takes it upon himself/herself to take power, however power resides neither in A nor B, but in the complexity of actions involved in power itself" (Steyn & Squelch, 1997:2; Maxcy, 1991:148). There is a need to move away from a situation where teachers are readily distinguished from specialist curriculum experts, and where detailed prescriptions for practice are derived from the findings of the latter and imposed on the former, towards a situation in which teachers are both expected to, and competent to make the most of their decisions about what to teach and how to teach (Barrow, 1984:261). It is the process itself that empowers both
those who are regarded as experts and teachers. Steyn and Squelch (1997:1) reveal that empowerment covers three areas:

(i) **Knowledge** is power, implying that an increase in knowledge is an obvious step to empowering teachers.

(ii) **Status** is seen as the ability of teachers to look upon themselves with dignity and respect and to exercise their work with confidence.

(iii) **Access to decision-making** implies access to knowledge, power structures and decision-making processes.

Carl (1995:243) acknowledges that there is a direct connection between the degree and nature of empowerment on the one hand and the degree and nature of involvement on the other hand.

Lotz (1996) argues that past trends and ideological practices in South Africa were responsible for disempowering teachers at all levels of education. The recognition of this condition is a necessary precondition for teachers to take their own development and transformation process seriously, and to enable them to find ways of reaffirming their role and position as key role players in transformation initiatives. Forms of empowerment that emanate from the top-down dissemination of pre-packaged curriculum materials to teachers are often problematic and also "managerial-hierarchical and technocratic in character" (Robottom, 1987). Lotz (1996:288) contends that teacher empowerment does not occur as a result of external intervention or the transferral of information, but rather through a process of creating, supporting and participating in the conditions which enable social interaction and critical reflection to take place around common (environmental and pedagogical) issues. Teacher empowerment through involvement in curriculum development processes should therefore be characterised by creating opportunities for teachers to reflect critically on their own practice, become clear about their own environmental and educational values, and engage in participant research on their own professionality. This view of curriculum development which encourages the participation of all involved, is socially critical and is a clear departure from a
"...behaviourist approach, which effectively creates a division of labour between practitioner and researcher" (Robottom & Hart, 1993).

A further dimension of teacher empowerment which could be problematic and biased is one in which only a few teachers are involved in curriculum development committees representing the entire teaching force. Fullan (1991:127) argues that change is a highly personal experience for all teachers. They should have an opportunity to work through the experience in such a way that they are rewarded individually and directly. Fullan further argues that when other teachers produce the change it is much experienced by teachers as if it had come from university or government. Curriculum change and development should therefore form part of the teacher’s professional experience in order to bridge the gap between curriculum material and curriculum practice. The challenge is to develop ways that will ensure the involvement of teachers in curriculum development activities, not as a form of tokenism, but as a broadly based and inclusive process.

According to Lotz (1996:353), the changes that occurred during her research on materials development (We Care Primary Project) showed a movement towards transformation in materials and curriculum development. Some changes and shifting orientations that emerged during the research project are:

- The development of opportunities in which teachers could engage with critical reflective practices in materials and curriculum development. The development of these opportunities enabled a critique-in-action of the historical and social context in which knowledge is created. Knowledge was thus removed from the realm of experts and placed in the hands of experts.
- Ongoing and reflexive engagement with the rhetoric of enlightenment and empowerment through participation revealed that the use of rhetoric in change was problematic. A reflexive re-searching and collaborative definition of what authentic participation in participatory materials development implies, was gradually and collaboratively defined within the context of the project.
Engagement in critique of dominant cultural patterns of schooling was reflected by active development of authentically participatory orientations to curriculum and materials development, co-operative and collaborative ways of working together, critical and reflexive thinking, active learning pedagogies and integrated classroom practice.

The development of action-based projects and ideas for activities to address local issues were developed through reflection on local environmental conditions. Possibilities of addressing environmental issues through the school curriculum was brought into focus.

A new role for participating teachers as critical educators and reflective practitioners was defined through ongoing participation in the development of materials.

The development of an enabling structure to provide opportunities for authentic participation in curriculum and materials development, supported form within the system, was explored and developed.

The aspiration to challenge managerial-hierarchical approaches (the RDDA model) to materials development and change was realised through ongoing critical and reflexive engagement with participatory processes of materials development and the change process (Lotz, 1996:253-254).

The changes reflected in Lotz's research project provide a clear indication of teacher participation in curriculum development. This should not be regarded as a once-off event or a mere week-long curricular dissemination workshop, but rather as an ongoing process of collaborative engagement, critique and reflection on own practice and local environmental issues which gradually results in the empowerment of all involved.

3.7 THE EMPOWERED TEACHER AND ENVIRONMENTAL EDUCATION

3.7.1 Greater democratisation of the teaching and learning situation
Participatory orientations to curriculum development have been influenced by global trends towards the democratisation of institutional and social life (Lotz 1999a:23). A general move towards this democratisation has also resulted in calls for less teacher-centred approaches to the teaching and learning of environmental processes. Ferreira (1997:28) argues that the lack of structural support is one of the barriers to democratic environmental education in schools. She further explains that teachers feel constrained by other curriculum requirements from using democratic approaches in environmental education. These curriculum constraints are largely caused by the fact that many curriculum development processes exclude teachers.

Empowerment resulting from teacher involvement in curriculum development processes ensures greater democratisation of the educational process in its entirety. Democracy cannot be learned through a lecture. It develops when teachers become involved in democratic processes (Carl, 1995). Learners will not experience democracy in the classroom if teachers do not experience it. Learners will only experience it when teachers are able to expose them to the plurality of environmental ideologies, and through the process of inquiry, critique and reflection they (learners) can be assisted to develop and defend their own set of environmental beliefs and values (Stevenson, 1987:72). Finally, teacher empowerment through democratic educational processes will influence what happens in the classroom. The empowerment theory should thus focus on making competent and confident curriculum planners out of teachers. In South Africa, the new curriculum with its learner-centred, participatory, action competency orientation and integrated approach is a remarkable achievement in terms of the opportunities it provides for environmental education (Wilmot, 1999:3). What seems to be lacking, however, is the identification and eradication of obstacles towards greater democratisation of educational processes (curriculum development, teaching and learning, professional development, etc.) in general.
3. 7. 2 Critical approach to environmental education processes

According to Stevenson (1993:8), approaches to curriculum development and change within a critical paradigm encourage teachers to reflect on the moral and ethical goals and consequences of their actions by explicitly directing their attention to such concerns. The recent critical and action orientation of environmental education in schools (Stevenson, 1987:73) creates a challenging task for schoolteachers who have never been involved in critical curriculum development processes. Robottom (1987: 83) argues in favour of environmentally and socially critical curriculum development and professional development processes. Provision should be made to allow environmental education teachers to adopt a critical form of educational inquiry in investigating problems of environmental education. The socially critical orientation in education regards teachers and learners as active members of society who could help create a more socially just and ecologically sustainable world, through critical action, reflection, participation and ongoing interaction with the hegemonic influences of their world (Lotz, 1996:38). Curriculum development processes based on this socially critical orientation could pave the way for the realisation of socially critical approaches to environmental teaching and learning.

Teachers working within the framework of the socially critical school will therefore attempt to provide learners with learning experiences that give them a historical and critical perspective on society, and opportunities to engage in activities that are consistent with building a responsive democratic society (Gough, 1997:91). Robottom (1987:108) argues that professional development processes will involve teachers in investigating real environmental issues in their local environment (Wilmot, 1999:3) and to critically reflect on their own environmental education practices. The environmental education teacher is therefore involved in negotiating, developing and practising curricula that will either maintain the status quo and reproduce its accompanying set of social values or create conditions for a teaching-learning environment that will promote a socially critical perspective of
the environment and solutions to its associated problems (Di Chiro, 1987:41). To ensure the latter, authentic teacher participation in environmental education curriculum development processes, based on socially critical approaches, needs to be investigated and pursued.

3. 7. 3 Teachers as researchers

There appears to be distinct parallels between research and curriculum development activities (Henson, 1995). When teachers engage in environmental education curriculum development activities basic research skills become necessary. This results in teachers becoming effective researchers of their own environmental practice. Henson (1995) proposes that teachers need to engage in research in order to maximise improvement into their classrooms. For example, action research, is increasingly being utilised for school-based curriculum development (Grundy, 1987). When action research is employed in the process of curriculum development for the dissemination of particular ideas rather than as a reflective process, it operates in the technical mode (teachers only get involved to achieve ends which have already been pre-determined elsewhere).

Robottom and Hart (1993:67) argue that 'insiders' (teachers) need to gain and maintain control over the participatory research agenda in order to avoid environmental education research becoming an instrument for reinforcing the values of those individuals (outside experts) who seek to set the goals for curriculum development. Teachers should therefore be afforded a central and equal role to play in developing curricula through collaborative participatory research. It is important that environmental education research should be participatory, thus enabling practitioners at all levels to adopt a research perspective in relation to their own practices rather than remaining the domain of outside experts whose interests are served by sustaining a division of labour between researcher and practitioners (Robottom & Hart, 1993:70).
When viewing curriculum development as an open-ended process of inquiry and deliberation critical reflection on the perception that curriculum development is a technical or mechanical process is enabled. This is often seen as some outside practice, and not connected to the daily experience of classroom practice (Lotz, 1999a: 6). Attempts to separate curriculum research and curriculum development from classroom practice tend to limit the role of the teacher to classroom decision-making, and upholds the need for expert outsiders to play the primary role in curriculum development.
CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 INTRODUCTION

In the previous chapters, the main research problem was stated and an extensive literature review was conducted. A number of issues about teacher involvement were explored from various sources. In this chapter, the methodology that was used for the collection of data will be explained. The methodology used will further be justified and motivated through various relevant literatures.

Teachers' perceptions on their involvement in environmental education curriculum development processes are central to this research. A qualitative and in-depth investigation of such perceptions is significant for the research findings. This research project further seeks to determine whether there are barriers towards teacher involvement in environmental education curriculum development processes and if so, to determine what action to take to remove the barriers.

4.2 JUSTIFICATION OF METHODOLOGY

An in-depth study of relevant available literature on research methodology revealed two main research paradigms or methodologies, namely quantitative and qualitative methodologies. It has become common practice for most research works to be clearly positioned or committed to one paradigm and in some cases to consider the other as misleading or unsuitable for social or educational research (Borg & Gall, 1989: 381). It is, however, not the intention of this study to position itself in a particular paradigm. Reichardt and Cook (cited in Borg and Gall, 1989:381) argue that the debate about polarising the two research
paradigms (qualitative and quantitative) has been dysfunctional. They further argue that an overemphasis of one method (quantitative) as the most appropriate will result in a similar overemphasis of the other method (qualitative). From a literature overview, it would seem that their assumptions are becoming true. Hammersley (1992:52) adds to the debate by asserting that the prevalence of the distinction between qualitative and quantitative methods tends to obscure the complexity of research problems facing researchers and threatens to render research decisions less effective than they might otherwise be. Hammersley further warns that the commitment to specific paradigms, in whatever form, tends to restrict the debate on research methodology and their suitability to particular research problems rather than keep it open. A possible solution would be to realise that the debate to separate the two methodologies is inappropriate and that there is no reason to choose a research method on the basis of a traditional paradigmatic stance. Without being blindly partisan to a particular paradigm, or attempting to discredit one methodology as useless at the expense of the other, the significance of being explicit about the research methods and methodology that were found useful and relevant for the purposes of this study will be emphasised. It is also acknowledged that differences in terms of the nature of data and data collection methods exist between the two paradigms.

The qualitative research methodology was deemed most suitable for this study since it allowed for more insight to be gained into the perceptions of teachers on their involvement in environmental education curriculum development processes. Qualitative research is concerned with understanding the social phenomenon under investigation from the participants' perspective (Macmillan & Schumacher 1993:373). In quantitative tradition, on the other hand, the instrument of research is a pre-determined and finely tuned technological tool which allows for much less flexibility, imaginative input and reflexivity (Brannen, 1992:5). The primary aim of quantitative research, therefore, is to infer a characteristic or a relationship between variables to a parent population or a large group of research subjects. Qualitative research, however, describes and analyses people's individual and
collective social actions, thoughts and perceptions. According to Miles and Huberman (1994:6) one of the recurring features of qualitative research is that the researcher attempts to capture data on the perceptions of local actors "from the inside", through a process of deep attentiveness, empathetic understanding, and suspending or "bracketing" the topics under discussion. This methodology enabled an in-depth investigation into teachers' perceptions, which prompted the researcher to rely mostly on a qualitative approach. It was also assumed that the possibility of understanding latent, underlying or non-obvious issues would be much stronger when using this method (Miles & Huberman, 1994:10).

