

**AN INVESTIGATION INTO ISSUES AND CHALLENGES IN IMPLEMENTING  
ENVIRONMENTAL EDUCATION IN SPECIAL SCHOOLS IN SOUTH AFRICA**

by

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## **DECLARATION**

I, Mathapelo Carol Zwelibanzi, hereby declare that

- The work in this thesis is my own original work;
- All sources used or referred to have been documented and recognised; and
- This thesis has not previously been submitted in full or partial fulfilment of the requirements for an equivalent or higher qualification at any other recognised educational institution.

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## **DEDICATION**

I dedicate this thesis to:

Prof S Shava: This thesis would have remained a dream, had it not been for his assistance. His encouragement and motivation made it possible for me achieve this goal.

My mother Constance Molefi who constantly reminded me to take it easy and relax. My mom was a source of inspiration, she believed that I could do it.

To my kids, Phola, Kwasa, Vela, Khanya, Xhanti, Retabile and my sister (Mathabo Molefe), without whom I was nothing. They supported me morally and emotionally throughout this journey. My daughter Phola ran my home errands without complaining, but with a smile.

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## **ABSTRACT**

The purpose of this study was to investigate the challenges that are met by the teachers in selected secondary level special schools, catering for physically impaired learners in South Africa, when they teach Environmental Education. The study was qualitative in nature. In order to meet the qualities of a qualitative research, a multiple case study design was employed in this research study. The data was collected from four special schools, two from Gauteng Province and the other two from the Eastern Cape Province. The sample consisted of 5 Grade 10 teachers, teaching Life Sciences from these 4 schools. Data was collected through observations, policy documents (as discussed in chapters 2 and 3) and interviews. The interviews were analysed through the phenomenological approach by Giorgi (1975).

The study revealed that most of the teachers in the study did not have the relevant educational qualification to teach environmental education nor do they have adequate training in the subject, for the workshops were conducted for only three days. The study also revealed that even though the teachers welcomed the integration of environmental education into the school curricula, they experienced challenges in teaching the subject, which included curriculum related, learner related, teacher related, policy related, administration related and office based related. The study also revealed that teachers' knowledge of EE was superficial and that they only taught in and about environmental education, they did not teach for environmental education which is the main goal of environmental education. The results also showed that the teachers were unable to translate the policies of inclusive education and by implication, they could not adapt the mainstream curriculum for special needs learners, as expected from teachers in special schools. It was also found out that the teachers lack knowledge of the philosophy that underpins the CAPS curriculum, which is social constructivism.

Key words: curriculum adaptation, environmental education, inclusive education, special schools, special needs learners.

## TABLE OF CONTENTS

DECLARATION .....	i
DEDICATION.....	ii
ACKNOWLEDGEMENTS .....	iii
ABSTRACT.....	iv
LIST OF TABLES.....	x
LIST OF FIGURES .....	x
LIST OF ACRONYMS.....	xi
<b>CHAPTER 1: ORIENTATION TO THE STUDY .....</b>	<b>1</b>
1.1 INTRODUCTION AND CONTEXTUAL BACKGROUND .....	1
1.1.1 Curriculum 2005 .....	3
1.1.2 The Revised National Curriculum Statements and Curriculum and Assessment Policy Statements.....	5
1.1.3 Teaching Environmental Education in Special School .....	7
1.2 PROBLEM STATEMENT .....	9
1.2.1 The Research Objectives .....	9
1.2.2 The Research-Questions.....	9
1.3 AIMS OF THE RESEARCH .....	10
1.4 MOTIVATION FOR THE RESEARCH.....	10
1.5 CLARIFICATION OF CONCEPTS .....	13
1.5.1 Special Schools.....	13
1.5.2 Learners with Special Needs .....	13
1.5.3 Curriculum and Assessment Policy Statements (CAPS).....	14
1.5.4 Environmental Education.....	14
1.5.5 Curriculum Adaptation .....	14
1.6 Thesis overview.....	14
1.7 CHAPTER SUMMARY.....	15
<b>CHAPTER 2: LITERATURE REVIEW: INCLUSIVE EDUCATION .....</b>	<b>16</b>
2.1 INTRODUCTION .....	16
2.2 THEORETICAL FRAMEWORK FOR ENVIRONMENTAL EDUCATION .....	16
2.3 THE RESPONSE OF THE DEPARTMENT OF EDUCATION TO APARTHEID EDUCATION.....	19
2.4 DEFINITION OF INCLUSIVE EDUCATION .....	20
2.5 IS THERE A PLACE FOR SPECIAL SCHOOLS IN INCLUSIVE EDUCATION? .....	21
2.6 HOW TO DETERMINE THE LEVELS OF SUPPORT NEEDED BY THE LEARNER ....	22
2.6.1 Learners who might fall within the Low to Moderate Range (Levels 1 – 3): Scenario A.....	26
2.6.2 Learners who might fall in the High Range (Level 4): Scenario B .....	27
2.6.3 Learners who might fall in the High Range (Level 4): Scenario C .....	28
2.6.4 Learners who might fall the Very High Range (Level 5): Scenario D.....	28
2.7 CHAPTER SUMMARY.....	32
<b>CHAPTER 3: LITERATURE REVIEW: THE CONCEPT OF ENVIRONMENTAL     EDUCATION .....</b>	<b>33</b>
3.1 INTRODUCTION .....	33
3.2 WHAT IS ENVIRONMENT? .....	33

3.3 THE RELATIONSHIP BETWEEN ENVIRONMENT AND ENVIRONMENTAL EDUCATION.....	35
3.4 DEFINITION OF ENVIRONMENTAL EDUCATION.....	38
3.5 AIMS OF EE .....	39
3.5 THREE DIMENSIONS OF EnVIRONMENTal EDUCATION .....	40
3.5.1 Education about the Environment.....	41
3.5.2 Education in Environment.....	41
3.5.3 Education for the Environment .....	42
3.6 HISTORY OF EE .....	43
3.6.1 Globally .....	43
3.6.1.1 Objectives of environmental education (Box 1) .....	44
3.6.1.2 Principles of environmental education (Box 2) .....	45
3.6.1.3 The NGO forum principles (Box 3).....	45
3.6.2 Origins of EE in South Africa .....	47
3.7 DIFFERENT WAYS OF INCLUDING EE IN THE CURRICULUM .....	52
3.7.1 EE as an Independent Subject .....	52
3.7.2 Integration of EE into Other Subjects.....	53
3.8 BARRIERS TO THE IMPLEMENTATION OF EE.....	53
3.8.1 Constraints related to the status and relevance of EE .....	54
3.8.2 Constraints related to the support of active environmental learning .....	54
3.8.3 Constraints related to learning support materials .....	54
3.9 CHALLENGES EXPERIENCED BY TEACHERS IN IMPLEMENTING EE IN SPECIAL SCHOOLS INTERNATIONALLY .....	55
3.9.1 Inclusive Education.....	55
3.9.2 Environmental Education for Special Needs Learners .....	57
3.10 CHAPTER SUMMARY.....	59
<b>CHAPTER 4: RESEARCH METHODOLOGY.....</b>	<b>60</b>
4.1 INTRODUCTION .....	60
4.2 RESEARCH PHILOSOPHY .....	61
4.2.1 Definition of Phenomenology.....	61
4.2.2 Steps in Phenomenological Research .....	62
4.2.3 Interpretivism.....	64
4.3 RESEARCH DESIGN .....	65
4.4 RESEARCH APPROACH – CASE STUDY.....	67
4.4.1 Different Types of Case Studies .....	69
4.4.2 Significance of a Case Study.....	70
4.4.3 Limitations of the Case Study Approach .....	71
4.5 SELECTION OF PARTICIPANTS .....	71
4.6 DESCRIPTION OF CASE STUDY SCHOOLS .....	72
4.6.1 Case Study One: Summer School (Teacher A) .....	72
4.6.1.1 Description of Summer School.....	72
4.6.1.2 Profile of Teacher A .....	73
4.6.1.3 Profile of teacher B (Summer School).....	73
4.6.2 Case Study Two: Winter School (Teacher C) .....	74
4.6.2.1 Profile of Teacher C (Winter School).....	74
4.6.3 Case Study Three: Autumn School (Teacher D).....	75
4.6.3.1 Profile of Teacher D.....	75
4.6.4 Case Study Four: Spring School (Teacher E).....	75

4.6.4.1 Profile of Teacher E .....	75
4.7 DATA COLLECTION METHODS .....	76
4.7.1 Interviews .....	77
4.7.2 Observations .....	78
4.8 DATA ANALYSIS AND INTERPRETATION .....	80
4.9 TRUSTWORTHINESS OF RESEARCH .....	82
4.10 ETHICAL CONSIDERATIONS .....	83
4.11 CHAPTER SUMMARY .....	84
<b>CHAPTER 5: PRESENTATION OF RESULTS .....</b>	<b>85</b>
5.1 INTRODUCTION .....	85
5.2 OBSERVATIONS REGARDING SCHOOLS AND STAFF .....	86
5.3 ANALYSIS OF INTERVIEWS .....	87
5.3.1 Teaching and Learning .....	87
5.3.1.1 Inclusion of Environmental Education in Life Sciences .....	87
5.3.2 Inclusion of EE – An Add-on Subject? .....	91
5.3.2.1 A-D Knowledge of different ecosystems .....	92
5.3.2.2 A-E Positive attitude .....	92
5.3.2.3 A-F Creation of job opportunities .....	93
5.3.3 Difference between Nature Conservation and EE .....	93
5.3.4 The Challenges experienced by Teachers in Special Schools in Teaching EE .....	94
5.3.4.1 A-G Curriculum related factors .....	95
5.3.4.2 A-H Learner related aspects .....	96
5.3.4.3 AI-L Challenges and experiences .....	98
5.4 PHILOSOPHY UNDERPINNING THE CURRENT CURRICULUM .....	102
5.5 TEACHING AND LEARNING SUPPORT .....	104
5.5.1 A-M Support from the DoE for Teaching EE .....	104
5.5.1.1 A-M1 CAPS training only .....	105
5.5.1.2 A-M2 Lack of special education background .....	105
5.5.1.3 A-N Inflexible forms of assessment .....	106
5.5.2 A-N1 Same Approach to Assessment for all Learners .....	106
5.5.3 A-O Clusters .....	107
5.5.3.1 A-O1 Grouping of teachers in clusters .....	107
5.5.3.2 Support and resources to teach EE .....	107
5.5.4 Workshops .....	108
5.6 STRATEGIES EMPLOYED IN TEACHING EE .....	109
5.6.1 Lesson Adaptation .....	110
5.7 LESSON OBSERVATIONS: SUMMER SCHOOL .....	111
5.7.1 Lesson description .....	112
5.7.1.1 Lesson 1 .....	112
5.7.1.2 Lesson 2 .....	113
5.7.1.3 Lesson 3 .....	114
5.7.1.4 Lesson 4 .....	115
5.7.2 Lesson Description .....	116
5.7.2.1 Lesson 1 .....	116
5.8 LESSON OBSERVATION: Winter School .....	118
5.8.1 Lesson 1 .....	119
5.9 CHAPTER SUMMARY .....	121