An important aspect of a qualitative approach is the detailed or descriptive nature of the data. According to Sprinthall et al (1991:100), qualitative data are made up of written descriptions of people, events, opinions, attitudes, and environments or combinations of these. The richness and holism, has strong potential for revealing complexity and provision of "thick descriptions". These are vivid, nested in a real context, and have a ring of truth that has strong impact on the reader. This is a significant feature of qualitative data (Miles & Huberman, 1994:10). Miles and Huberman further add that qualitative data strongly emphasises respondents' lived experiences and is fundamentally well suited for locating the meanings placed on processes and structures of their lives i.e., their perceptions, assumptions, prejudgements and presuppositions. According to Miles and Huberman (1994:10), qualitative data is also useful when one needs to supplement, validate, explain, illuminate, or reinterpret quantitative data gathered from the same setting. Qualitative-quantitative linkages exist between distinct data types, where qualitative information (e.g. open-ended interviews) is compared to numerical data (e.g. from a questionnaire). This claim has particular relevance to this study because of the use of both questionnaires, (which could be regarded as quantitative), and open-ended interviews, (which are more qualitative). According to Brannen (1992:11), this approach is known as a multiple research strategy or 'multiple methods', which could mean using different methods in relation to the same object of study. An in-depth discussion
of the research methods or instruments used in this study and a motivation for selecting them, will follow.

4.3 DATA COLLECTION METHODS

While various qualitative strategies or methods of data collection can be used to provide verbal descriptions, the main or common goal for each will be to capture the richness and complexity of behaviour or issues that occur in natural settings from participants' perspectives (McMillan & Schumacher, 1993:43). As pointed out by Miles and Huberman (1994) the qualitative researcher attempts to capture data on the perceptions of local actors from the inside, through a process of deep attentiveness, empathetic understanding, and suspending preconceptions about the topics under discussion. According to Ragin (1994:83), qualitative methods emphasise the immersion of the researcher in a research setting and his/her effort to uncover the meaning and significance of social phenomena of people in such settings. The organising principle of qualitative data, therefore, refers to in-depth knowledge needed for a proper representation of the research subjects and should be based on the perspectives of the people being studied. In this study, the researcher focuses on collecting data which will be representative of the perceptions of teachers on issues of their involvement in environmental education curriculum development processes.

For the purpose of this study, both structured questionnaires and semi-structured or open-ended interviews were used. Brannen (1992:11) acknowledges the need to use different research strategies and argues in favour of multiple methods that involve what is called 'between methods' (the use of different methods in relation to the same object of study e.g., questionnaire survey and open-ended interviews). The questionnaire and interview methods were particularly chosen for this study on a complementary basis. According to Miles and Huberman (1994:10), qualitative data is useful when one needs to supplement, validate, explain, illuminate, or reinterpret quantitative data. In this regard, Irwin (1998:10)
states that "...questionnaires could be used when one wishes to obtain a 'first sweep' of data for the specific purpose of developing or informing a more detailed or in-depth interview programme". Although questionnaires will produce numerical data, detailed descriptions of the findings in relation to the main research problem will be provided. In-depth interviews on the other hand will allow for flexibility and in-depth inquiry into the reasons behind questionnaire responses, thus making provision for further reflection on the perceptions of teachers on environmental education curriculum development issues.

4.3.1 The questionnaire as a research method

The questionnaire is a strategy for collecting research data in which the subjects respond to written questions in order to elicit reactions, beliefs, and attitudes (McMillan & Schumacher, 1993). McMillan and Schumacher further point out that in developing a questionnaire, the researcher selects or constructs a set of questions requesting respondents to answer them usually in a form that asks the respondents to check and select their perceived response. The questionnaire method tends to be reliable, as it is anonymous, it encourages honesty and it is economical in terms of time and money.

According to Mckeman (1996:128), questionnaires can quickly tap responses of large numbers of people. The questionnaire method was particularly used for this study, as the researcher wished to involve as many teachers as possible in the collection of data. The questions were designed carefully to probe into various aspects relevant to the research problem. The questionnaire was composed of both closed (structured) and open (unstructured) ended questions. McMillan and Schumacher (1993:243) explain that closed ended questions are ones in which the respondent chooses between predetermined responses, whilst in open ended, the respondents can write in any comment. A combination of both the two forms of questions in the questionnaire will therefore further contribute to the validity of the questionnaire as used in this study. The range of questions which
appear in the questionnaire were grouped into themes, based on the types or nature of the information they are designed to elicit from the respondents in the following manner:

- Questions 1 to 6 are introductory questions intended to elicit general information, such as the respondent's gender, marital status, age, qualifications, type of school and previous occupation.

- Questions 7 to 10 consist of questions related to effectiveness as rated by the teachers themselves.

- Questions 11 to 20 are intended to determine the respondent's knowledge and understanding of and involvement in environmental issues and environmental education.

- Questions 21 to 24 are intended to determine the respondent's engagement in environmental education through his/her teaching.

- Questions 25 to 38 are intended to determine the views, perceptions and knowledge of respondents about curriculum development, as well as involvement in curriculum development and decision-making.

- Question 31 specifically aims at determining whether teachers are currently engaged in any cross-curricular activities.

- Questions 39 to 42 are intended to determine the respondent's views and knowledge about and involvement in the current process of curriculum 2005.

The researcher selected and designed the questions carefully to ensure that they address the main research objectives and add to the validity of the questionnaire in addressing the main research problem.
4.3.1.1 Population

According to Sprinthall and Schmutte (1991:27) and Borg and Gall (1989:216) the term population refers to the entire group of persons, things or events that share one common trait. For the purpose of this study, the population includes all grade seven teachers of twenty-seven primary schools in the Sibasa inspection area. The Sibasa inspection area was selected because of its vicinity to the researcher and accessibility of the roads, especially after most of the roads were destroyed by cyclone Eline.

4.3.1.2 Sampling

A list of all schools included in the population was made available to the researcher by the Sibasa inspection office. Borg and Gall (1989: 426) call this list a sampling frame and maintain that it will be necessary for obtaining a proper sample. They further explain that sampling involves selecting a given number of subjects from a defined population as representative of that population. Miles and Huberman (1994:27) state: "... as much as we might want to, we cannot study everyone, everywhere doing everything. Your choices of whom to look at or talk with, where, when, about what, and why – all place limits on the conclusions you can draw, and how confident you and others feel about them".

A simple random sampling procedure was used for the questionnaire. Borg and Gall (1989:219) define a simple random sample as a sample where each individual in the defined population has an equal and independent chance of being selected as a member of the sample. Fowler (1993:33) argue that the population from which a particular sample size is drawn has virtually no impact on how well that sample is likely to describe the population. A total of seven schools were randomly selected from the entire population. All grade seven teachers in the selected schools were handed a questionnaire.
4.3.1.3 Data collection procedure

After drawing-up the questionnaire sample, the questionnaires were administered in the following manner:

- The researcher asked permission from the area office to distribute the questionnaires to teachers concerned.
- The questionnaire was distributed at the schools after permission was granted by the principal of each participating school.
- The researcher then identified contact teachers from whom to collect the completed questionnaires. In some cases the completed questionnaires were collected directly from the principal. This was done to suit the schools preferences.
- When handing over the questionnaires, the researcher explained the purpose of the questionnaires in order to ally any fears and unnecessary misunderstandings.
- The researcher agreed on the time frame for the completion and collection of completed questionnaires. This differed from school to school, ranging from three to five days.

4.3.2 The interview as a research method

According to Cannel and Kahn (cited in Cohen & Manion, 1994:271), the research interview can be defined as a two-person conversation initiated by the interviewer for the specific purpose of obtaining relevant research information. The researcher focuses on content specified by research objectives of systematic description, prediction, or explanation. The obvious difference between the questionnaire and interview methods is that the interview involves direct, or face-to-face (McKeman, 1996), interaction between individuals. The fact that the interviewer is also able to probe areas of interest as they arise. According to Hittleman and Simon (1997:151), the researcher can also modify the data collection context to fit the respondent's responses. The use of both
questionnaires and interviews in this study further enhances the reliability of the research findings. There are, however, different types of interviews for different research purposes. McKeman (1996:129) claims that there are chiefly three types of interviews which can be identified in terms of their content and organisation, namely structured, semi-structured or unstructured interviews. In structured interviews the interviewer uses a list of specific questions and does not deviate from the wording of such questions. Questions are often fixed-response types. In semi-structured, or 'open-ended' interviews (McMillan & Schumacher, 1993:251), the interviewer has certain questions he or she asks of all interviewees, but allows the respondents to raise issues and questions as the interview progresses. Finally, when using an unstructured interview, the issues and topics to be discussed are left entirely to the interviewee.

The type of interviews used in this research were semi-structured or open-ended. The semi-structured interview was particularly chosen because it has the advantage of being reasonably objective while still permitting a more thorough understanding of the respondent's opinions and the reasons behind them (Borg & Gall, 1989:452). Cohen and Manion (1994:277) further identified some advantages of open-ended questions:

- They are flexible.
- They allow the interviewer to probe in order to may go into depth if he or she chooses to.
- The interviewer is able to clear up any misunderstandings on the questions.
- They allow the interviewer to test the limit of the respondent's knowledge.
- They encourage co-operation and help establish rapport.
- They also allow the interviewer to make a correct assessment of what the respondent really believes.

Open-ended situations can also result in unexpected or unanticipated answers, which could suggest hitherto unthought-of relationships or hypotheses.
4.3.2.1 Focus group interviews

Group interviews based on open-ended questions were selected as a relevant interview instrument for this study, because of their potential for discussions to develop, thus yielding a wide range of responses from participants (Cohen & Manion, 1994:287). In focus group interview, therefore, the interviewer creates a permissive atmosphere by asking questions eliciting discussion and expression of differing opinions and views. Group interviews are fundamentally socially oriented as they allow to voice differing views and opinions about a particular phenomenon under investigation. According to Cohen and Manion (1994:283), a distinct feature of focused interview is the prior analysis by the research of the situation in which the respondents have been involved. The relevant interview groups for the purpose of this study were carefully selected.

The researcher selected two groups of grade seven teachers based on the following: The one group was composed of four teachers who had been involved in environmental education activities such as: workshops, seminars, conferences, and other environmental projects. They form part of the environmental teachers' network, which has been responsible for organising such activities for interested teachers. The network is known as the Far North Region Environmental Educators Forum. In his capacity as an environmental educator and teacher professional development facilitator, the researcher took part in some of the activities organised by this network. The teachers who were selected for the interview form part of the leadership component of the teachers' network. When identifying this group for purposes of this study, the researcher assumed that they were knowledgeable on environmental education issues and processes involved in environmental education curriculum development. It was therefore assumed that this group of teachers would provide valuable information about their own perceptions of the obstacles they encounter or perceive regarding involvement in curriculum development processes.
The second group consisted of seven grade seven teachers who were not specifically involved in an environmental teachers' network such as the one mentioned above. They were randomly selected from various primary schools in close proximity of the population explained earlier by the researcher. This was done in order to avoid travelling problems for some interviewees. When selecting this group, it was assumed that the teachers would provide different perceptions or opinions from the first group as they are exposed differently to environmental education issues and activities. Miles and Huberman (1994:28) refer to the selection of such groups to facilitate comparisons of data in qualitative studies, as stratified sampling.

4.3.2.2 Interview data collection procedure

When using group interviews for data collection, the researcher took into consideration several issues that could interfere with the interview process and impact negatively on the results of the interviews. Cohen and Manion (1994) acknowledge that there are unavoidable features of the interview that would normally be regarded as problems. They cited the fact that the respondents may feel uneasy and sometimes adopt avoidance tactics. The researcher made provision for this by attempting to create a relaxed and welcoming atmosphere to stimulate freedom and deep discussion among the participants. Interview dates were confirmed in time and confirmed with the interviewees.

The interviews were held at two neutral venues as preferred by the interviewees. In order to maintain focus and control on the interview discussions, and to avoid deviation from the purpose of the research, the researcher developed some theme questions as a point of reference for the interview. Borg and Gall (1989:451) refer to this set of questions as an interview guide (appendix B) and explain that, the interview guide lists questions in a desired sequence. This further provides guidelines on the entire interview process to the interviewer. The information was communicated to the interviewees beforehand. Some of these
questions were, however, supplemented by follow-up or probing questions during the interview. When developing questions for the interviews the researcher took into consideration some questions that formed part of the questionnaire. The results and findings from the questionnaires also provided useful information on preparations for the interviews. Similar questions were prepared for the two groups but different probing questions came up during the interviews.
CHAPTER FIVE

PRESENTATION OF DATA AND DATA ANALYSIS

5.1 INTRODUCTION

In this chapter, research data from both the questionnaires and group interviews will be outlined and critically discussed. Through a discussion based on this data, the researcher hopes to compare and contrast the findings and analyse them in relation to the main research questions according to five different themes. The themes were developed from the research questions and the main aim of this study. The chapter begins with a detailed outline and brief report of the questionnaire findings. This will be followed by a detailed report of the interviews, coupled with discussions of data from both the questionnaires and interviews.

5.2 REPORT OF QUESTIONNAIRE FINDINGS

The results of the questionnaires are clearly outlined in tables. This information is followed by a brief descriptive interpretation of the results. It should also be noted that only one of the questionnaires was not completed.

Question 1 (See appendix A)

TABLE 1: Gender

<table>
<thead>
<tr>
<th>SEX</th>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>MALE</td>
<td>24</td>
<td>68%</td>
</tr>
<tr>
<td>FEMALE</td>
<td>11</td>
<td>32%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>35</td>
<td>100%</td>
</tr>
</tbody>
</table>

The majority of respondents are male. This could be an indication of the fact that male teachers are mostly found in senior classes of the primary school phase, while female teachers are found mainly in junior primary phases. This trend could
be a result of the traditional tendency of male teachers to avoid dealing with small children.

**Question 2 (See appendix A)**

**TABLE 2: Marital status**

<table>
<thead>
<tr>
<th></th>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single</td>
<td>8</td>
<td>22.9%</td>
</tr>
<tr>
<td>Married</td>
<td>26</td>
<td>74.3%</td>
</tr>
<tr>
<td>Divorced</td>
<td>1</td>
<td>2.9%</td>
</tr>
<tr>
<td>Total</td>
<td>35</td>
<td>100%</td>
</tr>
</tbody>
</table>

The above table indicates that most respondents (74.3%) are married followed by those who are single (22.9%). Only one of the respondents is divorced.

**Question 3 (See appendix A)**

**TABLE 3: Age**

<table>
<thead>
<tr>
<th>AGE CATEGORY</th>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 – 25</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>26 – 30</td>
<td>10</td>
<td>28.6%</td>
</tr>
<tr>
<td>35 – 40</td>
<td>16</td>
<td>45.7%</td>
</tr>
<tr>
<td>OVER</td>
<td>9</td>
<td>25.7%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>35</td>
<td>100%</td>
</tr>
</tbody>
</table>

Most respondents are between the ages of 35 to 40 and make up 45.7% of all the respondents. They are followed by those between the ages of 26 to 30 (28.6%) and those over the age of 40 (25.7%).
Question 4 (See appendix A)

TABLE 4: Professional qualification

<table>
<thead>
<tr>
<th>QUALIFICATION</th>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>JPTD (See appendix A)</td>
<td>1</td>
<td>2.9%</td>
</tr>
<tr>
<td>SPTD</td>
<td>19</td>
<td>54.3%</td>
</tr>
<tr>
<td>STD</td>
<td>3</td>
<td>8.6%</td>
</tr>
<tr>
<td>UED</td>
<td>5</td>
<td>14.3%</td>
</tr>
<tr>
<td>BA. Ed</td>
<td>3</td>
<td>8.6%</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>11.4%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>35</td>
<td>100%</td>
</tr>
</tbody>
</table>

Most respondents have senior primary teacher's diplomas (54.3%) and are therefore well qualified to teach grade 7 (the old senior primary level). The remainder of the respondents have other teaching qualifications that do not specifically prepare them for the senior primary level. The other qualifications range from junior primary and secondary to university teacher education as indicated above.

Question 5 (See appendix A)

TABLE 5: Previous occupation

<table>
<thead>
<tr>
<th>PREVIOUS OCCUPATION</th>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher</td>
<td>1</td>
<td>2.8%</td>
</tr>
<tr>
<td>Administrative staff</td>
<td>28</td>
<td>77.8%</td>
</tr>
<tr>
<td>Full-time student</td>
<td>4</td>
<td>11.1%</td>
</tr>
<tr>
<td>Unemployed</td>
<td>3</td>
<td>8.3%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>35</td>
<td>100%</td>
</tr>
</tbody>
</table>
It is interesting to note that most respondents (77.8%) worked in administration before they actually began teaching. This could imply that they already had some work experience although with a different focus. Only about 11% of the respondents were directly employed as teachers after completion of their teacher education. The rest were either unemployed or worked as unqualified teachers.

Question 6 (See appendix A)

**TABLE 6: Rating of previous training institution**

<table>
<thead>
<tr>
<th></th>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>20</td>
<td>57.1%</td>
</tr>
<tr>
<td>Good</td>
<td>10</td>
<td>28.6%</td>
</tr>
<tr>
<td>Satisfactory</td>
<td>3</td>
<td>8.6%</td>
</tr>
<tr>
<td>Poor</td>
<td>2</td>
<td>5.7%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>35</td>
<td>100%</td>
</tr>
</tbody>
</table>

Most respondents felt that the institutions where they received their teacher education were excellent, which is the highest rating provided in the questionnaire. The rest remainder felt that their institutions were either good (28.6%) or satisfactory (8.6%) with very few indicating that they were poor at (5.7%).

Question 7 (See appendix A)

**TABLE 7: Teacher's self-assessment**

<table>
<thead>
<tr>
<th></th>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>21</td>
<td>60%</td>
</tr>
<tr>
<td>Good</td>
<td>13</td>
<td>37.1%</td>
</tr>
<tr>
<td>Satisfactory</td>
<td>1</td>
<td>2.9%</td>
</tr>
<tr>
<td>Poor</td>
<td>-</td>
<td>0%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>35</td>
<td>100%</td>
</tr>
</tbody>
</table>
Most respondents were confident about their competence as teachers and indicated that they were excellent (60%), good (37.1) or satisfied with their teaching competence (2.9%). No participants felt that they had poor teaching abilities.

Question 8 (See appendix A)

TABLE 8: Factors influencing self-assessment

<table>
<thead>
<tr>
<th></th>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistance from colleagues</td>
<td>14</td>
<td>40%</td>
</tr>
<tr>
<td>Training institution</td>
<td>17</td>
<td>48.6%</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>11.4%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>35</td>
<td>100%</td>
</tr>
</tbody>
</table>

The majority of respondents indicated that they performed the way they do because of the influence from their institutions. Fewer respondents indicated that they receive assistance from their colleagues. The remainder mentioned reasons ranging from commitment, dedication and, self-motivation to insight into the work.

Question 9 (See appendix A)

TABLE 9: Understanding of environmental education

<table>
<thead>
<tr>
<th></th>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature conservation</td>
<td>11</td>
<td>31.5%</td>
</tr>
<tr>
<td>Science education</td>
<td>9</td>
<td>25.7%</td>
</tr>
<tr>
<td>None of the above</td>
<td>1</td>
<td>2.9%</td>
</tr>
<tr>
<td>I have no idea</td>
<td>3</td>
<td>8.6%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>35</td>
<td>100%</td>
</tr>
</tbody>
</table>
An overwhelming majority of respondents think that environmental education is nature conservation or vice versa. Second was science education, followed by those who did not know what environmental education meant. Only one of the respondents did not select any of the other options as indicated above.

Question 10 (See appendix A)

TABLE 10: Teacher's perception of environmental education

<table>
<thead>
<tr>
<th></th>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology</td>
<td>3</td>
<td>8.6%</td>
</tr>
<tr>
<td>Geography</td>
<td>2</td>
<td>5.7%</td>
</tr>
<tr>
<td>Science</td>
<td>7</td>
<td>20%</td>
</tr>
<tr>
<td>All learning areas</td>
<td>23</td>
<td>65.7%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>35</td>
<td>100%</td>
</tr>
</tbody>
</table>

It is interesting to note that most respondents (65.7%) think that environmental education is relevant to all learning areas, while the second highest was science. The remaining 8% and 5% associated environmental education with Biology and Geography respectively.

Question 11 (See appendix A)

TABLE 11: Understanding of what environmental learning entails

<table>
<thead>
<tr>
<th></th>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Man should conserve nature</td>
<td>11</td>
<td>31.4%</td>
</tr>
<tr>
<td>Man should use natural resources wisely</td>
<td>21</td>
<td>60%</td>
</tr>
<tr>
<td>Man has unlimited potential to exploit and dominate nature</td>
<td>3</td>
<td>8.6%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>35</td>
<td>100%</td>
</tr>
</tbody>
</table>
Most respondents (60%) in this category indicated that people need to learn about using natural resources wisely. The second largest group (31.4%) believed that people need to learn about nature conservation. Very few respondents believed that man should have unlimited powers to exploit and dominate the environment.

Question 12 (See appendix A)

TABLE 12: The importance of environmental education

<table>
<thead>
<tr>
<th></th>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very important</td>
<td>33</td>
<td>94.3%</td>
</tr>
<tr>
<td>Important only in certain</td>
<td>2</td>
<td>5.7%</td>
</tr>
<tr>
<td>learning areas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I do not see any need for</td>
<td>None</td>
<td>0%</td>
</tr>
<tr>
<td>environmental education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>35</td>
<td>100%</td>
</tr>
</tbody>
</table>

An overwhelming majority of respondents indicated that environmental education is very important in the school curriculum. Only 5.7% of the respondents believed that environmental education was only relevant or important to certain learning areas. No respondents indicated that they do not see any need for environmental education in the school curriculum.
Question 13 (See appendix A)

**TABLE 13: Involvement in environmental activities**

<table>
<thead>
<tr>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>None at all</td>
<td>11.4%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>31.4%</td>
</tr>
<tr>
<td>Fully involved</td>
<td>48.6%</td>
</tr>
<tr>
<td>Only some teachers in my school</td>
<td>8.6%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

On the question of respondents' involvement in environmental awareness campaigns and other related activities the responses were divided amongst the three options. There was no overwhelming majority on any specific option. The majority of the respondents did, however, indicate that they were fully involved followed by those who said they are sometimes involved. Few respondents indicated that they were not involved. A small group indicated that only some school teachers are involved.

Question 14 (See appendix A)

**TABLE 14: Knowledge of local environmental issues**

<table>
<thead>
<tr>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well informed of what happens amongst people</td>
<td>28.6%</td>
</tr>
<tr>
<td>Know much about the natural environment</td>
<td>20%</td>
</tr>
<tr>
<td>Well informed about both human and natural issues of the environment</td>
<td>51.4%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
A small majority (51.4%) of the respondents claimed that they are well informed about both the human and natural issues of their local environment. The second highest group (28.6%) is made out of those who know more about what happens among people, while the smallest group are those who know much about the natural environment.

**Question 15 (See appendix A)**

**TABLE 15: Awareness of local environmental problems**

<table>
<thead>
<tr>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>23</td>
</tr>
<tr>
<td>No</td>
<td>12</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>35</strong></td>
</tr>
</tbody>
</table>

Most respondents (65.7%) indicated that they were aware of some environmental problems found in their local environment. The remainder of the respondents (34.3%) indicated that they were not aware of any local environmental problems.

**Question 16**
(See appendix A)

Some of the respondents named the following environmental problems that existed in their local environments:
- Water and land pollution
- Deforestation
- The hunting and killing of wild animals
- Littering
- Crime and child abuse
It is interesting to note that some participants also identified social problems such as crime. This could imply that some of the respondents already have a broad perspective of the environment as discussed in chapter two. The majority of respondents mentioned environmental issues that affected mainly the biophysical environment.

**Question 17 (See appendix A)**

**TABLE 16: Responsibility of dealing with environmental issues**

<table>
<thead>
<tr>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>The community</td>
<td>14.3%</td>
</tr>
<tr>
<td>Schools</td>
<td>2.9%</td>
</tr>
<tr>
<td>The department of environmental affairs</td>
<td>8.6%</td>
</tr>
<tr>
<td>All the above</td>
<td>74.3%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

It is interesting to note that a large majority of the respondents (74.3%) believed that all the stakeholders have the responsibility of finding solutions to environmental problems. The remainder of the respondents chose a specific stakeholder as the one responsible for solving environmental issues, as indicated in table 17.

**Question 18 (See appendix A)**

**TABLE 17: Knowledge or awareness of environmental organisations**

<table>
<thead>
<tr>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>31.4%</td>
</tr>
<tr>
<td>No</td>
<td>68.6%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
Most respondents (68.4%) were not aware of any organisation that deals with environmental issues. Very few respondents claimed to know about it.

**Question 19**

*(See appendix A)*

**Names of environmental organisations**

The respondents who claimed to be aware of organisations that dealt with environmental issues identified the following organisations or bodies:

- The Department of Agriculture and Environment of the Northern Province.
- The transitional local council
- Green and Clean
- The Green Party
- The South African Broadcasting Co-operation's 50/50 programme
- The Green Peace movement

Most respondents identified the Department of Agriculture and Environment as the main body that contributed to environmental issues. In general, respondents claimed to be aware of various environmental concern groups and forums, as reflected above.

**Question 20 (See appendix A)**

**TABLE 18: Extent to which teaching deals with environmental issues**

<table>
<thead>
<tr>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all</td>
<td>3</td>
</tr>
<tr>
<td>Fairly</td>
<td>11</td>
</tr>
<tr>
<td>Limited</td>
<td>10</td>
</tr>
<tr>
<td>Very well</td>
<td>11</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>35</strong></td>
</tr>
</tbody>
</table>
Responses to this question are evenly spread between those who believe that they contribute ‘fairly’ and ‘very well’ towards bringing solutions to environmental problems through their teaching. There is no clear majority of respondents who selected a particular option from the above. Very few respondents felt that their teaching does not contribute at all towards solving environmental problems. This could be an indication of the uncertainty that the respondents had in selecting the correct option.