<b>CHAPTER 6: DISCUSSION OF FINDINGS</b> .....	122
6.1 INTRODUCTION .....	122
6.2 SUMMARY OF EMPIRICAL FINDINGS.....	122
6.3 RESEARCH QUESTION 1: TEACHERS’ OPINIONS ABOUT THE INCLUSION OF EE IN THE CURRICULUM.....	122
6.3.1 Inclusion of EE as an Add-On Subject.....	127
6.3.2 Differences between Nature Conservation and EE .....	128
6.4 RESEARCH QUESTION 2: CHALLENGES THAT TEACHERS IN SPECIAL SCHOOLS FACE WHEN TEACHING EE .....	130
6.4.1 Time .....	131
6.4.2 Mobility Problems .....	132
6.4.3 Health-related Issues.....	133
6.4.5 National Examinations.....	135
6.4.6 Teacher-Related Factors.....	136
6.5 RESEARCH QUESTION 3: UNDERSTANDING THE PHILOSOPHY OF EE .....	136
6.6 RESEARCH QUESTION 4: LEVELS OF SUPPORT .....	138
6.6.1 Teacher Training .....	139
6.6.2 Lack of Professional Expertise by Subject Advisors.....	140
6.6.3 Clusters.....	141
6.6.4 Workshops .....	142
6.6.5 School Administration.....	143
6.6.6 Subject Advisors.....	143
6.7 RESEARCH QUESTION 5: TEACHING AND LEARNING RESOURCES.....	143
6.8 RESEARCH QUESTION 6: TEACHING STRATEGIES .....	144
6.8.1 Curriculum Adaptation .....	145
6.9 CHAPTER SUMMARY.....	146
<b>CHAPTER 7: CONCLUSION AND RECOMMENDATIONS</b> .....	<b>148</b>
7.1 INTRODUCTION .....	148
7.2 THE RESEARCH PHILOSOPHY .....	148
7.3 CONCLUSIONS.....	149
7.3.1 Teacher Preparedness .....	149
7.3.1.1 Qualifications.....	149
7.3.1.2 The philosophy underpinning CAPS .....	150
7.3.1.3 Curriculum adaptation.....	152
7.3.1.4 Teaching strategies of EE.....	153
7.3.2 Role of Subject Advisors in Special Needs Education .....	154
7.3.3 Role of the DoE in Special Needs Education.....	155
7.3.3.1 Policy implementation and monitoring.....	155
7.3.3.2 The “one-size-fits-all” approach .....	156
7.3.3.3 Lack of resources .....	157
7.3.3.4 Lack of qualifications of support staff .....	157
7.3.4 Conclusions on Other Findings.....	158
7.4 RECOMMENDATIONS.....	158
7.5 CONTRIBUTIONS TO THE BODY OF KNOWLEDGE.....	160
7.6 LIMITATIONS .....	161
7.7 RECOMMENDATIONS FOR FUTURE RESEARCH.....	161
7.8 REFLECTIONS.....	162

<b>REFERENCES .....</b>	<b>164</b>
APPENDIX 1: Interview Guide .....	181
APPENDIX 2: Classroom Observation Guide .....	183
APPENDIX 3: Ethics Clearance Certificate .....	186
APPENDIX 4: Letter of Permission from the Department of Education .....	187
APPENDIX 5: Letter Requesting Permission from School Principals .....	189

## LIST OF TABLES

Table 2.1: Screening, identification, assessment and support strategy .....	25
Table 2.2: Systems framework.....	30
Table 3.1: Events in the history of environmental education.....	43
Table 4.1: Observation type chart .....	79
Table 4.2: Number of observations .....	80
Table 4.3: Steps in data analysis .....	81
Table 7.1: The differences between positivism and constructivism.....	151

## LIST OF FIGURES

Figure 1.1: Teachers' knowledge and skills for adapting the curriculum .....	9
Figure 1.2: Life Sciences, paper 1, February/March, 2011 .....	11
Figure 2.1: Theoretical framework.....	16
Figure 2.2: The Medical Model (Source: Reiser, 2014: n. p).....	24
Figure 3.1: A model of the environment .....	34
Figure 5.1: Overview of the model used to present results from the interview questions. ....	86
Figure 5.2: The teachers' views on the inclusion of EE into Life Sciences.....	88
Figure 5.3: Assumption of positive correlation between acquired knowledge and environmental action. ....	91
Figure 5.4: Teachers' perceptions on the inclusion of EE as an 'add-on' subject.....	91
Figure 5.5.1: Barriers facing teachers in special schools when they teach EE to special needs learners.....	94
Figure 5.5.2: Barriers facing teachers in special schools when they teach EE to special needs learners.....	99
Figure 5.6: Support from the DoE for teaching EE .....	105
Figure 6.1: Raised garden beds for the comfort of wheelchair users .....	133
Figure 6.2: Arunima Sinha and Mt Everest.....	133
Figure 7.1: An example of an adapted question for learners who are cerebral-palsied and who cannot draw .....	156

## LIST OF ACRONYMS

ANC	African National Congress
BED	Bachelor of Education
C-2005	Curriculum 2005
CAPS	Curriculum Assessment Policy Statement
CNE	Christian National Education
CP	Cerebral Palsied
DEA & T	Department of Environmental Affairs and Tourism
DoE	Department of Education
EE	Environmental education
EEASA	Environmental Education Association of Southern Africa
EEPI	Environmental Education Policy Initiative
FET	Further Education and Training
FP	Fundamental pedagogics
GET	General Education and Training
IUCN	International Union for the Conservation of Nature
NCSNET/NCESS	National Commission on Special Needs in Education and Training/National Commission on Education Support Services
NEEP-GET	National Environmental Education Project for General Education and Training
NMMU	Nelson Mandela Metropolitan University
NP	National Party
OBE	Outcomes Based Education
PGDE	Post Graduate Certificate in Education
RDP	Reconstruction and Development
RNCS	Revised National Curriculum Statement
SEN	Special Education Needs
SIAS	Screening, Identification, Assessment and Support
UN	United Nations
UNEP	United Nations Environment Programme
UNESCO	United Nations Education, Science and Cultural Organisation
USSR	Soviet Russia

## CHAPTER 1: ORIENTATION TO THE STUDY

### 1.1 INTRODUCTION AND CONTEXTUAL BACKGROUND

According to Naicker (2000: 1), “apartheid education, produced a dual system of education which included a mainstream and a special education component. These were also characterised by racial disparity”. Stofile (2008: 1) confirmed this by stating that:

Prior to 1994, the general education system in South Africa enforced separate education systems for Indians, blacks, coloureds, and whites, and this led to discriminatory practices that excluded the majority from access to quality education. Each department of education had a dual system that separated learners with special education needs from the so called ‘normal learners’. Learners with special education needs were placed in special schools and the so-called normal learners in mainstream schools. However, not all of these departments of education made provision for learners with special education needs and thus they were mainstreamed by default.

Du Toit (1996: 12) also described special needs education in South Africa during the apartheid era as follows:

- A fragmented specialised education system based on ethnic separation and discrimination on the basis of race and colour;
- Duplication and disproportionate allocation and utilisation of facilities, professionals and services;
- For Whites there were also separate education departments for special and regular education, each with its system of management, control and educational support;
- Separate schools for children with different categories of disabilities. Children with disabilities were channelled out of the mainstream into schools catering for such disabilities and welfare;
- Limited education support services that were disproportionately distributed across the different education departments. The more privileged sectors of the society received the best services, while the most disadvantaged sectors of society had little or no access to support;

- A lack of trained professionals to fill posts in the field of special education and educational support services, especially for Black education;
- Disparities in per capita expenditure across different education departments, which were even more exaggerated in the case of special education;
- Unequal access to special education. Free and compulsory education was mandatory for all except Black Africans;
- Varying criteria for the admission and discharge of pupils;
- The use of varying terminology and categories of special education in different departments;
- A strong medical focus with clinically described admission criteria and a multidisciplinary approach;
- Severe discrepancies in the provision of special education for the different race groups, with provision at pre-school level being almost non-existent for Black and Coloured disabled children;
- Extreme disparities between special education provision in urban and rural areas;
- Inadequately trained teachers, especially in Black special education; and
- A lack of equipment in special schools.

The 1994 democratic elections in South Africa marked an end to the apartheid era and ushered in welcome changes. In October 1996, the Ministry of Education decided to investigate the position of special needs learners who experienced learning difficulties and learners with disabilities (DoE, 2001). It set up two task teams to do this work and to make recommendations about how to improve all aspects of what were called 'special needs and support services' in education and training in South Africa. These task teams were the National Commission on Special Needs in Education and Training and the National Committee on Education Support Services (DoE, 2001).

These two task teams undertook much research and presented a draft copy to the Minister of Education in November 1997. The final report was published by the Department of Education in February 1998. The report supported the description of special needs education as described by Du Toit (1996). It described the status of special needs education pre-1994 (National Commission on Special Needs in

Education and Training/National Commission on Education Support Services (NCSNET/NCESS) 1997: 1) as follows:

- Under the apartheid education system, education for learners who experienced learning difficulties was called special education. These learners were called 'learners with special education needs';
- Special education and support services had been provided mainly for a small number of 'learners with special education needs' in 'special classes' in ordinary schools or in 'special schools';
- Special education and support services were provided on a racial basis, with the most resources going to the White learners;
- Most learners with disabilities were either not in special schools, or had never been to a school. A few were in ordinary schools that could not properly meet their needs;
- In general, the curriculum and the education system had failed to respond to the many different needs of learners. This caused large numbers of learners to drop out of school, be pushed- out of school, or to fail at school; and
- While some attention had been given to special needs and support in schools, the other levels of education (for example, ECD) had been seriously neglected.

Two main findings were that only a small percentage of learners with disabilities were receiving specialised education and support, usually on a racial basis, and that the education system had generally failed to provide services appropriate to the diverse needs of learners. For most learners with disabilities, this meant they were mainstreamed by default or that they did not attend school at all, and that very little was done by those schools to adapt teaching methods, the learning environment and assessment procedures to accommodate them (DoE, 2005c).

### **1.1.1 Curriculum 2005**

In an attempt to address these imbalances and prepare the learners more adequately for active participation in the social and economic world, the first Education Minister of the democratic Republic of South Africa, Sibusiso Bhengu, introduced Outcomes Based Education (OBE) in 1997 for the General Education and Training sector in the form of Curriculum 2005 to replace the then existing content-

based curriculum (Maphalala, 2006). This new curriculum was to be gradually phased into all subjects in all the schools in South Africa by 2005, hence its name Curriculum 2005 (C-2005). C-2005 was seen by most South Africans as a tool that could be used for social change and educational achievement (Chisholm, 2003). This highlights that education is never a neutral entity but it is always embedded with the aspirations and values of the ruling class.

This new curriculum, C-2005 required major changes to teaching and learning processes in South Africa. According to Motshegoa (2006: 1), these changes were as follows:

- Firstly, the focus became different, with learning now focused on the development of skills, knowledge and values as opposed to the over-emphasis on content and theory-based learning of the past.
- Secondly, C-2005 introduced changes to the terminology and concepts in use. For instance, subjects became 'Learning Areas' and subjects across the curriculum became a 'Phase Organiser', while a Lesson Plan, became conceptualised as 'learning experience'.

A notable change in this new curriculum was the incorporation of Environmental Education as one of the Phase Organisers for the General Education and Training (GET) phase. According to Janse van Rensburg and Lotz (1998b: 16), "Environment as the phase organiser [would] enable different environmental processes in different learning programmes". This reflects the principle of the White Paper on Education and Training (DOE, 1995: 18) which states that "Environmental Education, involving an interdisciplinary, integrated and active approach to learning, must be a vital element of all levels and programmes of the education and training system". According to Khumalo (2000), this also reflects other national statements such as the Reconstruction and Development Programme (Parliament of the Republic of South Africa, 1994), the White Paper on Environmental Management (South African Government, 1997) and the draft Environmental Education Discussion Document (EEASA, 1995). These policy statements support the implementation of the Bill of Rights (Republic of South Africa, 1996) in the new constitution which enshrines the right of every citizen to a healthy environment.



However, when OBE and EE were introduced for the first time in South Africa, it was found that most of the teachers were not ready to implement the changes in curriculum, irrespective of the workshops conducted. In a study conducted by Janse van Rensburg and Lotz (1998a), some teachers' views on EE were found to be very narrow. They thought of EE as nature study, out of class activities and litter clean-ups. Janse van Rensburg and Lotz (1998a: 66) also claimed that some of the teachers indicated that they knew nothing about EE, and EE was not something that they 'taught'. Some were quoted saying "we are just teaching in a vacuum".

C-2005, therefore, never stood the test of time. Maphalala (2006) was of the view that the failure to implement C-2005 could be attributed, among other things, to the fact that the philosophy underlying the curriculum was not understood by the teachers and by the education officials who were supposed to train the teachers in this new curriculum. Such problems necessitated the then Minister of Education, Professor Kadar Asmal to appoint a Review Committee to embark on the process of curriculum review.

### **1.1.2 The Revised National Curriculum Statements and Curriculum and Assessment Policy Statements**

The Review Committee made its recommendations and, subsequent to that, changes in the South African curriculum began. In May 2002, the C-2005 became known as Revised National Curriculum Statement (RNCS) for Grades R-9 as well as National Curriculum Statement (NCS) for Grades 10-12 (DoBE, 2011a). This was not a negative development as curriculum implementation should be dynamic and not static. The RNCS was meant to build on the basic principles and vision of Curriculum 2005, while at the same time streamlining and simplifying terminology and curriculum design features to make it user friendly (Motshegoa, 2006). In 2009, the two National Curriculum Statements, for Grades R-9 and Grades 10-12 were again reviewed. They were then combined into a single document, known as the National Curriculum Statement Grades R-12 (DoBE, 2011a). The National Curriculum Statement Grades R-12 consist of Curriculum and Assessment Policy Statements (CAPS) for all the school subjects across all the grades. The new Curriculum and Assessment Policy Statements seek to address problems of knowledge and quality experienced in the first two rounds of post-apartheid curriculum implementation (DoBE, 2011a). These

changes in the curriculum implementation are discussed in detail in the next section of this chapter.

The changes in curriculum had a tremendous impact on teachers as they had to change the way they taught and embrace the philosophy underpinning the new curriculum, namely social constructivism. Teachers in special schools were doubly compromised by the changes, for they had to first grapple with the new curriculum and then make curriculum adaptations or modify the curriculum in some of the lessons to make certain that those learners experiencing barriers to learning were catered for.

In 1992, the Environmental Education Policy Initiative (EEPI) contributed to the White Paper on Education, making recommendations that EE should be integrated into all subjects and that it should adopt an active, integrated approach to learning (Clacherty, 1993). The NCS - CAPS also adopted the recommendations to include EE across the subjects. In other words, EE does not exist as an independent subject within the current curriculum as it was pre-1994, but it is included as a theme across all subjects. This paradigm shift in education policy calls for all the teachers in South Africa to have a good knowledge of EE. This is a major challenge for all teachers in South Africa for they have to learn an additional subject that they were never exposed to during their pre-service teacher training. My concern is whether the subject is properly taught, given that the majority of teachers do not have the necessary subject content knowledge, pedagogical content knowledge and assessment skills needed to teach it, more so for children with special needs.

CAPS aims to emphasise in-depth content knowledge as opposed to focussing on skills and attitudes that the learners needed to master in the past (Dada, Dipholo, Hoadley, Khembo, Muller & Volmink, 2009). The implication is that teachers should be highly qualified to teach the subjects they are teaching in order to produce the kind of learners envisaged by the curriculum. However, Hendricks (2008) claimed that studies carried out in South Africa provide evidence that teachers lack sufficient content and pedagogical knowledge.

### **1.1.3 Teaching Environmental Education in Special School**

The problem of teaching EE is compounded when it comes to special schools. Besides mastering EE content knowledge, the teachers in special schools also have to first learn how to adapt the mainstream curriculum to make it learner friendly.

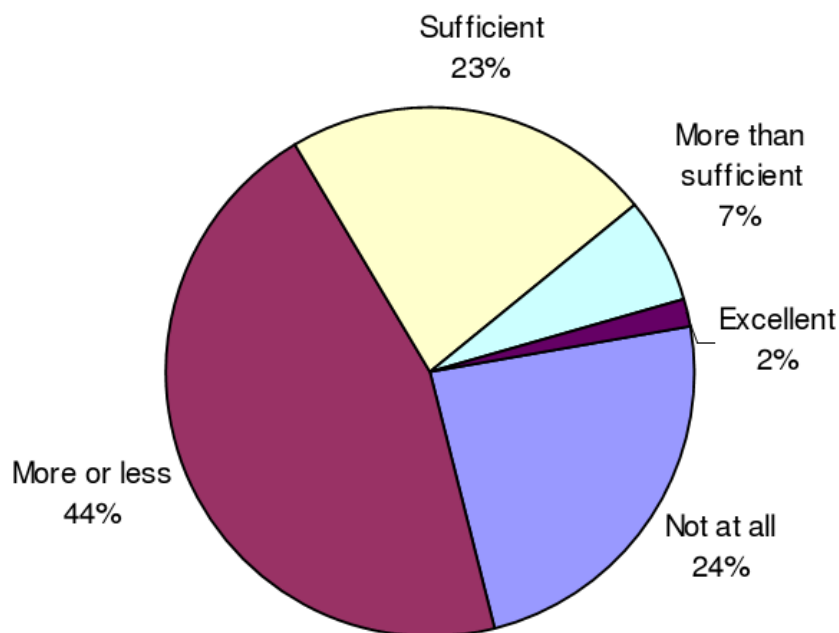
What is of concern is the disparity between policy and practice, which seems to be evident in the implementation of any policy attempted by educators. According to Sayed and Jansen (2001), officials in South Africa seem to focus on policy design, without indicating how to translate such policies into measurable outcomes. In 1992, South Africa was among the 92 countries that adopted the Salamanca Statement and Framework for Action on Special Needs Education (UNESCO, 1994), which declared that education:

must recognise and respond to the diverse needs of their students, accommodating both different learning styles and rates of learning and ensuring quality education to all through appropriate curricula, organisational arrangements, teaching strategies, resource use, and partnership with their communities (Nel, 2007: 1).

Consequent to that, in 2001, the Ministry of Education launched the Education White Paper 6 entitled Special Needs Education: Building an Inclusive Education and Training System (DoE, 2001). In 2002, Draft Conceptual and Operational Guidelines for the Implementation of Inclusive Education were produced (DoE, 2002a). According to Nel (2007: 2), this document gave birth to two further draft policies in 2004 and 2005, namely the Summary Outline of the Draft National Strategy for Screening, Identification, Assessment and Support (DoE, 2004a) and the Conceptual and Operational Guidelines for the Implementation of Inclusive Education: District Based Support Teams (DoE, 2005a). Nel was of the opinion that the focus of White Paper 6, as well as the documents that followed, were based on the notion that all teachers in South Africa would be in a position to identify learners who experience barriers to learning as well as assisting them in any educational context. But this is where the problem lies: “Currently most teachers are not trained to handle the challenges that inclusive education lays at their front doors” (Nel, 2007: 2).

The documents mentioned above (DoE, 2002a; DoE 2004b; DoE, 2005a) are silent when it comes to the 'how' of teaching and adapting certain lessons to the needs of the learners in special schools. This is in agreement with what was raised by Sayed and Jansen (2001) that South Africans are good at writing policies, but fail to indicate how such policies are to be translated into measurable outcomes. I would think that for a subject like EE, which is a relatively new subject in the South African curriculum, examples of lesson plans (not recipes) should be prepared for the teachers, to familiarise them with the content of EE and how to teach it, before they can adapt the lessons for the benefit of the learners experiencing barriers to learning. How does one adapt a lesson when one knows nothing about the subject area in the first instance? The study by Nel (2007: 6) proves that when changes in curriculum happen, it does not always necessarily mean that teachers are ready to implement such changes, as stated in the quotation below and represented in Figure 1.1.

On the question if the respondents think that they have sufficient knowledge and skills regarding the adaptation of the curriculum for learners experiencing barriers to learning, only 32% respondents indicated that they have sufficient or more than sufficient knowledge and skills. 68% of the respondents have more or less or no skills and knowledge at all (Nel, 2007: 6).



## Figure 1.1: Teachers' knowledge and skills for adapting the curriculum

Source: (Nel, 2007: 6)

The uncertainty about the readiness of South African teachers to deal with this relatively new subject of EE that has been integrated in all the school subjects, triggered my interest in researching the challenges that are faced by the teachers in special schools when teaching Environmental Education in South Africa as this is important for both policy development and teacher professional development work.

### **1.2 PROBLEM STATEMENT**

From the preceding discussion on curriculum developments, the inclusion of environmental education into the curriculum and the fact that my main concern relates to the implementation of curriculum in special schools, the problem statement is: "How is EE implemented at special schools in South Africa?"

#### **1.2.1 The Research Objectives**

The research objectives are to:

- determine the understanding of teachers of environmental education and their opinions about the inclusion of environmental education in the curriculum;
- investigate the challenges experienced by teachers in implementing environmental education in special schools in South Africa;
- investigate the support provided to teachers to teach environmental education;
- establish what learning and teaching resources are needed and supplied in order to implement environmental education at special schools in South Africa;
- explore the teaching strategies employed by teachers teaching and assessing environmental education in special schools in South Africa.

#### **1.2.2 The Research-Questions**

With this study, I hope to get answers to the following questions:

1. How do teachers feel about the inclusion of EE in the curriculum?
2. What challenges do teachers at special schools in SA face in implementing EE?
3. What do teachers understand about the philosophy behind the inclusion of EE in the curriculum?