Question 21 (See appendix A)

TABLE 19: Use of local environment as teaching resource

<table>
<thead>
<tr>
<th></th>
<th>No. of Respondents</th>
<th>Percentage %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Often</td>
<td>15</td>
<td>42.9%</td>
</tr>
<tr>
<td>Always</td>
<td>15</td>
<td>42.9%</td>
</tr>
<tr>
<td>Hardly</td>
<td>5</td>
<td>14.3%</td>
</tr>
<tr>
<td>Total</td>
<td>35</td>
<td>100%</td>
</tr>
</tbody>
</table>

As in question 20, the responses were equally divided between two options. Two equal groups of forty three percent each claimed that they often or always make use of their local environment and community life as part of their teaching and learning resource. A small minority of 14.3% admitted that they hardly made use of their local environment and community life as a teaching resource.

Question 22 (See appendix A)

TABLE 20: Possibility of teaching environmental issues across the curriculum

<table>
<thead>
<tr>
<th></th>
<th>No. of Respondents</th>
<th>Percentage %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>33</td>
<td>94.3%</td>
</tr>
<tr>
<td>No</td>
<td>2</td>
<td>5.7%</td>
</tr>
<tr>
<td>Total</td>
<td>35</td>
<td>100%</td>
</tr>
</tbody>
</table>
An overwhelming majority of respondents believed that it was possible to teach about the environment and environmental issues in their learning area or subject. One or two of the respondents felt that it was impossible.

Question 23  
(See appendix A)

As a follow-up question to question 22, the respondents cited their reasons for supporting the idea that environmental education could be taught across different learning areas. The reasons provided can been summarised as follows:

- Because there is a need to learn about our environment through different ways.
- Because different learning areas address different areas of our environment.
- In order to make learners aware of their environment.
- Because children live in relation to their environment.
- Because we can refer to the environment for various example.
- We can teach about the environment through debate and other means.

Some of the above responses give an indication that teachers are able to relate the nature of the environment to the variety of learning areas. They therefore see the environmental education playing an integrative role. An example of using debates for the teaching of environmental themes was cited by one of the respondents as proof of this observation.

Question 24 (See appendix A)

TABLE 21: Exposure to curriculum studies

<table>
<thead>
<tr>
<th></th>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>9</td>
<td>25.7%</td>
</tr>
<tr>
<td>No</td>
<td>26</td>
<td>74.3%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>35</td>
<td>100%</td>
</tr>
</tbody>
</table>
Most respondents (74.3%) indicated that they had never been exposed to curriculum studies as a field of study. A quarter of the respondents (25.7%) claimed that they had been exposed to curriculum studies as a field of study.

Question 25

(See appendix A)

Only two institutions were named as a follow-up to the first option in question 24, namely, the University of Venda and workshops conducted by the Department of Agriculture and Environment (DAE). The naming of the DAE confirmed a common perception among the respondents of this Department as a main role player on issues of the environment, both in the community and in schools.

Question 26 (See appendix A)

TABLE 22: Involvement in developing learning programmes

<table>
<thead>
<tr>
<th></th>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>32</td>
<td>91.4%</td>
</tr>
<tr>
<td>No</td>
<td>3</td>
<td>8.6%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>35</td>
<td>100%</td>
</tr>
</tbody>
</table>

A large number of respondents agreed that there was need for them to become involved in developing curriculum or learning programmes. Only 8.6% of the respondents felt that there was no need for them to become involved.
The majority of respondents believed that they were sufficiently competent to develop curricula or learning programmes for their own learners. The remainder of the respondents (28.6%) were not confident that they could develop curricula on their own.

Most respondents indicated (77%) that given a chance, they would prefer to participate in a professional development course on curriculum development rather than a course on subject content. No respondents felt that there was no need for further professional development.
Question 29 (See appendix A)

TABLE 25: Teachers' role in curriculum development processes

<table>
<thead>
<tr>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observers in the process</td>
<td>1 2.9%</td>
</tr>
<tr>
<td>Main participants</td>
<td>10 28.6%</td>
</tr>
<tr>
<td>Leave process to curriculum experts</td>
<td>3 8.6%</td>
</tr>
<tr>
<td>Partnership with experts</td>
<td>21 60%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>35 100%</td>
</tr>
</tbody>
</table>

Most respondents (60%) would like to see the role of teachers in curriculum development processes as a partnership with curriculum experts. The second largest group of respondents (28.6%) believed that teachers should be the main participants in such curriculum development processes. This group is followed by those who believed that curriculum development should be left entirely in the hands of curriculum experts and those who identified with the fact that teachers should merely be observers in such processes.

Question 30 (See appendix A)

TABLE 26: Availability of cross-curricular teacher meetings

<table>
<thead>
<tr>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>12 34.3%</td>
</tr>
<tr>
<td>No</td>
<td>23 65.7%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>35 100%</td>
</tr>
</tbody>
</table>

According to most of the respondents (65.7%), there seemed to be no forums or meetings for teachers across the curriculum where they could share ideas about curriculum issues. Only 34.3% of the respondents claimed that such forums existed.
Question 31 (See appendix A)

TABLE 27: Nature of teacher involvement in curriculum development processes

<table>
<thead>
<tr>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have all teachers fully involved</td>
<td>26</td>
</tr>
<tr>
<td>Have representatives from each school</td>
<td>6</td>
</tr>
<tr>
<td>Have union leaders representing teachers</td>
<td>3</td>
</tr>
<tr>
<td>Have principals representing teachers</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>35</td>
</tr>
</tbody>
</table>

The majority of respondents (74.3%) identified with the fact that all teachers should be fully involved in curriculum development processes. They were followed by those (17.1%) who preferred to have representatives for each school and a small percentage (8.6%) of those who believe that unions should be allowed to represent them. No respondents preferred to have school principals representing teachers.

Question 32 (See appendix A)

TABLE 28: Time for curriculum development meetings

<table>
<thead>
<tr>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>After school hours</td>
<td>20</td>
</tr>
<tr>
<td>During school hours</td>
<td>15</td>
</tr>
<tr>
<td>No time is available</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>35</td>
</tr>
</tbody>
</table>

The respondents were not significantly divided on the issue of appropriate times for holding curriculum development meetings. A small number of respondents (57.1%) preferred to have such meetings after school hours and others (42.9%)
during school hours. No respondents indicated that it was totally impossible for such meetings to take place.

**Question 33 (See appendix A)**

**TABLE 29: Awareness of curriculum decision-making structures in the Department of Education**

<table>
<thead>
<tr>
<th></th>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>2</td>
<td>5.7%</td>
</tr>
<tr>
<td>No</td>
<td>33</td>
<td>94.3%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>35</td>
<td>100%</td>
</tr>
</tbody>
</table>

A large majority of respondents were not aware of any curriculum decision-making structures. Only two of the respondents claimed to be aware of such structures.

**Question 34 (See appendix A)**

**TABLE 30: Area/s of preference in curriculum decision-making**

<table>
<thead>
<tr>
<th></th>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of content</td>
<td>6</td>
<td>17.1%</td>
</tr>
<tr>
<td>Methods and strategies of teaching</td>
<td>7</td>
<td>20%</td>
</tr>
<tr>
<td>Both of the above</td>
<td>22</td>
<td>62.9%</td>
</tr>
<tr>
<td>None of the above</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>35</td>
<td>100%</td>
</tr>
</tbody>
</table>

Most respondents preferred to make curriculum decisions on both the type of content and teaching strategies than on just one of these.
Question 35 (See appendix A)

TABLE 31: Teachers' perceptions on prescribed curriculum packages

<table>
<thead>
<tr>
<th></th>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>26</td>
<td>74.3%</td>
</tr>
<tr>
<td>No</td>
<td>9</td>
<td>25.7%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>35</td>
<td>100%</td>
</tr>
</tbody>
</table>

Most respondents would prefer to have readily prescribed curriculum packages if they were expected to teach environmental education. Very few felt that there was no need for such packages.

Question 36
(See appendix A)

The respondents who indicated that they would accept prescribed curriculum packages in question 35 cited a number of reasons:

- Because it will be easier to follow.
- Because it will have the approval of the Department of Education.
- It can only be used as a guide or resource.
- Because we have confidence in those people.
- Because I feel that I have not been properly trained to produce my own.

Those who were against the idea of prescribed curriculum packages gave the following reasons:

- Because such materials may not be relevant to local issues.
- Because I should form part of the curriculum developers.
Question 37 (See appendix A)

TABLE 32: Need for change in current teaching approach

<table>
<thead>
<tr>
<th></th>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>34</td>
<td>97.1%</td>
</tr>
<tr>
<td>No</td>
<td>1</td>
<td>2.9%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>35</td>
<td>100%</td>
</tr>
</tbody>
</table>

All the respondents, except one, believed that there was a need for changing in what they taught.

Question 38 (See appendix A)

TABLE 33: Familiarity with Curriculum 2005

<table>
<thead>
<tr>
<th></th>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>21</td>
<td>60%</td>
</tr>
<tr>
<td>No</td>
<td>14</td>
<td>40%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>35</td>
<td>100%</td>
</tr>
</tbody>
</table>

Although the respondents were already expected to be implementing Curriculum 2005 in their teaching, only 60% admitted that they were familiar with the new curriculum terminology and concepts.

Question 39 (See appendix A)

TABLE 34: Awareness of environmental education within Curriculum 2005

<table>
<thead>
<tr>
<th></th>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>20</td>
<td>57.1%</td>
</tr>
<tr>
<td>No</td>
<td>15</td>
<td>42.9%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>35</td>
<td>100%</td>
</tr>
</tbody>
</table>
A small number of respondents (57.1%) were aware of plans to introduce environmental learning across the curriculum. The remainder of the respondents were not aware of such plans although the implementation of the new curriculum was already taking place at the time.

Question 40 (See appendix A)

TABLE 35: Training received on Curriculum 2005

<table>
<thead>
<tr>
<th></th>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>26</td>
<td>74.3%</td>
</tr>
<tr>
<td>No</td>
<td>9</td>
<td>25.7%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>35</td>
<td>100%</td>
</tr>
</tbody>
</table>

The above table indicates that some teachers had not yet attended any meetings or training for the new Curriculum 2005 though its implementation in schools was already underway.

Question 41 (See appendix A)

TABLE 36: Responsibility on the successful implementation of Curriculum 2005

<table>
<thead>
<tr>
<th></th>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers</td>
<td>23</td>
<td>65.7%</td>
</tr>
<tr>
<td>Department of education</td>
<td>12</td>
<td>34.3%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>35</td>
<td>100%</td>
</tr>
</tbody>
</table>

Most respondents believed that teachers could ensure the successful implementation of the new curriculum. As indicated above, the remainder of the respondents thought that the Department of Education carried such a responsibility.
Question 42 (See appendix A)

TABLE 37: Extent of teacher involvement in Curriculum 2005 implementation

<table>
<thead>
<tr>
<th></th>
<th>NO. OF RESPONDENTS</th>
<th>PERCENTAGE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>4</td>
<td>11.4%</td>
</tr>
<tr>
<td>Good</td>
<td>7</td>
<td>20%</td>
</tr>
<tr>
<td>Satisfactory</td>
<td>11</td>
<td>31.4%</td>
</tr>
<tr>
<td>Poor</td>
<td>13</td>
<td>37.1%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>35</td>
<td>100%</td>
</tr>
</tbody>
</table>

A small number of respondents rated teacher involvement in the current curriculum development processes as poor. Few respondents thought that teacher involvement was excellent.
5.3 ANALYSIS AND COMPARISON OF THE INTERVIEW REPORT AND QUESTIONNAIRE FINDINGS

In this section, a brief report of the group interviews, including direct quotations of some of the respondents’ statements captured during the interviews, will be provided. Interview data from both groups will be compared in order to analyse the meaning of the data against the interview questions and determine the relevance of this information to the main themes or questions of this study. This data will be compared and contrasted to the findings from the questionnaire data in order to establish the reliability and validity of the entire research findings and how these relate to the main research problem. For the sake of clarity, the various interview questions were divided into themes and the relevant questionnaire data was discussed under each theme.

5.3.1 Teachers’ views on the broader process of curriculum change in South Africa

This theme was meant to serve as an introduction. It was assumed that discussions on curriculum change in general would set the tone for the remainder of the questions and stimulate relevant responses about curriculum issues amongst the participants. It was also assumed that the interviewees would raise issues of relevance to the main objectives of the study. The opening question was posed as follows: *What are your feelings and opinions about the entire process of curriculum change and the implementation of Curriculum 2005?*

At first, the concept curriculum and curriculum development appeared to be unfamiliar to the respondents. This was also the case during the pilot questionnaire. The researcher therefore had to use these concepts interchangeably with the words syllabus learning programme or learning programme development respectively. The respondents were more familiar with these concepts and responded comfortably and with understanding. All the
respondents were generally supportive of the need for curriculum change in schools. However they had some reservations and experienced problems with the process of change as it unfolded. The respondents generally appreciated change as it implied a shift from the traditional content driven approach to a new flexible learner-centred approach, from teaching to learning. However, they expressed different views about the reasons why they felt change was necessary, amongst others, that the new curriculum centred on “observable outcomes required for the world of work”, and that it “promotes freedom and participation amongst the learners”. One of the respondents stated this as follows:

“I believe that our children will now start preparing for work as early as possible through OBE. I also think that if the new approach is implemented well our children will have a much better future”.