4. What support do teachers at special school receive for implementing EE?
5. What teaching and learning resources are used to implement EE at special schools in SA?
6. What teaching strategies are used by teachers at special schools in SA to implement EE?

### **1.3 AIMS OF THE RESEARCH**

This study aims to explore the implications of curriculum changes for teachers and learners in special schools, with a focus on the teaching and learning of EE. The approaches being implemented and the problems they encounter when they teach EE to the ‘disabled’ learners in South Africa will be documented, and interventions for improving their teaching world will be explored. The study intends to suggest possible ways to modify their lessons so that special learners are not left out in the process. The research is delimited to teachers in the FET phase, teaching Life Sciences in Grade 10.

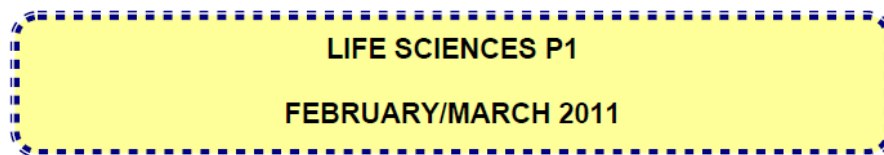
The answers to the above sub-questions will not only inform the curriculum and policy developers about the challenges encountered by the teachers in special schools, but more importantly, they could help the teachers to reflect on their own teaching and, by extension, become better teachers. I argue that if teachers are not conversant with the philosophy that informs their curriculum (CAPS) and do not have sufficient knowledge about environmental concepts, and, if they lack knowledge of the rationale behind teaching EE, a gap between policy and practice will be the result. Teaching is praxis, meaning that teaching is a prescribed activity – what happens in the classroom is always informed by the philosophy that underpins the curriculum. The implication is that if teachers understand the relationship between theory and practice they would be in a better position to reflect on their own teaching and to improve their teaching.

### **1.4 MOTIVATION FOR THE RESEARCH**

I am motivated by the desire to speak for those who cannot ‘speak’ for themselves, specifically with regards to environmental education curriculum considerations for children with special needs. With this study I hope to give teachers in special schools a “voice”, so that their teaching world can be changed for the better. Studies on the

implementation of the environmental education curriculum have been conducted in South Africa by a few researchers, such as Maila (2003), Khosa (2002) and Khumalo (2000). However, none of those studies addressed the plight of teachers in the special schools. In other words, thus far no other research located in this area appears to have taken place.

This study will open the window for the policy and curriculum developers so that they can peep through and see the world of education through the eyes of teachers in special schools. Most of the curriculum planners have never had dealings with “disabled learners”, hence teachers and learners in special schools are often neglected. I have taught in a special school for 15 years, teaching Biology (Life Sciences). Even though policies of inclusion and curriculum adaptation are in place, when it comes to external assessment, our learners always experience obstacles. To quote an example, when an examination question asks that learners draw a graph, learners with shaky movements or those who have no arms feel side-lined and disempowered by the very nation that promises to care for the needs of the disabled (see Figure 1.2: question 4.2.2).



**QUESTION 4**

- 4.1 Explain THREE advantages of using genetically modified organisms as food. (6)
- 4.2 The table below shows the percentage frequency of human blood groups in the populations of two different cities in South Africa.

Human blood groups	% frequency in population	
	City 1	City 2
A	25	45
B	20	10
AB	10	5
O	45	40

- 4.2.1 Which blood group has:
- (a) The highest frequency in City 1 (1)
- (b) The lowest frequency in City 2 (1)
- 4.2.2 Plot the data in the table as bar graphs on the same system of axes. (10)

Figure 1.2: Life Sciences, paper 1, February/March, 2011

Source: (DoBE, 2011b)

This runs contrary to the main objectives of curriculum adaptation. It is my belief that disabled people including the learners who experience barriers to learning, do not need “easy” options but need support to help them overcome barriers to learning. In agreement, Hensel (2015) wrote, “I have a disability, yes that is true, but all that it means is that I may have to take a slightly different path than you”. I am of the view that question 4.2.2 in Figure 1.2, could have been asked differently to cater for special-needs learners with shaky movements; they could instead be asked for example to interpret the graph instead of drawing it. With this study, I hope to lend the curriculum and policy planners ‘our shoes’ so that they can walk in them, in order to feel the plight of teachers and learners in special schools. Verspoor (1989: 131) once said, “when the implementing aspect is neglected even a good idea or innovative policy initiative would result in low outcomes”.

Disabled or challenged learners are a fact of life. What we can do as South Africans to enable inclusivity is to ensure that we create opportunities that limit the hurdles in their way. We can start off by practising what we preach, such as adapting and modifying the curricula to include the learners who are challenged, and not the other way round. “We know that equality of individual ability has never existed and never will, but we do insist that equality of opportunity must be sought” (Roosevelt, 1936). Disabled learners do not have to be forced to fit into the mainstream curricula, but the curricula must fit the disabled learners. Thabo Mbeki stated in the foreword to the Integrated National Disability Strategy (Office on the Status of Disabled Persons, South Africa, 1997):

Among the yardsticks by which to measure a society’s respect for human rights, to evaluate the level of its maturity and its generosity of spirit, is by looking at the status that it accords to those members of the society who are most vulnerable: disabled people, the senior citizen and its children.

In short, the moral test of any society is how it treats those who are vulnerable. We can talk as much as we want to, write good policies about special needs education, but until we begin to take deliberate steps to bring about the change in the way we deal with the disabled people of South Africa, change will never happen.



## **1.5 CLARIFICATION OF CONCEPTS**

Concepts related to the study are discussed below with the intention of indicating their meaning as used in this study.

### **1.5.1 Special Schools**

Special schools are schools that provide education to learners who need high level individualised and specialised support on a high-frequency basis. The role of these schools is two-fold: full time provision of appropriate and quality education and support to those learners who are enrolled at these schools and providing advice, guidelines, training and mentoring on a consultative and part time basis to both teachers and learners in ordinary schools with regard to curriculum, assessment and instruction matters (DoBE, 2011a).

### **1.5.2 Learners with Special Needs**

The following are regarded as learners with special needs (DoBE, 2011a: 24-25):

- Learners who have neurological barriers to learning such as, reading, spelling, dysgraphia, mathematical calculations and numeracy skills, and the understanding of the written word.
- Learners whose hearing impairments (deaf and hard of hearing learners) present barriers to learning and for whom learning should be facilitated through sign language.
- Learners who have severe visual barriers to learning (blind and partially sighted) and for whom learning should be facilitated through effective individualised support measures such as Braille equipment, magnification cameras and CCTV in classrooms, screen reading software, or magnification software.
- Learners who have physical barriers to learning and whose level of functioning is restricted due to limited gross and fine motor movements, dependency on the availability of certain devices (e.g. wheel chairs), medical conditions and inaccessible school buildings. The term 'physical disability' covers a range of conditions from congenital disabilities to impairments acquired as a result of illness or injury of which the most common are spinal bifida, cerebral palsy, muscular dystrophy, haemophilia, and cardiovascular and pulmonary conditions.

### **1.5.3 Curriculum and Assessment Policy Statements (CAPS)**

CAPS stands for Curriculum Assessment Policy Statements. It is a revision of the current National Curriculum Statement (NCS). With the introduction of CAPS, every subject in each grade has a single, comprehensive and concise policy document that provides details on what teachers need to teach and assess on a grade-by-grade and subject-by-subject basis. This curriculum review has the aim of reducing the administrative load on teachers, and ensuring that there is clear guidance and consistency for teachers when teaching.

### **1.5.4 Environmental Education**

Environmental education is a process through which the present and the future generations should be able to respond to environmental issues in ways that might foster change towards sustainable community life in a healthy environment (Janse van Rensburg & Lotz, 1998b: 10).

### **1.5.5 Curriculum Adaptation**

Curriculum adaptation is “Any adjustment or modification in the environment, instruction or material used for learning that enhances the person’s performance or allows partial participation in an activity” (Udvari-Solner, 1992: 7).

## **1.6 Thesis overview**

This thesis is divided into seven chapters:

In chapter 1, an overview of this study is provided. This includes a brief background and rationale for the study and research purpose. The research questions are also presented as well as the methodological plan. In addition, it provides explanations of different terms used in the study and concludes by providing an outline and organisation of the thesis.

Chapters 2 provides a literature review on inclusive education, while chapter 3 provides a literature review of the inclusion of environmental education in the curriculum from both a South African and international perspective, and considers some of the challenges that have been experienced with this.

Chapter 4 describes the research design and methods applied in this study. The chapter begins with a description of the research paradigm employed. It details the choice of the research design, research sites, and selection of participants, the case studies of the participant teachers are presented. For each of the five case reports, a detailed background of the teacher, the school, as well as the classroom context is provided.

In chapter 5, the main themes that emerged from this investigation of the challenges that are faced by teachers in special schools when they teach environmental education are identified.

In chapter 6, the findings of the study are integrated with the findings from the literature review.

Chapter 7 provides a summary of the key findings, highlighting the significance of the findings and contribution to the body of knowledge. Recommendations and conclusions are provided. Suggestions are made for further research.

## **1.7 CHAPTER SUMMARY**

The primary purpose of this chapter was to present the background to the research, along with its purpose and methods. The rationale and research questions, explaining the research strategy and important concepts mentioned throughout the study were highlighted. The next chapter provides an in-depth literature review of inclusive education.

## CHAPTER 2: LITERATURE REVIEW

### INCLUSIVE EDUCATION

#### 2.1 INTRODUCTION

The aim of this study is to investigate the challenges that are met by teachers in selected special schools in South Africa when teaching Environmental Education. In the previous chapter, I outlined the structure of this inquiry by providing an introduction and background to the study, guiding questions and the rationale for the study.

#### 2.2 THEORETICAL FRAMEWORK FOR ENVIRONMENTAL EDUCATION

The theoretical framework for this thesis is reflected in Figure 2.1 below.

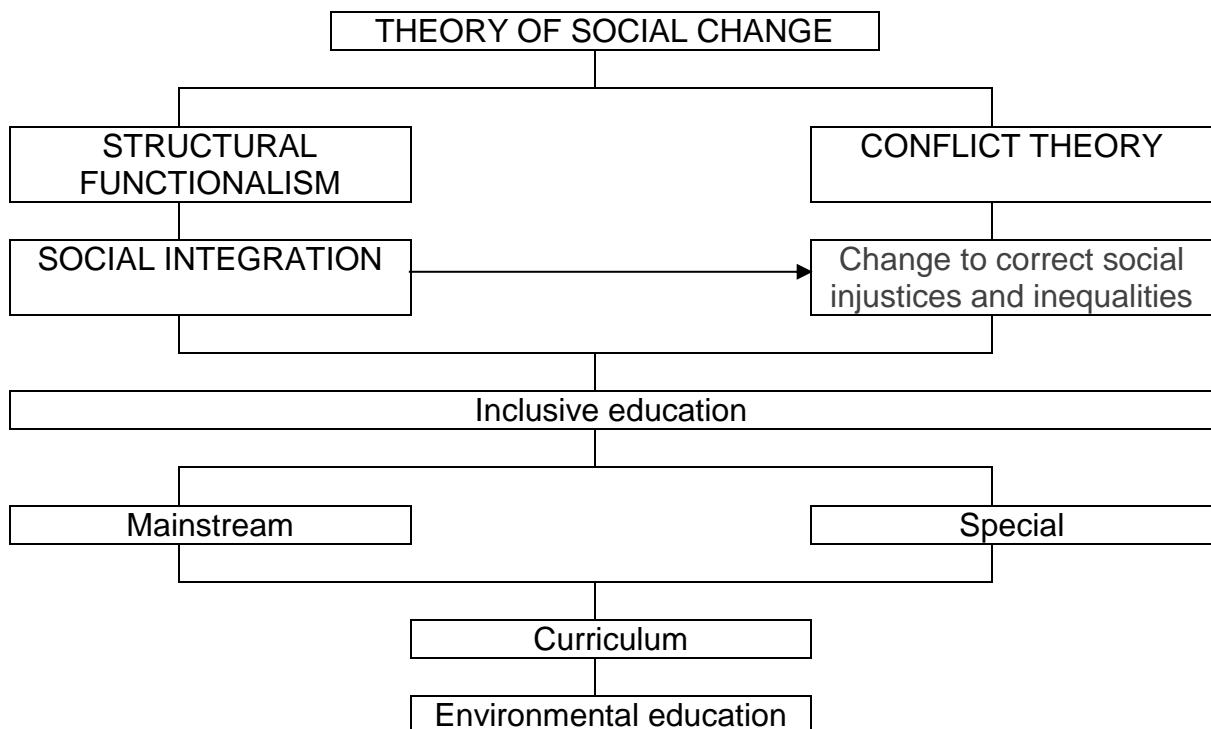


Figure 2.1: Theoretical framework

The theoretical framework is the theory of social change and more specifically structural-functionalism (Van den Bergh, 1963) which favours a unitary concept of society which emphasises social integration. The White Paper on Education (DOE, 2001), as we have seen, sets out a policy that promotes inclusion of all learners in the school system of South Africa, not only learners of all races in a single or unitary

education system, but also learners with special needs, who have traditionally been accommodated in special schools and excluded from the mainstream schooling system. The playing field, nevertheless remained uneven for many years as the system was gradually transformed, for example, by opening all schools to all learners, creating a funding framework whereby poor and disadvantaged schools would receive greater funding than previously advantaged schools such as the Model C schools that existed in largely “white” suburban areas where government funding was enhanced by other funding mechanisms such as high school fees. In some ways, however, one could say that conflict theory is also applicable. Conflict theorists contend that institutions and practices continue because powerful groups have the ability to maintain the status quo, such as the apartheid government. Change has a crucial significance, since it is needed to correct social injustices and inequalities. Conflict theorists do not believe that societies smoothly evolve to higher level. Instead, they believe that conflicting groups struggle to ensure progress (Coser, 1956). Conflict theorists assert that conflict is a necessary condition for change and it must be the cause of change. There is no society, changing or unchanging, which does not have conflict of some kind or another. Thus, conflict is associated with all types of social change in some way or other. It is the contention of the researcher that conflict is still evident in the arena of special needs education, where curriculum adaptation has not been sufficiently accommodated, for example in the assessment of learners; as pointed out in Chapter 1.

It is against this background that the issues of inclusive education and environmental education are discussed in this chapter and Chapter 3.

This chapter provides a brief history of South African Education pre-1994 and post 1994 with specific reference to special schools, which is the main focus of the study. The chapter reveals how apartheid laws affected the Black South Africans, how those laws divided society, and how they created divisions and inequities among South Africans. The chapter also reveals how the ANC government responded to the issues raised, and its commitment to reverse the ills of the apartheid regime, especially when it comes to special needs education, which was adversely affected during the apartheid era. Some documents that reveal the ANC government’s commitment are also discussed in this chapter namely:

- Education White Paper 6: Special Needs Education; building an inclusive education and training (DoE, 2001): this document sets to address the needs of all learners in one undivided education system.
- Guidelines for inclusive education learning programmes (DoE, 2005a): this document commits the state to the achievement of equality and non-discrimination.
- Screening, identification, assessment and support (DoE, 2005b, 2008; DoBE, 2014): The purpose of this document is to provide policy framework for the standardisation of the procedures to identify, assess and provide programmes for all learners who require additional support to enhance the participation and inclusion in school.

Inclusive education is also discussed as is the future of special schools in inclusive education. This is followed by a review on environmental education and the challenges of implementing EE in special schools. Boote and Beille (2005: 1) state that literature review helps to:

- Provide a context for the research;
- Justify the research;
- Ensure the research has not been done before or (that it is not a “replication study”);
- Show where the research fits into the existing body of knowledge;
- Enable the researcher to learn from previous theory on the subject;
- Illustrate how the subject has been studied previously;
- Highlight flaws in the previous research;
- Outline gaps in the previous research;
- Show that the work is adding to the understanding and knowledge of the field; and
- Help refine, refocus or even change the topic.

In reviewing literature on challenges affecting teachers when they teach EE, several gaps in the research were identified. Many studies were conducted only in the mainstream schools by authors such as Maila (2003), Khosa (2002) and Khumalo (2000). However, none of these studies addressed the challenges that are faced by

teachers in special schools when it comes to the teaching of EE, which has modules integrated into a number of subjects such as Life Sciences.

### **2.3 THE RESPONSE OF THE DEPARTMENT OF EDUCATION TO APARTHEID EDUCATION**

To address the problems raised above, the ANC government recommended that the education system be changed to inclusive Outcomes Based Education (OBE) where all learners can access education and training no matter what their individual needs are. Naicker (2000: 2) stated that “The decision to adopt OBE was a political decision taken by the Ministry of Education with the intention of addressing the disparities and problems associated with apartheid education”. This proves that education is never a neutral entity, but it always serves the interests of the ruling class (Kallaway, 1988). According to Ladbrook (2009: 31):

Outcomes Based Education allows for the realisation of the values and principles held by the Constitution (Act 108 of 1996) founded on a democratic state and common citizenship, holding the values of human dignity, rights and freedom. It set out a constitutionally based building framework for national and provincial legislative action in the field of education.

This change permitted all children, including children with disabilities, to develop and extend their potential and participate as equal members of society. OBE was followed by South Africa’s Policy for Inclusive Education. The OBE curriculum and the current CAPS were discussed in chapter 1 of this thesis.

In 2001, the Department of Education issued a framework policy document called White Paper 6: Special Needs Education, Building an Inclusive Education and Training System (DoE, 2001). This policy framework, according to Mbelu (2011), illustrates the Ministry’s commitment to the provision of educational opportunities to all including learners with barriers to learning. This document is also regarded as a response by the post-apartheid state to special needs and support services in education and training (DoE, 2001). As stated: “The White Paper also reminds us that our constitution challenges us to ensure that all learners pursue their learning potential to the fullest. It commits the state to the achievement of equality and non-discrimination” (DoE, 2005a: 7).

As mentioned above, the new OBE curriculum, post-1994 was followed by South Africa's policy for inclusive education. The question that needs to be posed is what defines inclusive education? A discussion of what constitutes inclusive education is provided below.

## **2.4 DEFINITION OF INCLUSIVE EDUCATION**

According to du Plessis (2013: 78), "inclusive education in the South African context is defined as a learning environment that promotes the full personal, academic and professional development of all learners irrespective of race, class gender, disability, religion, culture, sexual preference, learning styles and language". Stubbs (2002: 21) stated that "IE represents a shift from being preoccupied with a particular group to a focus on overcoming barriers to learning and participation". Makoelle (2013) stated that the implementation of inclusive education in South Africa came amidst the process of phasing in an outcomes-based curriculum (OBE) which is based on the same assumptions as inclusive education, that is, on the belief that all learners can learn and succeed and that they have full control over their learning.

As used in the White Paper 6 (DOE, 2001: 16), the tenets of inclusive education and training, are described as:

- acknowledging that all children and youth can learn and that all children and youth need support;
- accepting and respecting of the fact that all learners are different in some way and have different learning needs which are equally valued and an ordinary part of our human experience;
- enabling education structures, systems and learning methodologies to meet the needs of all learners;
- acknowledging and respecting differences in learners whether due to age, gender, ethnicity, language, class, disability or HIV-status;
- broader than formal schooling and acknowledge that learning also occurs in the home and community, and within formal and informal modes and structures;
- changing attitudes, behaviour, teaching methodologies, curricula and the environment to meet the needs of all learners;



- maximising the participation of all learners in the culture and curricula of educational institutions and uncovering and minimising barriers to learning; and
- empowering learners by developing their individual strengths and enabling them to participate critically in the process of learning.

When this version of inclusive education was introduced, teachers like me who teach in special schools wondered about the future of special schools and whether they would be closed down. The future of special schools is discussed extensively below.

## **2.5 IS THERE A PLACE FOR SPECIAL SCHOOLS IN INCLUSIVE EDUCATION?**

Inclusive education (IE), by its very nature, cannot exist in environments where some children are educated separately or substantively differently from their peers (Lorema, Deppeler & Harvey, 2005: 2). In other words, the goal of IE is “to have all students learn together, work together, play and grow together” (EETAP, 1997: 1). The implication is that there should be no mainstream schools and separate special schools. Learners must all learn together in one environment. In other words, the White Paper 6 on Inclusive Education committed itself to addressing the needs of all learners in one undivided education system as opposed to apartheid education which had a dual system of education for the ‘normal’ children and the ‘disabled’ children.

It departs from the previous notion of referring learners with particular disabilities to specific special schools, but permits all schools to offer the same curriculum to learners while simultaneously ensuring variations in mode of delivery and assessment procedures to accommodate all learners (DoE, 2005b: 7).

A pilot study was conducted by Maher (2009) in the KwaZulu Natal Province of South Africa regarding inclusive education. The study looked at teachers and parents, children and workers in order to determine how these various parties perceived the extent to which inclusive education was being implemented in their communities (Maher, 2009). It was found that the ostracism of learners with disabilities was perceived as a barrier by participant groups. Teachers blamed negative societal attitudes towards disability within mainstream schools and considered this a justification for maintaining separate schools. In the same study,

parents and children stated that learners might be safer in special schools for children with disabilities due to the intolerant attitudes of other children and school staff.

In another study by Masasa, Irwin-Carruthers and Faire (2005), caregivers of children with disabilities who lived in the Western Province of South Africa were canvassed. The study revealed that most of them expressed similar fears concerning mistreatment of children in mainstream schools, with 72% of the respondents stating that they preferred that children with disabilities be educated in special schools.

To acknowledge the fears of those concerned about the future of special schools in South Africa, the then Minister of Education Kader Asmal, stated that he was aware of the concerns of many parents, teachers and other stakeholders, and of the specialised settings in inclusive education and training systems. He alluded to the fact that they were worried about what kind of educational experience would be available to learners with moderate to severe disabilities in mainstream education. To allay their fears, he stated in White Paper 6 that special schools would be strengthened rather than abolished (DoE, 2001). In sum, special schools would not be a thing of the past but would cater for those who need a 'high or intensive' level of support, that is, those who were severely disabled. The question that arises is how would those involved with the assessment of the learners determine the level of support required by the learners; in other words, which learners would need low, moderate or high level of support? It is hoped that the following paragraphs shed some light onto how decisions should be made regarding the level of support the child needs and to what type of school should the learner be referred.