It was interesting to note that most respondents appreciated the broad principles or frameworks of the new curriculum as stated in policy documents. However, they showed some dissatisfaction with the actual process of curriculum development and implementation. One of the respondents indicated that the future of the new curriculum was to some extent uncertain one:

“To me the new approach feels like moving from one situation to a situation which we are not yet sure of. It seems as if the Government is just experimenting on some approach, which according to rumours has failed somewhere else and now that we a free South Africa they just want to try it out here as well”.

Of even greater interest for this study was the fact that some respondents in both groups complained that principals and others in authority acted as obstacles to their involvement in the process of curriculum change. They mentioned that school principals were too concerned about the movement of teachers from
schools to workshops or other professional development meetings. Principals showed signs of insecurity because they thought that teachers were being empowered and therefore would become more knowledgeable than they were. These claims further brought to light the question of how inclusive the curriculum development process had been. Many principals were left out of the process of training or preparing educators for the new curriculum could prove to be problematic. This division of labour and involvement among teachers themselves and teachers and their principals could be seen as an obstacle to successful whole school curriculum development and implementation. The issue of the relationship between principals and their teachers on the issue of involvement is highlighted in question 31 of the questionnaire. No respondents indicated that they would prefer their principals to represent them on curriculum development matters. The majority would rather prefer to be involved in such matters individually.

A cause for concern raised by the respondents was that only a few teachers (in most cases one teacher per school) represented remainder of the teachers at the same grade level at curriculum development and curriculum implementation workshops. Some teachers responded as follows:

"The problem is that those who attend workshops do not even bother to share with the rest of us. We have to struggle to get the information..."

"...I feel that those of us who have the privilege of attending workshops should be able to help other teachers..."

This could stem from the Department of Education's approach of implementing curriculum 2005 through what is known as the cascade model. According to this method, information is disseminated from the top-down by training a few participants at each level who will in turn train others. A major problem with this
approach has been the fact that there is no guarantee of the quality of the information and training of individuals as the process spreads down. As mentioned by the participants, a typical problem to this approach is that most primary schools had more than six grade seven teachers. This makes it difficult for the trained teacher to find time to train or share the information with all his/her colleagues, considering the teachers' workload and fixed school timetables.

5.3.2 Teachers' understanding and knowledge of environmental education in the new school curriculum.

In this section, teachers were asked the question: *What is your understanding of environmental education in the primary school curriculum and in particular grade 7?*

To familiarise the respondents with the concept of environmental education the researcher had to use familiar concepts such as, environmental studies or teaching and learning about the environment. At first, the respondents in group one seemed reluctant to answer the question, but later came up with different views about environmental education in the primary school curriculum, including the fact that environmental education is "about nature", "educating people about nature conservation" or "making learners aware of nature conservation". It was interesting to note one particular response which seemed to be different to that of the group:

"I think it deals with learning about the depletion of natural resources and how we can ensure how to replace some of the resources".

The most dominant views expressed in group one were that environmental education refers to nature and nature conservation. It is interesting to note that this understanding of environmental education was similar to earlier views and
approaches to environmental education as discussed in paragraph 2.1.2. In Chapter two this was explained, based on information from various literature sources that earlier responses to the environmental crises in South Africa basically focused on conservation education viewing the environment in its biophysical dimension only. These views about environmental education changed over time. This understanding of environmental education as expressed by respondents in group one could represent the poor level of understanding and the state of environmental education in schools. From the interviews it became clear that though environment was introduced in the new OBE curriculum, the level of understanding of teachers posed an issue of great concern. This came to light when most of the respondents indicated that environmental education could only be taught in the natural sciences and mainly by biology and geography teachers.

It is also interesting to note that the majority of respondents in question 1 of the questionnaire believed that environmental education implied nature conservation or conservation education, followed by those who believed that it referred to Science education. This could be a further indication of the fact that in the past emphases was placed on conservation education as a response to the environment crises. Question 10 also revealed the fact that some respondents believe that environmental education could only be taught in subjects such as biology, geography or science.

The responses for this question were divided indicating uncertainty of the respondents in selecting the most appropriate option. A number of teachers indicated that environmental education was relevant to all learning areas. This could be an indication that teachers had a positive attitude towards the environment and the need to care for it, as could be seen in the responses of question 11. The majority of respondents believe that man should not have an unlimited potential to dominate the environment. This was reaffirmed by responses to question 12 where more than ninety percent of the respondents
agreed to the importance of environmental education. Questions 13 to 19 indicated of the interest and attitude of the respondents towards the environment and environmental issues as well as the level of environmental awareness and knowledge among the respondents.

The respondents in group 2 were confident about their understanding of environmental education and what it entailed in the primary school curriculum. The general trend of responses was that it was about “developing an awareness about the beauty and importance of the environment”. Some of the responses were as follows:

“I believe that environmental education in the primary school should mean that teachers are able to prepare children in the understanding and caring for the environment so that they grow with a firm foundation of environmental awareness and knowledge”.

“The new curriculum brought a new enlightenment to us in terms of being environmentally aware. I have come to realise that I can use my knowledge of the local environment to make my learners aware of the beauty of their environment and how we can further develop it for tourist attraction”.

Most respondents in group 2 were aware that environmental education should be taught across the curriculum, and they had an understanding and awareness of environment as a phase organiser. They suggested strongly that most teachers were not aware of the place and status of environmental education in the curriculum and would not be capable of handling environmental education because they lacked significant training and knowledge about environmental issues.
There was common agreement in both groups that the level of teachers' understanding of what is expected in the teaching and learning of the environment and environmental issues was poor. Responses from both the questionnaire and interviews showed that teachers could have positive attitudes and sympathetic understanding of the need to care for the environment and to have environmental education in the school curriculum. This observation does not necessarily imply that teachers have a good understanding or sufficient skills and knowledge of environmental education processes. Indications from the responses revealed a willingness and positive attitude towards environmental education. However, only poor signs of environmental knowledge and skills seemed to exist.

Question 39 revealed that the majority of respondents were not aware that environmental education had become an integral part of the new curriculum. This state of affairs raises questions about the extent to which teachers could be ready to contribute meaningfully into environmental education curriculum development processes. This lack of sufficient environmental understanding and knowledge among teachers could be an obstacle to successful environmental education curriculum development by teachers. The poor state of environmental education in schools could also be attributed to a highly fragmented subject oriented curriculum which dominated the South Africa school curriculum for many years.

5.3.3 Teacher involvement in the practice of environmental education and the place of environmental education in the school curriculum

Respondents were asked to respond to the following question: **Who do you think has the responsibility of teaching environmental education in schools and why?**
It was interesting to note that an immediate response from the respondents in group 1 involved the mentioning of the different subjects or learning areas that they thought were more relevant for environmental education. These subjects included geography, biology and natural sciences.

It was also interesting to note that though the respondents were already involved in implementing the new curriculum in schools they, did not refer to environment as a phase organiser or an organising theme across the various learning areas. This could be as a result of the current curriculum implementation process placing very little emphasis on specific learning areas and organising themes or phase organisers. During activities, learning areas were only referred to as examples involving the development of learning programmes.

The respondents also indicated that there were no specific workshops that focused on environment or particular learning areas. The only environmental education workshops and support programmes were conducted through NGO funded projects and only in some areas.

Respondents in group two, however, argued that all teachers had the responsibility of teaching environmental education and issues about the environment in their various learning areas. They also raised the point that many teachers are not well trained and prepared to handle environmental themes and topics. One of the respondents argued:

"...I think all teachers, but as of now I think most teachers are not knowledgeable enough to handle it (environmental education). I would rather suggest that interested teachers should volunteer because then they become more effective rather than when they are compelled to do so".
A sentiment such as this could indicate that teachers who had been involved in an environmental educators' network had experienced problems when attempting to make the network inclusive of all teachers. This was brought to light by complaints from some respondents that while workshops were organised by the Department of Agriculture and Environmental affairs, the teachers who attended such workshops did not share the resources and information with other teachers. One of the respondents in group one stated:

"I know for a fact that Environmental officers do hold teachers workshops but the problem is that when they go back to schools they don't practice what they have learnt. It ends up as theory without practice".

In response to the same question and statement reflected above, respondents in group 2 blamed the lack of environmental education practice in schools to the lack of whole school support in the implementation of environmental education and environmental projects that needed the involvement of the entire school. They complained that other teachers tended to have a negative attitude and considered it a waste of time. This problem was caused by the subject-based orientation of most of the teachers and was worsened by the fact that teachers were overloaded. Some respondents also indicated that many teachers taught different subjects to classes at more than two grade levels.

It could also be significant to learn that the involvement of one teacher or few school teachers in environmental education did not imply that all the other teachers would be involved. This observation seemed to echo the sentiments of (Fullan, 1991:127) as discussed in paragraph 3.6, namely that a process of change should be inclusive of all teachers. It is argued that change is a highly personal experience which all teachers affected by it should have an opportunity to work through the experience in such a way that they are rewarded individually or directly.
Also to be noted is the fact that although environmental education has been allocated a special place in the new curriculum it did not guarantee that environmental teaching and learning would actually take place. The apparent lack of environmental education curriculum development or learning programme development workshops and meetings could act as an obstacle to authentic teacher involvement in the teaching of environmental education and curriculum development.

Another question relevant to the above was as follows: *Do you think as teachers you are involved in teaching about the environment or relevant topics?*

Responses to this question added value to assumptions and observations made in the above discussion. Some responses were as follows:

“I don’t think teachers are fully involved in teaching about the environment. I think teachers have always depended on guided syllabuses and textbooks to teach the various subjects. OBE however makes it possible for us to teach environmental education, we only need serious training and knowledge”.

“...The fact that we still find litter in our school yards and in our rivers and everywhere is a clear indication that our teaching of environmental education is still very poor and in most cases completely absent.”

“No, the other problem is that many teachers are already used to the idea that environmental studies was a non-exam subject and those who taught it, were not serious about what they taught. Some
would even use the period (meant for environmental studies) to teach something else.”

It is interesting to note that the respondents were critical about their own level of engagement in the teaching of environmentally related issues. Some perceived this as lack of emphasis on environmental learning and a lack of appropriate training and knowledge. It is useful to note that many respondents did not view environmental education as something that had been completely absent from the school curriculum. However, they recognised it as a field that has been under-emphasised or ignored. An almost similar trend existed in questionnaire responses as indicated for questions 20 to 23. In question 20, responses indicated that respondents were not confident about whether their teaching actually dealt with environmental issues or not. In question 21, there are signs of uncertainty about whether the respondents made use of their local environment or community in their teaching. In the questionnaire, responses could have been influenced by factors such as honesty and suspicion. Interview responses could vary due to openness of the interview sessions and the fact that they were able to discuss issues.

The apparent lack of teacher involvement in the teaching of environmental education in schools could imply that there is a need to expose teachers to the importance and relevance of environmental education before expecting them to be fully involved in developing relevant curricula for environmental education. There is also a need to expose teachers to debates about the dynamic and integrative nature of environmental education, as discussed in the second chapter.
5.3.4 Teachers perceptions about involvement in environmental education curriculum development processes

The question asked was: \textit{Do you think as teachers you are confident enough to develop your own teaching and learning material, syllabus or curriculum for environmental education?}

Contrary to responses about whether teachers were involved in teaching environmental education, responses to this question were overwhelmingly positive in both groups. The respondents complained that they have always had problems with using textbooks and materials that are not relevant to their local settings. They argued that although they did not possess sufficient knowledge on environmental education they felt confident that they were in a good position to understand the needs of children and the local environment. Some statements were as follows:

"I believe that we can be able to develop our own environmental education syllabus, which would be more relevant to our local needs. Because you might find a situation in which somebody is talking about mines and mining when we do not even have a single mine to refer to in our local environment. It would help if we were to develop our own syllabuses".

"...I fully support that because if a book is written by somebody from Jo'burg you might find that, they are referring to the city and city life when our children have never been exposed to such. So, if we were to be involved it would really help because then you will be able to use examples of things which are relevant to our situation".

"I also believe that the local environment is well known by those who live in it. I also think that all stakeholders should be involved in
developing learning materials based on the local environment rather than have somebody from elsewhere do everything out of ignorance”.

“I actually believe that even local experts should not be given the total responsibility of developing learning materials for us, because if they do, we will be expected to memorise everything as prescribed by them”.

It is interesting to note that the respondents were very outspoken on this issue. The frustrations they experienced with many of the textbooks and study guides were clearly expressed. These responses clearly indicated of the preparedness and deep desire of teachers to play a primary or central role in various aspects of curriculum development. It should also be noted that most respondents to question 35 would rather prefer to receive readily prescribed curriculum packages. It became clear from the reasons given under question 36 that this preference was caused by the fact that some of them believed it would be more convenient and also because of a lack of confidence and sufficient knowledge and skills to handle environmental education.