## **2.6 HOW TO DETERMINE THE LEVELS OF SUPPORT NEEDED BY THE LEARNER**

In 2005, the National Department of Education developed the National Strategy on Screening, Identification, Assessment and Support (SIAS Strategy). The main focus of this policy document is to manage and support teaching and learning processes for learners who experience barriers to learning within the framework of the National Curriculum Statement Grades R-12 (DoBE, 2014). In other words, this policy is directed at determining the nature and level of support required in schools and in classrooms to maximise learners' participation in the learning processes. It is worth noting that this policy document is not only directed at teachers in special schools,

but is directed at all teachers, managers, provincial and district officials (DoBE, 2014). The SIAS policy supports the implementation of the main principles of Education White Paper 6 (DoE, 2001) which aims to:

- correct discriminatory practices and imbalances of the past and promote the principles of inclusion;
- promote human rights, social justice, access, equity and redress;
- promote quality education for all learners to participate actively in the classroom;
- develop an integrated education system at all levels from early childhood development through general education and training to further education and training, higher education and adult education;
- infuse “special needs and support services” throughout the system;
- align special schooling with mainstream schooling;
- foster the development of inclusive centres of learning, care and support;
- ensure a barrier-free physical environment;
- develop the capacity of teachers, support personnel and other relevant human resources;
- promote the rights and responsibilities teachers, parents and learners;
- indicate how learners with disabilities will be identified, assessed and incorporated into special, full service and ordinary schools in an incremental manner;
- introduce strategies and interventions that will assist learners to cope with a diversity of teaching and learning needs to ensure that transitory learning and difficulties are ameliorated; and
- provide clear signals about how current special schools will serve identified disabled learners on site and also serve as a resource for teachers and schools in the area.

Therefore, special schools would not be abolished, but admission to a school would be on the basis of an assessment of a child’s level of educational support and not according to a medical condition only, such as physical disability. The KwaZulu Natal DoE (2005: 11) stated that “learner support will be provided on three levels. Low-intensive support will be provided for learners at ordinary schools; while moderate support will be provided at full-service schools. High intensive support will be provided at special schools/special school-resource centres”.

During the apartheid era, it is stated by the DoE (2006: 12) that “in order to be assigned to special placements, learners were often assessed and then classified into different categories, like Attention Deficit Disorder, Generalized Anxiety Disorder, Learning Disabilities, moderately or severely ‘mentally handicapped and others’”. This process was referred to as the “medical model” of disability which sees the disabled person as the problem (Rieser, 2014). The learners must adapt to fit into the curriculum. If this is not possible, they are placed into special schools or isolated at home. This model focuses on the individual and the impairment, for example, physical disability, rather than the needs or the support needed by the learner to succeed at school. By contrast, the social model of disability which is advocated in inclusive education believes the ‘cure’ to the problem lies in the restructuring of society (Rieser, 2014). The two models of disability, namely, Medical Model and Social Model of disability are illustrated in Figures 2.2 and 2.3 below by Rieser (2014: n. p.).

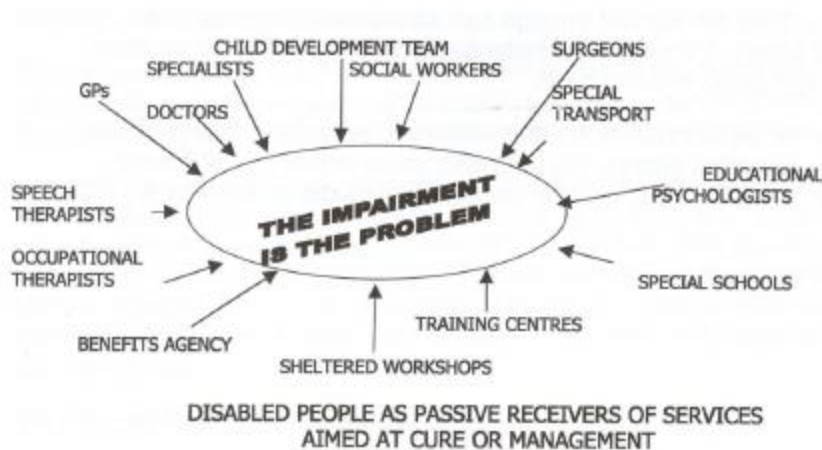


Figure 2.2: The Medical Model

(Source: Reiser, 2014: n. p).

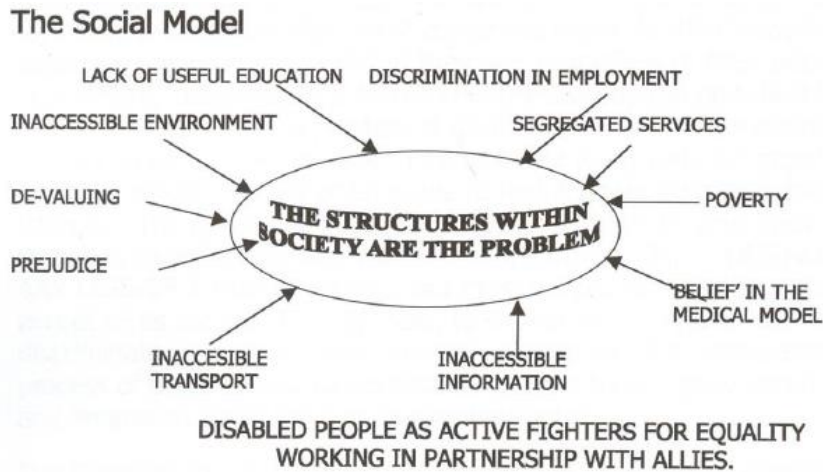


Figure 2.3: The Social Model

(Source: Reiser, 2014: n. p.)

In short, the medical model of disability, as illustrated above, shows that the learners were identified as having an impairment or illness. In addition, the learners were always assessed in isolation from their daily living environment. Factors such as sexual abuse, poverty, effects of divorce on the learner, abusive environment and teaching methods applied by the teachers were never considered as factors that could hinder the child's progress in school. On the other hand, in the social model employed in inclusive education, the identification and assessment starts with the learner's strengths, the involvement of the family in the child's life, the support it renders to the child, and the learning environment.

In sum, the Screening, Identification, Assessment and Support (SIAS) document (DoE, 2005b) was developed to give guidance on how to assess the level of support learners need. An example of how to determine the levels, the levels of support, zone of barriers to learning and type of educational institution where learners would be placed and the degree of support from the district is given below, taken from the draft policy on Screening, Identification, Assessment and Support (DoE, 2005b: 85) as shown in Table 2.1.

Table 2.1: Screening, identification, assessment and support strategy

Levels	Levels of support required by learners with disabilities	'Zone' of barriers to learning & participation	Type of educational institution where learners will be eligible to access appropriate support	Degree and nature of intervention by the District-based Support Service

			<b>programmes on a full time or part time basis</b>	
1 – 3	Low to Moderate levels of support	Low to Moderate	Ordinary schools	General and focused on building capacity of all teachers and ILSTs
4	Intensive support	High	Ordinary and Full service schools	More specific and providing consultative support around individual cases
5	Very Intensive support	Very High	Ordinary schools/ Full Service schools / Resource centres / special schools /	More intensive in the form of providing individual interventions which require more staff time or resources

Examples of scenarios are given below to give clarity to the table above, regarding learners who fall into levels 1-5.

The following scenarios are taken from the draft policy on screening, identification assessment and support (DoE, 2005b: 86-88).

### **2.6.1 Learners who might fall within the Low to Moderate Range (Levels 1 – 3): Scenario A**

Sandile (pseudonym) is hard of hearing. When looking at all the indicators, one may find that she may have no useful hearing (in the high needs column), but that she has moderate expressive and receptive language, can lip read and / or make use of residual hearing (through an FM system), has few cognitive, fine motor and behaviour problems, does not come from a poor socio-economic home environment, has strong family support, lives within reach of a school with a high level of resourcing and the capacity to organise effective school based support. The completed learner profile will therefore show that the learner falls predominantly within the range of 'low-moderate zone'. Decisions to be taken around this learner would therefore not be based on her category of disability but on the level of support needed and how this can practically be organised. The ordinary school can arrange for the learner to use an FM system in class, organise teaching and assessment to accommodate her. The district support team could arrange support and training for teachers and the Institution Level Support Team by specialists who can be drawn

from the District Based Support Team or a special school. If any of the above arrangements cannot be made, the learner could be given the choice of attending a full-service school.

The above scenario shows us that the social model of disability helps us to see the children in context, to see what systems are causing barriers that are getting in the way of their development and to identify support that they might need to reach their full potential (DoE, 1997).

### **2.6.2 Learners who might fall in the High Range (Level 4): Scenario B**

Susan (pseudonym) is a learner with severe intellectual disability. When assessed by the teacher, the following profile emerges: she may, broadly-speaking, fall within the high needs range with regard to cognitive functioning. Her cognitive skills in literacy may, however, fall within moderate range, with numeracy skills in high needs; she may have good participation and social skills, mobility, receptive communication, hearing, vision and self-care. However, regarding expressive language, the learner falls within the high needs range; she is only moderately safe in terms of independent moving in and outside the school; fine motor skills fall within the moderate range; in terms of health needs the learner falls within the moderate range and also has moderate transport needs. The school profile shows that the local neighbourhood school would fall in the moderately effective range, because of lack of resources, large classes, safety problems, lack of capacity amongst educators, no Institution Level Support Team and a district support team which does not yet function effectively. Decisions on organising support for this learner who falls predominantly within the moderate-intensity support needs range and where the local school also has some level of developmental needs, may find that placement in a full-service school will be more appropriate. Had this learner lived in a district where there is a fully functioning district-based support team with pro-active training on inclusive practice and had the school been highly effective, with good curriculum implementation and an institution-level support team, the learner may quite easily have attended the local school with support coming from the DBST and or special/resource school. The decision on the placement of the learner needs also not be permanent but should be reviewed annually. This case makes it quite clear that

the decision must be based on a range of factors and not solely on the category of disability of the learner.

### **2.6.3 Learners who might fall in the High Range (Level 4): Scenario C**

Richard (pseudonym) is in conflict with the law. Although only 14 years old, he has been in and out of school due to involvement in street gang activities. He is at present awaiting trial and has been placed in a secure care centre. In the area of “challenging behaviour”, he requires constant supervision and counselling by a youth care worker. In the areas of cognitive functioning with respect to literacy, numeracy and life skills, he has fallen far behind his grade age peers and will need assistance through a fast track programme. It appears that he has the ability to access the ordinary school curriculum. He has no expressive and receptive language problems. His socio-economic and family situation shows that he has no back-up from his home. His completed profile might show that he might be a learner who needs high-level support. However, if he has access to a rehabilitation programme, he will not need to be in a high needs facility for ever. His identification as a learner with high-level support needs is also not based on any category of disability.

Richard’s case (who is not disabled) also indicates that the placement of a learner in a full service school does not depend on a learners’ disability but on the level of support that is needed by the learner.

### **2.6.4 Learners who might fall the Very High Range (Level 5): Scenario D**

Tebogo (pseudonym) is a learner with severe limitation of movement because of cerebral palsy, with moderate cognitive ability, poor fine motor skills, little expressive and receptive language, a very low level of self-care, high medical needs and no transport to school, and may fall within the very high zone of support needs. If contextual factors also indicate that the local school is not accessible, that support (e.g. physiotherapy) is not readily available in the district, this learner may possibly best be accommodated in a special school/resource centre. If a special school is not within reach, a full service school should also be targeted and equipped. All the contextual factors should, however, weigh more heavily in the decision-making process than the category of disability. If some indicators like receptive language, cognitive ability and transport needs, accessibility of the school and availability of



physiotherapy on a peripatetic basis had been different, some other decision could have been arrived at regarding the placement of this learner.

These four scenarios indicate that “the implementation of an Inclusive Education policy means that educating a child is not only working with children’s difficulties in isolation, but also working with the broader social context that the child comes from, and what the child experiences at school” (DoE, 2006: 28). The research conducted by (DoE, 2006: 22) gives a framework of all the systems that can influence the ability of the learner to succeed in school (Table 2.2). This framework further illustrates or emphasises the points indicated by the four case scenarios discussed above.

Table 2.2: Systems framework

System	Findings
Life History and Circumstances	<ul style="list-style-type: none"> <li>• Life events such as divorce, illness and death impact heavily on learning.</li> <li>• Any trauma such as floods, or on- going stress such as sexual abuse, affects development.</li> <li>• Moving, such as schools, homes, towns, countries, presents difficulties.</li> </ul>
Political Systems and Socio-economic System	<ul style="list-style-type: none"> <li>• Legislation and the way policy is implemented affect considerably the way people develop (e.g. the value of certain groups of people was entrenched in Apartheid policy and practice, and adversely affected the development of the majority of the SA's people.</li> <li>• Poverty undermines the development of children.</li> </ul>
School System	<ul style="list-style-type: none"> <li>• The provisioning of schooling is often poor.</li> <li>• The training that teachers have received is often inadequate.</li> <li>• Hierarchical systems in education have disempowered teachers, parents and learners.</li> <li>• Curricula have been limited for many of the population</li> </ul>
Individual Socio-economic System	<p>There are many individual consequences of socio-economic inequalities:</p> <ul style="list-style-type: none"> <li>• Inadequate nutrition</li> <li>• High indwelling density</li> <li>• Lack of access to full social services, e.g. health care, electricity, libraries, parks.</li> <li>• Few opportunities for new experiences.</li> </ul>
Social Support System	<ul style="list-style-type: none"> <li>• The quality of the interaction between child and adult (teacher, parent, also peers) is crucial in fostering learning and development.</li> <li>• Children who are valued and loved for who they are develop very well behaviourally, emotionally and cognitively.</li> <li>• Children who receive mediation in the teaching and learning process develop very well cognitively</li> </ul>
Individual Biological Systems (Impairments)	<ul style="list-style-type: none"> <li>• Biological, neurological and physiological conditions present particular constraints and challenges for learning (e.g. spinal injuries, Down syndrome).</li> </ul>

Source: (DoE, 2006)

In sum,

It must be recognized that disability is not only the results of individual impairment, but is the result of interaction between individuals and the environment that is not intended or designed to enable participation. The social model suggests that social, economic and political practices and systems contribute to the disablement. So the attitudes of other people, the lack of proper resources and lack of access to services, for example, could also be things which get in the way of people achieving their full potential (DoE, 2006: 22).

Despite inclusive education, special schools would not be something of the past but will be fully operational, though they would only cater for those who fall inside levels 4 and 5 (Du Plessis, 2013). The White Paper 6 (DoE, 2001: 15) states that “In an inclusive education and training system a wide spread of educational support services will be created in line with what learners with disabilities require. This means that learners who require low-intensive support will receive this in ordinary schools and those requiring moderate support will receive this in full service schools. Learners who require high-intensive educational support will continue to receive such support in special schools”.

In conclusion, in spite of the popular misunderstanding that inclusion is about the closure of special schools, the reality is that policies such as those written in White Paper 6: Special Needs Education, has been consistent in recognising the need for some children to be educated in special schools. In support of special schools, the White Paper 6 (DoE, 2001: 21) states that:

- While special schools provide critical education services to learners who require intense levels of support. They also accommodate learners who require much less support and should ideally be in mainstream education.
- When implementing our policy of inclusion, we will pay particular attention to raising the overall quality of education services that special schools provide.
- We will ensure that learners who require intense levels of support receive these services since mainstream schools will be unable to provide them.
- In addition to these roles, special schools will have a very important role to play in an inclusive system. The new role for these schools will include providing particular expertise and support, especially professional support in curriculum, assessment and instruction, as part of the district support team to neighbourhood schools, especially ‘full service’ schools. This role also includes providing appropriate and quality educational provision for those learners who are already in these settings or who may require accommodation in settings requiring secure care or specialised programmes with high levels of support.

## **2.7 CHAPTER SUMMARY**

The literature review in this chapter highlighted the views, conceptions and misconceptions on inclusive education: what it means and how the ANC government post-1994 committed itself to changing the educational policies to accommodate all learners irrespective of their background, race or disability. The next chapter focuses on environmental education as a construct and then addresses how environmental education is implemented in special schools.

## **CHAPTER 3: LITERATURE REVIEW**

### **THE CONCEPT OF ENVIRONMENTAL EDUCATION**

#### **3.1 INTRODUCTION**

Given the commitment of the South African government 13 years ago to support special schools as stated in the previous chapter, the concept of environmental education is extensively discussed below and related to special needs education.

#### **3.2 WHAT IS ENVIRONMENT?**

According to Kimaryo (2011), there is a dilemma in defining 'environment' because it depends on how individuals and societies perceive it. The way individuals perceive the environment is significant, because it will have an impact on how one interacts with it and responds to environmental issues and problems.

Tani (2006) maintained that there are three different ways in which individuals and societies view or perceive the environment. Some people view the environment as:

- An entity: people perceive the environment as something out there which is not linked to man. However, Kimaryo (2011: 25) holds the contrary view that "one can compare this way of understanding environment with the way we see the moon, the stars or the sun" which is an objective view of environment.
- An experienced phenomenon: the environment is viewed as a space which surrounds the individual who is at the centre of the environment. Kimaryo (2011) argues that this is a subjective view of the environment.
- A socially or culturally produced or constructed phenomenon. Tani (2006) is of the contrary the opinion that humankind is an integral part of the environment and that s/he shapes it through his or her social and cultural behaviour.

It is clear according to the definitions of the environment given above that the environment is not considered holistically, which would be the ideal. Kimaryo (2011) and others, such as Le Roux (1997) and Reddy (2008) are opposed to this non-holistic notion and were of the view that environment should be considered in its totality. Considered thus, according to Wagiet (2002: 28), it can be defined as a "construct where the biophysical forms the basis for economic and social

developments, with numerous interactions between political, economic, social and biophysical dimensions”. The biophysical system provides the support systems for all life; a social system provides rules and structures that enable people to live together; and an economic system provides ways of producing and exchanging goods and services. Through a political system, people make decisions about how social and economic systems use the biophysical environment (Ministry of Education, New Zealand, 1999). These arguments are in agreement with the first principle of the Tbilisi declaration (see Box 2) which reads “consider the environment in its totality- natural and built, technological and social (economic, political, cultural-historical, ethical, and aesthetic)” (UNESCO 1977: 27). The Tbilisi declaration produced 12 principles which state how environmental education should be taught or learnt.

The diagram below (Figure 3.1) by O’Donoghue (1993) illustrates the broader perspective on environment, which does not consist of only the biophysical aspect, but also includes the social, economic and political aspects of the environment.

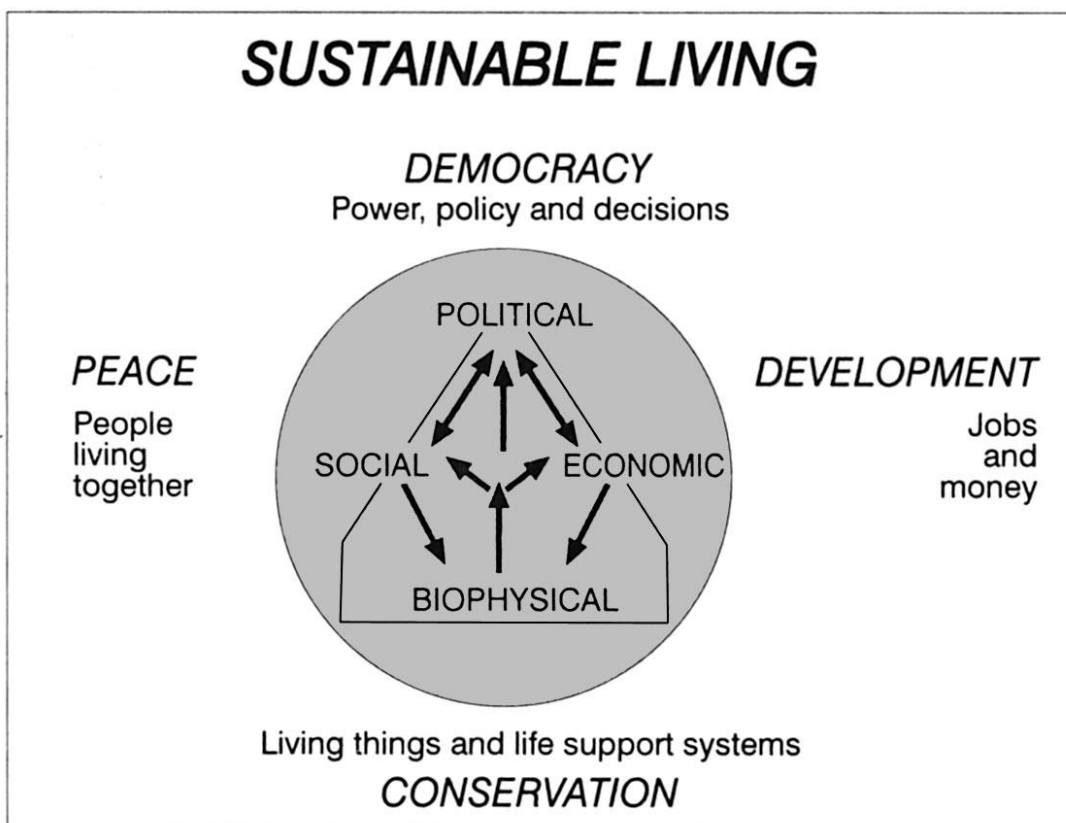


Figure 3.1: A model of the environment

Source: (Adapted from O’Donoghue, 1993)

Initially the environment was considered to be only the natural or biophysical component that excluded the impact of the human dimension (Reddy, 2008). O'Donoghue (2001: 5) argued that "From initially having been limited to nature and the biophysical elements of our surroundings, it [the environment] has grown to embrace the economic, social and political dimensions as well". Tselane and Mosidi (1998: 11) also claim that "environment includes everything around people, including people themselves, where they live, shop and where history occurred (e.g. monuments and cemeteries)". According to Lotz-Sisitka and Raven (2001: 29), the "environment" is a living world made up of communities of humans, other living things and life-support systems. All of these interact, shaping our surroundings in diverse ways, so that the biophysical, social, economic and political all become interacting dimensions of our environment.