This issue of lack of training in environmental education was revealed by the fact that some of the respondents indicated the need for training on environmental education knowledge and skills during the interviews. Responses to question 27 reaffirmed the fact that teachers feel confident about their competence in curriculum development processes. They show a high level of willingness to be involved in further training on curriculum development issues as indicated in question 28. As was the case during the interviews, many respondents to question 29 would prefer to see teachers play a central role in partnership with experts in curriculum development processes.
In question 24, the questionnaire provided valuable information about the fact that most of the respondents had no background of curriculum studies. This could imply that many teachers would find it difficult to fully understand curriculum processes and therefore to participate meaningfully in shaping the environmental education curriculum. With reference to question 26 most respondents showed interest and a willingness to participate in curriculum development processes (similar to interview respondents).

It is significant to note that although teachers were not fully involved in the teaching of environmental education they understood that environmental education curriculum should focus on local environmental contexts. In their responses teachers clearly distanced themselves from curriculum development and criticised current curriculum development processes. A sense of ownership of the process of curriculum development was clearly absent from the responses. This could be as a result of the fact that most materials and resources they used came from elsewhere and seemed unfamiliar to learners. Examples of some responses about mining and city life bore clear testimony to the above.

A second question was: **Are there any structures in place, through which teachers in grade 7 are able to come together to help each other develop learning programs?**

All respondents indicated that structures existed in the form of clusters of teachers from neighbouring schools. Groups of 4 to 8 teachers meet at specified times to help each other develop learning programs for various learning areas and to share their difficulties in implementing Curriculum 2005. These clusters were an initiative of the Northern Province Department of Education. However, the respondents indicated that these clusters were dysfunctional. They also acknowledged the fact that the cluster method was highly successful in the foundation phase. The respondents cited a number of reasons for the failure of the cluster meetings in grade 7:
"...Yes, we have cluster groups. It is only that they have not been fully functional because in some schools they have not yet started implementing all the new learning areas in full due to the lack of both man power and material resources”.

"...Most of us don’t even understand the policy documents. In some schools they don’t even bother to study the policy documents. So how can you expect such meetings be successful”?

In answer to question 30 of the questionnaire, the majority of respondents indicated that no teacher structures existed to deal with issues across the curriculum. Few indicated that they were aware of such structures.

As mentioned earlier, most of the interview respondents were concerned about the fact that some teachers were expected to handle more than one or two learning areas. This led to teachers divided attention and not knowing what to concentrate on. It became clear from the discussions that such clusters lacked clear direction, support and guidance.

An issue that was repeated during the interviews was that few teachers were involved in the process of curriculum change, and few benefited from the training that was needed by all teachers. There was an apparent lack of information transfer from teachers who were privileged to attend training workshops on the new curriculum or environmental education. This apparent lack of interaction and co-operation among teachers could be due to the fact that most teachers were overloaded and that no specific time on the schools’ timetables was allocated to attend workshops.

During the interviews it was also mentioned that the so-called 'key teachers' were actually selected by the principals to attend workshops on behalf of other
teachers in the same school and grade level. This practice was arranged by the Department of Education, and caused controversy on the issue of teacher empowerment and involvement in change processes. This form of division also existed between teachers who were privileged to attend workshops organised for environmental education and teachers who could not. The first group blamed the latter for not being available to help, while the latter blamed the lack of whole school support.

5.3.5 Teachers' views about their own involvement in Curriculum 2005 development processes and government support

A follow-up to the above question was as follows: Have teachers been involved in the broader process of curriculum (2005) development from the time when it was introduced and in which form?

Most respondents indicated that they were not aware of any form of teacher involvement at the beginning of the curriculum development process. Some respondents claimed that they only learnt about the new curriculum in the media. An interesting issue was also brought to light by one of the respondents in the first group.

"In the beginning learning area committees were elected amongst us but they were never invited to do their work. It would seem that the authorities felt that teachers were not fit enough to contribute meaningfully to the process. We however, think that it would help to have the process starting from bottom-up".

A concern such the above confirms a similar concern reported by Jansen, (1999: 8). Such concerns by teachers could be signalling feelings of disempowerment and isolation. Respondents from both groups made it very clear during the interviews that they had been left out of important debates on why the OBE
approach would be relevant to the South African context. They also indicated that it had become difficult for them to keep abreast of current changes in education and the curriculum in particular. Responses to question 40 indicated that some teachers were not yet trained or well informed about the new curriculum or changes in the new curriculum although some of them in the same grade level had had the opportunity. Question 41 brought to light that the majority of respondents believed that teachers could ensure the successful implementation of the new curriculum.

A significant observation regarding the main objectives of this study is that the poor level of teacher involvement in the broad curriculum process in South Africa could prove to be an obstacle to efforts of attempting to engage teachers in developing curricula for environmental education. When asked whether they had ever attended any workshop or meeting dealing specifically with environmental education, the respondents in group one indicated that they had never attended a single workshop. However, they knew that such workshops were held. They thought that the workshops were only meant for teachers who taught natural sciences.

Respondents in group one indicated that they were able to attend some workshops, aimed at training teachers to integrate environmental education into the school curriculum and develop relevant learning programmes. These workshops were organised and facilitated by the Department of Agriculture and Environmental affairs and by Delta and UNESCO. However, there was a lack of continuity of the workshops because of insufficient funds. There was also no school-based support after workshops. An issue raised by one of the respondents in group two was as follows:

"It feels good when we attend these workshops and we feel confident that we will be able to contribute in developing our own materials. But when we go back to our schools we often feel
isolated and it becomes almost impossible to introduce this environmental education".

The apparent lack of whole school support and involvement in environmental education featured as a major point of concern for the respondents in group two, as they have been making efforts to promote the teaching and learning of environmental education in their schools. A significant observation is that although teachers could be enthusiastic about their involvement in developing curricula for environmental education in their schools, they needed support, not only from the Government, but also from of their colleagues and their entire school community.

A follow-up question on the issues of workshops and attendance of professional development meetings was as follows: What time of the day (during or after school hours) would you like to attend curriculum development meetings and other professional development workshops?

Respondents from both groups were divided on this issue. However, they indicated that they would prefer to attend such meetings during school hours. They also raised a concern that it is difficult to attend such meetings without disruption of classes, because the school time-table was fixed and overloaded. It therefore needed to be adjusted to suit such programmes. The respondents were critical of afternoon workshops, introduced by the Department of Education in a bid to avoid the disruption of classes. Their argument is based on the fact that the afternoon is too short and some have transport problems because of the distance between schools and centres where workshops were held. Some respondents had to travel long distances to their homes. The following statements, from group one and group two respectively, highlight the above sentiments:
"I am particularly concerned that the workshops that were previously planned for us have now all been cancelled, and the ones that have been organised now are only meant for a few hours. It would seem that the authorities are only doing this for the sake of doing it”.

"I also blame teachers who are not faithful in attending full workshop sessions because some of us leave the workshop venues immediately after getting their meals when the programmes are still continuing”.

The second concern raised by the respondents in group two brought to light that there was another side to this issue. The issue of teacher commitment in using the opportunities forwarded to them could also be cause for concern. Question 32 revealed that the respondents were divided on the issue of time for curriculum development meetings. In this case, a small number of respondents would prefer to attend such meetings after school hours. A limiting factor is that the respondents could not elaborate on their preference because of the nature of the questionnaire. The issue of time and its availability for teachers’ curriculum development activities enhances the success of efforts to make teachers fully involved in curriculum development activities.

The last question was as follows: *What form of government support do you get in the process of curriculum change?*

All the respondents indicated that government support was very poor and did not exist in many cases. The respondents were adamant and maintained that government seemed to stay aloof of the process as it happened at grassroots level. They argued that the government seemed less concerned about teachers’ struggles to understand the new curriculum. One of the respondents made this strongly worded statement:
"I think it (government support) is terrible and in most cases nonexistent. I was only called for one workshop at the beginning of last year and I was not called for another one this year. I definitely think there is no support from the government."

It was interesting to note how the respondents reacted when this question was posed. They said that the government was not carrying its responsibility of supporting them throughout this process of curriculum implementation. This was confirmed by the fact that teachers feel disempowered to contribute meaningfully in the process of curriculum change. To them it is almost as if the new curriculum has been dumped onto their shoulders without any form of assistance. The respondents mentioned that they did not see government support in terms of resources, and of training of all educators in an equitable way. It was argued that there was no support specifically aimed at helping them understand the new learning areas and phase organisers such as environment.

The respondents in group one complained that they had never attended a workshop focusing particularly on environmental education or environment as a phase organiser. Some respondents indicated that they found it difficult to identify or interpret specific outcomes and assessment criteria, relevant to environmental education. Some respondents were critical and suspicious about the type of support they get from some NGO's, contacted to the Department of Education. One of the respondents said:

"I might sound like I am talking politics, but I think that government introduces many useless projects because some people in the government benefit financially from them."

Statements such as the above indicate problems and frustrations on the part of teachers. Claims for a teacher centred approach to curriculum development do
not seem to obtain the necessary support. It does not seem obvious that the new role of teachers as curriculum developers had been getting the necessary support in terms of the needed training and time.

5.4 CONCLUSION AND SYNTHESIS

The use of both the questionnaire and group interviews for this study proved to be very useful for providing insights into teachers' perceptions about the issue of curriculum development and the issue of their involvement in such processes. The above discussion highlights some perceived obstacles towards successful environmental education curriculum development and the subsequent involvement of teachers. These obstacles were identified as follows:

- The apparent lack of teacher involvement in essential debates about the implications and nature of the new curriculum: teachers only became aware of the new curriculum when conclusions had already been drawn on the suitability of the new curriculum framework and ways of implementing it. Teachers only came into the picture during the dissemination of information about the new curriculum.

- The new role of teachers as curriculum developers in the new curriculum framework is not clearly defined and supported. There is an apparent lack of efforts to ensure that teachers understand their new role.

- Poor methods and strategies of information dissemination and teacher training on the new curriculum e.g., the training of only representative teachers per school and the use of the cascade model to disseminate information which could result in its distortion and degrading.
- Poor experience of curriculum development practices among teachers and the lack of sufficient training on curriculum development knowledge and skills.

- Dysfunctional curriculum or learning programme development structures for teachers across the curriculum.

- Rigid and overloaded school timetables and the fact that teachers are also overloaded with two grades and overcrowded classrooms.

- A poor focus on environmental issues and environmental education as an integral part of the new curriculum.

- The apparent lack of teacher involvement and training on appropriate methods and strategies of handling environmental teaching and learning in schools. This is worsened by the lack of whole school support for teachers who are involved in environmental education processes.

- The low level of understanding the implications and nature of environmental education and current trends in environmental education practices.

- The lack of continuity and consistence of environmental education (professional development programmes) for teachers.

The above issues call for an in-depth look into the realities of curriculum development processes and the difficulties faced by teachers who have the final responsibility of implementing the curriculum. Heed should be taken of Oliva's challenge, as discussed in paragraph 3.2. No persons should be involved in the planning process when it is a foregone conclusion that curriculum change will be implemented as already planned. The challenge is to attempt to change the status quo of having teachers at the receiving end of curriculum decisions, towards making them equal and valuable partners in curriculum development.
processes. These challenges will also need to be addressed in order to pave the way for curriculum development processes that take the involvement of teachers seriously, as a way of enabling the practice of environmental education in schools. An issue of concern is the disparity which seem to exist between the good intentions enshrined in the new curriculum framework about teachers' roles as curriculum developers, as well as, the importance of environmental education as an integral part of the new curriculum, and the realities of the lack of both material and human resource support for such intentions to be realised.

The next and final chapter will investigate ways and strategies that should be considered towards the eradication of obstacles to meaningful teacher involvement in curriculum development processes.
CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 INTRODUCTION

The main focus of this final chapter is to provide conclusions and to reflect on the entire study. This will include a brief synthesis of the findings, possible weaknesses of the study culminating in an outline of relevant recommendations and conclusions.

6.2 A SUMMARY OF RESEARCH FINDINGS

6.2.1 Teachers' perceptions on the need for change in education and the school curriculum in particular

On the question of the need for change in what is being taught and how it is being taught including the entire curriculum framework, there is little doubt from the findings of this study of the need for change in education and curriculum development in particular. Responses to question 37 of the questionnaire show clear support for the need for change in teaching and learning. Similar responses are also evident in interview findings as explained in paragraph 5.3.1. Interview responses were, however, useful because they reveal some teacher concerns on the actual process of curriculum change. These concerns include: firstly, the issue of school principals who are not supportive of teachers' involvement in curriculum and professional development activities (this finding also correlate with those of question 31 of the questionnaire, as discussed in paragraph 5.3.1). Secondly, the issue of teachers having to be represented in curriculum development and implementation training workshops (this approach is one based on the cascade model of training teachers as discussed in paragraph 5.3.1).
Although there are indications that teachers understand the need for change in the South African education system and the curriculum in particular, the crucial issue posing challenges to successful curriculum development is the issue of teachers forming part of the entire process from the early stages. According to the above findings, it would seem that there are still problems that need to be properly addressed in order to make headway on issues such as participatory curriculum development processes.

6.2.2 Teachers' understanding and knowledge of environmental education in the school curriculum

A significant issue to be noted, is that most respondents in both the questionnaire and interview findings paragraph 5.3.2 understand or associate environmental education to nature conservation or science education. Only in group 2 (respondents who were actively involved in environmental issues paragraph 4.3.1.1) of the interviews, the majority of respondents stated broad ideas of what environmental education involves.

This general narrow regard for environmental education as conservation education or nature studies show similar trends to those of the early stages in the development of environmental education as a response to the environment crisis. According to the various literature sources discussed in chapter two, paragraph 2.1.2 of this study, the concept of environment was only understood in terms of its biophysical dimension without considering of other dimensions viz., political, economic and social. Earlier trends in environmental education are therefore also based on a similar understanding and thus limiting its scope and ability to respond effectively to environmental issues both locally and globally. This finding could also impact negatively on teachers ability and readiness to deal effectively with environmental education curriculum development issues based on this narrow understanding of environmental education. Any attempts to ignore this apparent need for teachers to develop a broad and good understanding of
environmental education processes in general and in the school curriculum could prove to be a barrier to effective environmental education curriculum development. This understanding of environmental education among teachers could also impede any intentions to integrate environmental education into the new curriculum as required by the new curriculum framework.

Based on the findings of group 2's interviews, paragraph 5.3.2, there are indications that much could be achieved in terms of teachers environmental knowledge, skills and understanding if they are well supported and engaged in a variety of environmental education activities and processes.

6.2.3 Teachers' level of environmental education practice

To begin with, teachers showed a poor understanding of the place of environmental education in the new curriculum. Although most respondents were already involved in Curriculum 2005 training workshops they, however, showed very little understanding of how they could integrate environmental issues into the curriculum. Respondents in group 2 also gave an indication that there was some reluctance by teachers of other subjects or learning areas to become involved in environmental education workshops and projects as they felt that it was beyond their scope.

Another significant finding is the apparent lack of whole school support for teachers who make efforts to involve the entire school in environmental education projects. Reasons for this attitude could be the subject-based orientation of many teachers and the fact that many teachers are overloaded with schoolwork, as discussed in paragraph 5.3.3. The findings could imply the lack of any purposeful efforts to make all teachers aware of the need for their involvement and individual responsibility to deal with environmental issues in their teaching. This could serve as a barrier to their committed involvement in environmental education curriculum development processes. This finding further
alerts us to Fullan’s claim, as discussed in paragraph 3.6, change is a highly personal experience that all teachers affected should have the opportunity to work through it.

It is significant to note that both the questionnaire and interview responses reveal that teachers have been very poorly involved in the teaching of environmental education in schools (paragraph 5.3.3). Interview responses provide a better perspective on this issue. The respondents were able to provide reasons such as the lack of emphasis in environmental issues in the curriculum and the lack of appropriate training of teachers on environmental knowledge and skills. Respondents also indicated their desire to be fully involved in the teaching of environmental education.

The fact that teachers currently lack proper experience in integrating environmental education into their teaching could also impede meaningful teachers’ involvement in environmental education curriculum development activities, both at local and national level.

6.2.4 Teachers’ perceptions about their involvement in environmental education curriculum development processes

Although findings in the preceding sections could indicate that teachers are not ready to engage in meaningful environmental education curriculum development processes, the findings as stated in paragraph 5.3.4 reveal an overwhelming support for teachers assuming their roles as curriculum developers at all levels of decision-making. The respondents clearly indicated that they were dissatisfied with using textbooks and other materials that were not relevant to local settings. This echoes similar claims by Lotz, Combleth and Robottom discussed in paragraph 3.5 that curriculum is shaped contextually. Both the questionnaire and interview findings show that there is a need among teachers to play a central role in curriculum development processes. This need for teachers to play a more
meaningful role in curriculum development is also widely supported by many curriculum scholars discussed in paragraphs 3.2 & 3.3. Oliva (1988:40) argues in favour of teachers to form the professional core of curriculum planners, in partnership with curriculum specialists.

While the questionnaire responses indicated that there were no curriculum development structures among teachers, interview responses however went further to reveal that such structures existed on paper but were dysfunctional. Local teacher cluster groups had been established for the purpose of teachers getting together in order to share ideas on developing learning programs for the new curriculum (paragraph 5.3.4). This situation could be attributed to the lack of sufficient and adequate support structures for teachers in the entire process of curriculum development and implementation.

6.2.5 Teachers' perceptions about their own involvement in curriculum 2005 development, and implementation processes and the level of government support

A significant finding was that teachers felt that they did not have any part to play in the inception of the new Curriculum 2005. Although they appreciate the need for change in education, they feel that they have been left out of important decision-making processes responsible for shaping the current curriculum framework and development processes. Although both the questionnaire and interview responses provided the same findings, interview responses provided an even bigger picture on this issue (paragraph 5.3.5). Group 1 interview respondents indicated that they had never attended a single workshop on environmental education while those in group 2 had. A worrying factor is that the majority of grade 7 teachers fall under the category of group 1. Another issue is that most workshops or meetings that promoted the teaching of environmental education in schools were sponsored and organised mainly by private
organisations and the Department of Agriculture, Land and Environment, with no any workshops organised by the Department of Education.

Another finding which focuses on the issue of time for curriculum development activities is that teachers feel the school time-table is too fixed and does not allow time for such activities. According to the findings in paragraph 5.3.5, most the respondents were dissatisfied with the type of support they obtain from the Department of Education and Training on the overall process of curriculum development and implementation. This apparent lack of teacher involvement in important decisions, deliberations and poor government support of teachers in such processes as curriculum development and implementation, could overshadow any efforts to empower teachers on environmental education processes completely.

6.3 POSSIBLE WEAKNESSES AND SHORTCOMINGS OF THE STUDY

The researcher had desired that the study could have had a much wider impact than it has, in order to enhance the quality of the findings. However during the course of the research process there were limiting factors which were beyond the researcher's control. After careful scrutiny of the entire research process several factors were subsequently identified that could be possible weaknesses or shortcomings of this study:

- The researcher wished to involve a large number of stakeholders in data collection for the study. A large number of education decision-makers would have enhanced the scope of the research project and also its findings and recommendations. However, this was not possible given the time and financial resources.
The researcher also wished to cover the entire Northern Province in the collection of data. Both time constraints and limited financial resources proved to be obstacles to accomplish this target.

Due to the apparent poor level of most teachers' understanding and knowledge of environmental education processes, some respondents found it difficult to clearly understand a number of questions. Some curriculum concepts were also unfamiliar to them and thus the possibility of some questions (in the questionnaire) having been misleading or unclear to them can not be ruled out completely.

It was the researcher's view that it would have been useful for the purpose of this study to engage teachers in participatory discussions or activities where they could have reflected on the entire curriculum development process as well as their possible involvement in the process, the aim being to elicit useful ideas and proposals for ensuring meaningful teachers' involvement in such processes.

It is this researcher's opinion that a case study involving some teachers who have participated in environmental education curriculum development activities would have provided a wider perspective, thus further enriching the research findings. However, the researcher could not establish such an opportunity.

6.4 RECOMMENDATIONS

In the opinion of the researcher, this study has provided valuable insights into obstacles or barriers towards meaningful and effective teacher involvement and participation in environmental education curriculum development processes. The findings of this research, including the literature discussed in earlier chapters revealed and reiterated the need to empower teachers or to facilitate their
empowerment on issues of curriculum decision-making and development, as well as on acquiring appropriate environmental knowledge and skills. The findings of this study further raise a number of issues, which affect both teachers and the entire education system. Sufficient redress mechanisms, appropriate measures and structural adjustments therefore need to be identified and implemented.

This study does not wish to simply portray teachers as victims of highly centralised and undemocratic educational bureaucracies. It wishes to alert both teachers and all other formal and non-formal environmental education providers and decision-makers for the need to be cautious and considerate in terms of the important and sensitive role and status that teachers should play and have in curriculum development processes. Based on the findings of this study, the following recommendations can be made:

- Allowing teachers to participate at every level of curricular decision-making. This implies that teachers should be involved from the onset of any curriculum deliberations even before decisions are actually taken. This could be done by establishing teacher curriculum working groups at national, provincial, local and school level. In this way, teachers will no longer be overlooked in important curriculum decision-making processes. It will also ensure that the gap which currently exists between theory and practice is narrowed.

- Ensuring that there are sufficient curriculum advisors who will facilitate such teacher working groups and provide further information on curriculum issues. These curriculum advisors will also provide continuous support and training to teachers on curriculum matters and other professional development needs.

- Making curriculum studies an important aspect of both in-service and pre-service teacher education programmes. Through such programmes teachers should be afforded opportunities to engage in praxis-based curriculum development projects and activities.
- Giving teachers opportunities to develop and further improve their resource material development skills, through both in-service and pre-service teacher education programmes. Teachers should be exposed to a wide range of existing resource material and information on curriculum issues and environmental education. This should, however, be accompanied by efforts to train teachers on how best the materials could be used or adapted to local contexts so that they can be beneficial to both the learner and the teacher. A relevant suggestion in this regard is made by Lotz (1999b:6), namely that teachers need supportive materials for localised curriculum development. Lotz further reports that the EECI has found that materials which support teachers to interpret new policy documents are vital to successful localised curriculum development at three different levels:

(i) Materials that interpret educational policy and provide pathways for teachers to develop localised environmentally oriented learning programmes.

(ii) Materials that provide and share examples of good practice.

(iii) Hands-on school-based curriculum materials that provide teachers with the tools to make the shift to learner-centred education.

The idea is not to impose materials developed by curriculum experts outside the school situation on teachers, but to create a good support base from where they can start working on their own curriculum ideas. Future research will therefore also need to focus critically on the adaptability of available resource material in environmental education to local individual teacher’s needs.

- There also needs to be a more focussed approach to environmental education and support to empower teachers on environmental knowledge and skills. This recommendation is supported by Steyn and Squelch’s (1997:2) claim (paragraph 3.6), that empowerment covers three areas namely, (i) knowledge, (ii) status and (iii) access to decision-making. This could be done by setting up a more specialised programme of teachers’ professional
development in environmental education. Such a programme will facilitate environmental education projects and a whole school approach to environmental education, as a point of departure.

- Professional development programmes for teachers should also aim at engaging teachers in participatory action research projects. In this way teachers will be able to reflect on their own environmental education practices while by working together with other teachers, they will be able to provide workable ideas and methods of improving their environmental education practices (Axelsson, 1993: 56). Professional development programmes for teachers should also aim at providing useful insight into the imperative for teacher involvement in curriculum development at a local level. Schools will also need to be more organised at local level by investigating issues of time-tableing in such a way that provision will also be made for professional and curriculum development activities. This will require the involvement of the relevant authorities who should recognise the activities to form an integral part of teaching and learning, through the establishment of supportive policy. This understanding will ensure that a whole school approach to environmental education is enabled. Future research will need to focus on participatory action research projects with teachers, in order to ensure that research on curriculum development in environmental education is teacher-driven and subsequently context-based.

- Networking among environmental educators from various schools at local, provincial and national level, as well as with other informal environmental education providers should be encouraged by establishing appropriate policy and structural support systems in the Department of Education and Training. 'Networking' can be understood in this context as a social process involving teachers seeking relationships that will allow them to learn and make changes in their practices, resulting in either developing new methods and materials themselves, or adapting ideas, practices and things developed by others.
(Neluvhalani & Mphaphuli, 1999: 33). A network may be described as a structure, whether informal or formal, that enables people to share information and work together (Taylor, 1997:113). The main benefit for teachers is that they will be able to find opportunities through which they can pool all their resources for the benefit of all. McAndrew & Pascoe (1993:42) report that Scottish teachers involved in networking activities and participated in environmental projects, developed better skills on how to integrate environmental issues into other subjects.

6.4.1 Model for teacher involvement in environmental education curriculum development processes

In order to make provision of the recommendations stated above, this researcher designed a model for teacher involvement in environmental education curriculum development, (Figure 3). This model will help to establish an interactive and comprehensive system of curriculum development in environmental education.
MODEL FOR TEACHER INVOLVEMENT IN ENVIRONMENTAL EDUCATION (EE) CURRICULUM DEVELOPMENT PROCESSES

OTHER EE SUPPORT STRUCTURES

- NGO's, DEAT, EE projects, Resource links

Provincial committees

Regional committees

District committees

Clusters

EE TEACHERS' CURRICULUM DEVELOPMENT FORUM

To co-ordinate teachers' activities & projects aimed at curriculum & materials development. To identify & find ways of dealing with teachers' professional development needs in EE.

CURRICULUM ADVISORY

EE Unit

INSET

PROVINCIAL DEPARTMENT OF EDUCATION

EE enabling policy

PRESSET

EE Unit

Figure 3
The model can be interpreted as follows:

The central idea of this model is based on the assumption that curriculum development should be viewed as an interactive process where teachers are expected to play a central role in partnership with other curriculum developers at different levels of curriculum decision-making.

According to this model, curriculum development activities should be teacher-driven with the Environmental Education ‘Teachers’ Curriculum Development Forum at the centre of all curriculum development activities. This forum will be expected to assume a co-ordinating function between teachers and other stakeholders in the provisioning of environmental education. This will further ensure a change away from a top-down approach towards a more teacher-driven and interactive curriculum development approach.

The fact that the Department of Education is placed at the top of the structure implies that there is still a need to recognise the decisive authority held by the Department on issues of curriculum development. It also implies that there is need for co-operation and common understanding between the Department and the Teachers’ Forum on the entire modus operandi of curriculum development. A mutual understanding will need to be acknowledged through the formulation of appropriate policy.

The three blocks, which follow that of the Provincial Department of Education, represent the need to have environmental education as part of every programme or sector of teacher education. This should also apply to curriculum studies and curriculum development activities.

The central block illustrates the central role played by teachers and further outlines some important functions of the Teachers’ Curriculum Development Forum. It is significant that this forum should exit at all levels of curriculum development and decision making in the province.
Another significant aspect of this model is the co-operation that exists with other environmental education interest groups and support structures, represented by the bottom block. It should be noted that this entire structure displays an interactive nature (represented by the arrows) representing the need for interdependence and mutual support and understanding, in order for environmental education to contribute meaningfully towards the need to deal effectively with environmental issues.

6.5 CONCLUDING REMARKS

This study has been an eye-opener regarding the fact that curriculum development can not be considered a simplistic process of 'give and take'. It is a complex and sensitive process that has enormous impact on the success of any educational changes that may be necessary. Although part of the participatory role ascribed to teachers in Curriculum 2005 is participation in curriculum development (Lotz, 1999b), it should be realised that meaningful and focused efforts will be required by all involved in education, in order to deal with barriers to this endeavour.

The central idea of this research is the realisation that in the quest for developing an effective environmental education curriculum, cognisance should be taken of the fact that an ethic of authentic involvement and participation of all concerned in the implementation of such curricula, should form the core of activities. 'Environment' helps provide a meaningful and contextual starting point for curriculum development at a local level (Lotz, 1999b). The need to involve teachers in curriculum development processes is of prime importance when it comes to environmental education because of its emphasis and reliance on local environmental issues.
LIST OF REFERENCES


JICKLING, B. 1997. If Environmental education is to make sense for teachers, we had better rethink how we define it! Canadian Journal of Environmental Education, 2, Spring.


APPENDIX A

A QUESTIONNAIRE FOR GRADE SEVEN SCHOOL TEACHERS IN SOME SCHOOLS IN THE THOHOYANDOU INSPECTION AREA, NORTHERN PROVINCE

This questionnaire seeks to find out your views concerning Environmental Education and need for your involvement in the process of curriculum development for Environmental Education in particular. Your response will be used in an evaluation of the above-mentioned area in order to make informed conclusions.

Please answer all the questions. Your name is not required, so be free, honest and give your true response to all questions.

Please indicate your response by placing a cross \( \checkmark \) in the appropriate block.

<table>
<thead>
<tr>
<th>1. Gender :</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>a</td>
</tr>
<tr>
<td>Female</td>
<td>b</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Marital status :</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Single</td>
<td>a</td>
</tr>
<tr>
<td>Married</td>
<td>b</td>
</tr>
<tr>
<td>Divorced</td>
<td>c</td>
</tr>
<tr>
<td>Separated</td>
<td>d</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. In which age category do you fall?</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>20 - 25</td>
<td>a</td>
</tr>
<tr>
<td>26 - 30</td>
<td>b</td>
</tr>
<tr>
<td>35 - 40</td>
<td>c</td>
</tr>
<tr>
<td>Over</td>
<td>d</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4. What is your professional qualification?</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Junior primary diploma</td>
<td>a</td>
</tr>
<tr>
<td>Senior primary diploma</td>
<td>b</td>
</tr>
<tr>
<td>Secondary teachers diploma</td>
<td>c</td>
</tr>
<tr>
<td>University education diploma</td>
<td>d</td>
</tr>
<tr>
<td>BA, Ed</td>
<td>e</td>
</tr>
<tr>
<td>Other, specify</td>
<td>f</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. What was your previous occupation?</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher</td>
<td>a</td>
</tr>
<tr>
<td>Administration staff</td>
<td>b</td>
</tr>
<tr>
<td>Full-time student</td>
<td>c</td>
</tr>
<tr>
<td>Unemployed after completing studies</td>
<td>d</td>
</tr>
</tbody>
</table>
6. How do you rate the training institution from which you obtained your most recent teaching qualification?

- Excellent
- Good
- Satisfactory
- Poor

7. How do you rate yourself as a teacher?

- Excellent
- Good
- Satisfactory
- Poor

8. Is your answer in question 9 (above) influenced by:

- Assistance from colleagues at the school
- Training institution
- Other, specify

9. What, in your own knowledge and understanding, is Environmental Education?

- Nature conservation
- Science education
- None of the above
- I have no idea

10. In which area of learning do you think Environmental Education is most relevant?

- Biology
- Geography
- Science
- All learning areas (subjects)

11. What, in your opinion, should be learnt about man and his environment?

- Man should conserve nature
- Man should use natural resources wisely
- That man has unlimited potential to exploit and dominate nature

12. How important do you consider Environmental Education to be in the primary school curriculum?

- Very important
- Important only in certain learning areas
- I do not see a specific need for Environmental Education
20. To what extent do you think that your teaching contributes directly towards solving environmental problems or promoting awareness about the environment?

| Not at all | a. |
| Fairly    | b. |
| Limited   | c. |
| Very well | d. |

21. In your teaching, do you make use of your local environment and community life as learning and teaching resource?

| Often     | a. |
| Always    | b. |
| Hardly    | c. |

22. Do you think it is possible to teach about environmental issues in or through your subject (learning area)?

| Yes       | a. |
| No        | b. |

23. Motivate your answer to question 22.

--

24. Have you in one way or another been exposed to Curriculum Studies as a field of study?

| Yes       | a. |
| No        | b. |

25. If your answer in question 24 above is Yes, please write the name of the institution.

--

26. Do you think there is need for you to be involved in developing subject curriculum or syllabus (learning programs)?

| Yes       | a. |
| No        | b. |

27. Do you think that you are competent enough to develop curriculum (syllabus or learning programs) for your learners?

| Yes       | a. |
| No        | b. |
13. How is your involvement in environmental awareness campaigns and activities?

<table>
<thead>
<tr>
<th>Option</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>None at all</td>
<td>a.</td>
</tr>
<tr>
<td>Sometimes</td>
<td>b.</td>
</tr>
<tr>
<td>Fully involved</td>
<td>c.</td>
</tr>
<tr>
<td>Only some teachers in my school</td>
<td>d.</td>
</tr>
</tbody>
</table>

14. How well do you know issues about your local environment?

<table>
<thead>
<tr>
<th>Option</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am well informed and aware of what happens amongst people</td>
<td>a.</td>
</tr>
<tr>
<td>I know much about the natural environment</td>
<td>b.</td>
</tr>
<tr>
<td>I am well informed about both human and natural issues of my environment</td>
<td>c.</td>
</tr>
</tbody>
</table>

15. Are you aware of any problems facing your local environment?

<table>
<thead>
<tr>
<th>Option</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>a.</td>
</tr>
<tr>
<td>No</td>
<td>b.</td>
</tr>
</tbody>
</table>

16. Please specify the nature of environmental problem if your answer to the above question is yes.

17. Who do you think has the responsibility of solving environmental problems?

<table>
<thead>
<tr>
<th>Option</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>The community</td>
<td>a.</td>
</tr>
<tr>
<td>Schools (teachers and learners)</td>
<td>b.</td>
</tr>
<tr>
<td>The Department of Environmental Affairs and Tourism</td>
<td>c.</td>
</tr>
<tr>
<td>All the above</td>
<td>d.</td>
</tr>
</tbody>
</table>

18. Are you aware of any local, national or international body or organisation which addresses environmental issues and concerns?

<table>
<thead>
<tr>
<th>Option</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>a.</td>
</tr>
<tr>
<td>No</td>
<td>b.</td>
</tr>
</tbody>
</table>

19. If your answer to question 18 above is Yes, please name the organisation in the space provided.
28. If you are given a chance to attend a professional development course in curriculum development, what would be your area of need?

<table>
<thead>
<tr>
<th>Option</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge about relevant content</td>
<td>a</td>
</tr>
<tr>
<td>Skills needed in developing curriculum</td>
<td>b</td>
</tr>
<tr>
<td>I have no need for further development</td>
<td>c</td>
</tr>
</tbody>
</table>

29. What do you think should be the role of teachers in developing curriculum?

<table>
<thead>
<tr>
<th>Option</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observers in the process</td>
<td>a</td>
</tr>
<tr>
<td>Main participants</td>
<td>b</td>
</tr>
<tr>
<td>Leave the whole process to curriculum experts</td>
<td>c</td>
</tr>
<tr>
<td>Work hand in hand with curriculum experts</td>
<td>d</td>
</tr>
</tbody>
</table>

30. Do you have any forum or meetings where teachers from various subjects share ideas about their teaching and help each other?

<table>
<thead>
<tr>
<th>Option</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>a</td>
</tr>
<tr>
<td>No</td>
<td>b</td>
</tr>
</tbody>
</table>

31. If teachers are expected to be involved in the process of developing curricula, would you prefer to:

<table>
<thead>
<tr>
<th>Option</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have all teachers fully involved</td>
<td>a</td>
</tr>
<tr>
<td>Have representatives from each school</td>
<td>b</td>
</tr>
<tr>
<td>Have union leaders representing teachers</td>
<td>c</td>
</tr>
<tr>
<td>Have principals representing teachers</td>
<td>d</td>
</tr>
</tbody>
</table>

32. At what times would you prefer to attend meetings on curriculum development, if there is need?

<table>
<thead>
<tr>
<th>Option</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>After school hours</td>
<td>a</td>
</tr>
<tr>
<td>During school hours</td>
<td>b</td>
</tr>
<tr>
<td>I do not see any time available for that</td>
<td>c</td>
</tr>
</tbody>
</table>

33. Are you familiar with any curriculum decision making structures or officials in the department of education?

<table>
<thead>
<tr>
<th>Option</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>a</td>
</tr>
<tr>
<td>No</td>
<td>b</td>
</tr>
</tbody>
</table>

34. In which areas of the curriculum would you prefer to make your own decisions?

<table>
<thead>
<tr>
<th>Option</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>The type of content</td>
<td>a</td>
</tr>
<tr>
<td>The methods and strategies of teaching</td>
<td>b</td>
</tr>
<tr>
<td>Both of the above</td>
<td>c</td>
</tr>
<tr>
<td>None of the above</td>
<td>d</td>
</tr>
</tbody>
</table>
35. Would you prefer to receive readily prescribed curriculum packages if expected to teach Environmental Education?

<table>
<thead>
<tr>
<th>Yes</th>
<th>a.</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>b.</td>
</tr>
</tbody>
</table>

36. Please give a reason for your answer in question 35 above.

________________________________________________________

37. Do you think that change in what you teach is necessary?

<table>
<thead>
<tr>
<th>Yes</th>
<th>a.</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>b.</td>
</tr>
</tbody>
</table>

38. Are you familiar with the concepts and terminology of the new Curriculum 2005?

<table>
<thead>
<tr>
<th>Yes</th>
<th>a</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>b</td>
</tr>
</tbody>
</table>

39. Are you aware of any decision or plans to promote or include environmental education across all subjects (learning areas) in the new Curriculum 2005 (Outcomes based education)?

<table>
<thead>
<tr>
<th>Yes</th>
<th>a</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>b</td>
</tr>
</tbody>
</table>

40. Have you attended any workshop or meeting on the new Curriculum 2005?

<table>
<thead>
<tr>
<th>Yes</th>
<th>a</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>b</td>
</tr>
</tbody>
</table>

41. Who in your opinion could ensure the successful implementation of Curriculum 2005?

<table>
<thead>
<tr>
<th>Teachers</th>
<th>a.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Department of Education</td>
<td>b.</td>
</tr>
</tbody>
</table>

42. How do you rate teacher involvement in the current process of Curriculum 2005?

<table>
<thead>
<tr>
<th>Excellent</th>
<th>a.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>b.</td>
</tr>
<tr>
<td>Satisfactory</td>
<td>c.</td>
</tr>
<tr>
<td>Poor</td>
<td>d.</td>
</tr>
</tbody>
</table>
APPENDIX B

Interview guide (Questions)

1. What are your feelings and opinions about the entire process of curriculum change and the implementation of Curriculum 2005?

2. What is your understanding of environmental education in the primary school curriculum and in particular grade 7?

3. Who do you think has the responsibility of teaching environmental education in schools and why?

4. Do you think as teachers you are involved in teaching about the environment or relevant topics?

5. Do you think as teachers you are confident enough to develop your own teaching and learning material, syllabus or curriculum for environmental education?

6. Are there any structures in place, through which teachers in grade 7 are able to come together to help each other develop learning programs?

7. Have teachers been involved in the broader process of curriculum (2005) development from the time when it was introduced and in which form?

8. What time of the day (during or after school hours) would you like to attend curriculum development meetings and other professional development workshops?

9. What form of government support do you get in the process of curriculum change?