From the above definitions, it appears that the environment is everything around us. People are placed at the centre of all environmental concerns, with an emphasis on the biophysical, social, economic and political factors as part of the environment.

In the next section I discuss how this definition affects the content of the environmental education.

### **3.3 THE RELATIONSHIP BETWEEN ENVIRONMENT AND ENVIRONMENTAL EDUCATION**

The literature reviewed reveals that the modern environmental concern began to develop in the 1960s, and, according to Pretty et al (2007), these concerns were particularly driven by Rachel Carson's book *Silent Spring* (1962) and the publicity surrounding it. Carson's book focused on the environmental harm that was caused by the agricultural sector. It criticised the manufacturing and use of agricultural pesticides for harming the countryside, and influenced governments to ban the use of pesticides like DDT, which is also banned in South Africa.

Orr (2004: 7) was an environmentalist who was concerned about the state of the environment and he wrote,

Many things on which our future health and prosperity depend are in dire jeopardy: climate stability, the resilience and productivity of natural systems, the beauty of the natural world, and biological diversity. It is worth noting that this is not the work of the ignorant people. Rather it is largely the results of the work by people with BAs, BSCs, LLBs, MBAs and PHDs.

In short, Orr (2004: 11) boldly blamed the elite, educated members of our society for destroying the environment and, by implication, he was blaming the education system. His main concern was that the institutions of learning produce graduates who cannot solve problems in their communities, pertaining to the environment. He said, for example:

... after 12 or 16 or 20 years of education, most students graduate without any broad, integrated sense of the unity of things. The consequences for their personhood and for the planet are large. For example, we routinely produce economists who lack the most rudimentary understanding of ecology or thermodynamics. This explains why our national accounting systems do not subtract the costs of biotic impoverishment, soil erosion, poison in our air and water, and resource depletion from gross national product. We add the price sale of a bushel of wheat to the gross national product while forgetting to subtract the three bushels of topsoil lost to grow it. As a result of incomplete education, we have fooled ourselves into thinking that we are much richer than we are.

To sum up, Orr advocated for a new kind of education that will help develop students' potential to deal with the environment in a sustainable manner. Orr (2004) proposed a set of goals for ecological literacy for students. He felt that when students graduate from educational institutions, they must have at least the basic understanding of the following concepts:

- Laws of thermodynamics;
- Basic principles of ecology;
- Carrying capacity;
- Energetics;
- Least-cost, end-use analysis;
- How to live well in a place;
- Limits of technology;



- Appropriate scale;
- Sustainable agriculture and forestry;
- Steady-state economics; and
- Environmental ethics.

In agreement with Orr, Peden and Roff (2005: 23) wrote, “We are facing an unprecedented environmental crisis. Unless learners start discovering and valuing the natural world and understanding their relationship to it, we are unlikely to find the way forward to sustainable living on this planet”.

Since there is a wide appreciation of the damage caused by human beings on the environment, there is an urgent need, according to authors such as Orr (2004), to develop in people, young and old, knowledge, skills, values and attitudes that help them to conserve the environment. Greenall (1987) and Kimaryo (2011) were of the opinion that knowledge, skills, values and attitudes to protect the environment can only be acquired through education which is referred to as ‘Environmental Education’.

Kimaryo (2011: 26) argued that “in order to sustain the environment, people have to develop knowledge, skills and positive attitudes on how to interact with the environment”. UNESCO (1997: 11-12), stated that “Environmental Education has an evident role to play if the issues at stake are to be grasped and if all concerned are to be provided with the knowledge, skills and attitudes which can modify the existing situation for the better”.

The Guidelines for Environmental Education in New Zealand (Ministry of Education, New Zealand, 1999) state that environmental education is a new focus in education, which aims at helping individuals and societies to resolve environmental issues and problems. In sum, environmental education is a response to the appeals of people like Orr mentioned above, regarding the incomplete and fragmented education, which does not equip the students with skills to live on earth sustainably.

The relationship between the environment and education (environmental education) according to the literature reviewed reveals that, in order for people to live in harmony with the environment and conserve it, people need the knowledge, skills, values and attitudes that can be acquired through education, which is ‘Environmental

education'. In the New Zealand Guidelines (Ministry of Education, New Zealand, 1999: 5), it is stated that "Education can give people the environmental, ethical awareness, values, attitudes, skills and behaviours needed for sustainable development. To do this, education needs to explain not only the physical and biological environment, but the socio-economic environment and human development." It is clear that one cannot talk about environment without talking about environmental education.

Dube (2012) believed that the identification of the need for individuals and societies to care for the environment has led to the growth and development of environmental education. The question is, what is environmental education? There are many different definitions of environmental education which are discussed in the following section.

### **3.4 DEFINITION OF ENVIRONMENTAL EDUCATION**

Many authors have tried to define Environmental Education (EE). A few of these definitions are given below.

- "Environmental education is the process of recognising values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the interrelatedness among man, his culture and his biophysical surroundings. Environmental education also entails practice in the decision-making and self-formulation of a code of behaviour about issues concerning environmental quality" (IUCN, 1971: 7).
- Environmental education is a continuous process of equipping people with the knowledge, attitudes, skills and commitment (action competencies) to address socio-ecological issues (Janse van Rensburg & Lotz, 1998b: 9).
- Environmental education is a process aimed at developing a world population that is aware of and concerned about the total environment and its associated problems, and which has the knowledge, attitude, motivation, solutions of current problems and the prevention of new ones (UNESCO-UNEP, 1978).
- Environmental education is now at the stage where gaining knowledge about the environment is accompanied by active learning and experiential encounters with environmental issues. It has come to be defined as a "process through which we

might enable ourselves and future generations to respond to environmental issues in ways that foster change toward sustainable community life in healthy environment” (Department of Environmental Affairs and Tourism, 1996: 4).

In sum, this means that EE (in schools) should be taught in the form of education about, in and for the environment to produce learners who have developed the skills, attitudes and values that are needed if we are to preserve the environment.

### **3.5 AIMS OF EE**

The White Paper on Education and Training in South Africa, (DoE, 1995: 18) saw the aim of environmental education as creating “environmentally literate and active citizens” who will “enjoy a decent quality of life through the sustainable use of resources”. Kimaryo (2011: 26) added that “Through environmental education learners will be able to know their environment just as they know reading, writing and arithmetic which are referred to as the 3Rs”. Bornmann (1997: 58) also stated that “Environmental education has the capacity to reform and transform education in many respects and will, it is hoped, cultivate environmentally literate citizens who have learnt to live and work in harmony with the environment”.

If the aim of environmental education is to produce environmentally literate citizens and learners, the question that needs to be asked, is how it [EE] should be taught in schools in order to realise its goals? Many authors have agreed that environmental issues are complex and multi-faceted. Therefore, EE programmes must no longer concentrate on the transference of information about environmental issues, because it has been proven that information about environmental issues alone has little effect as discussed below. For many, especially initially, EE was about getting across information (for example through the media) about environmental problems (Zwelibanzi, 2001). This strategy was based on the belief that knowledge about environmental problems would foster the attitudinal change necessary to resolve such problems (O’Donoghue, 1993; Irwin, 1999; Tembo, 1999) – a notion which reflected the traditional assumption that knowledge acquisition is necessarily linked to behaviour change (Van Damme, 1989). However, this assumption has proved to be a misconception (O’Donoghue, 1993) because, as the deep ecologists, Devall and Sessions (1985), have argued, people’s consciousness and behaviour cannot

be changed simply by their listening to others. In a UNESCO document (1990), as cited in Tema (1999, n.p.), it is said that:

No amount of preaching to the citizenry about the perils of a polluted environment, the dangers of irresponsible disposal of waste or deforestation and the benefits to mankind of greening the environment will make people act to seek to forestall the environmental degradation unless they are imbued with a deep concern for the common good, a sense of responsibility for maintaining a balanced and healthy ecosystem and a strong drive to achieve harmony with nature.

In other words, knowledge about the environment is of limited value unless accompanied by the desire to actively care for the earth and everything that is found in it (Zwelibanzi, 2001).

### **3.5 THREE DIMENSIONS OF ENVIRONMENTAL EDUCATION**

Lucas (1972, as cited in Le Grange 2002) proposed that, for EE goals to be achieved, EE teaching should involve three key dimensions which are interlinked, namely:

- education *about* the environment;
- education *in* the environment; and
- education *for* the environment.

These three dimensions of EE differ in goals and approaches, but despite their differences they are interdependent and complement each other. For example, education *for* the environment is based on student's knowledge and understanding *about* the environment and their practical experiences *in* the environment (Ministry of Education, 1999). These three dimensions are briefly discussed below to clarify or explain the concepts of education about, education in, and education for the environment.

### **3.5.1 Education about the Environment**

Education *about* the environment is all about the transmission of information (facts, theories and concepts) on environmental issues (Huckle, 1985). According to Kimaryo (2011), this view of environmental education was developed at the beginning of the environmental education movements, when the main focus was on developing knowledge and understanding about the environment and creating environmental awareness among people. “Underlying education about the environment is the assumption that increasing the environmental knowledge in the curriculum can lead to new forms of understanding and managing the environmental problems (Tilbury,1997: 2). Based on this assumption, the teaching of EE in class becomes a top-down approach, whereby a teacher is a transmitter and a gatekeeper of knowledge. Fien (1993: 17) claimed that the assumption was that “right knowledge and right attitudes lead to right behaviour”.

Robottom (1987) and Melville (2007) argued that this dimension adopts a predominantly cognitive focus that is, building learners’ cognitive ability without action taken to promote sustainable living. Fien and Gough (1996, cited in Thomas, 2005: 107), suggested that the concepts of “education *in*, and education *about*, the environment are only helpful if they provide skills and knowledge to support education *for the environment*” (my emphasis). According to Kimaryo (2011), this view is positivist in nature and as such the learners are passive participants, and the teaching methods are behaviouristic and attempt to address learning in a linear way. Critics maintain that education *about* the environment has served to promote techno-centric perspective and a conservative view of the environmental crisis.

### **3.5.2 Education in Environment**

Melville (2007: 21) claimed that “education *in* environment is any form of education conducted outside the classroom using the environment as a medium for teaching”. Palmer and Neal (1994) were of the view that education *in* the environment emphasises students’ experience in the environment. Kimaryo (2011) shared these sentiments by stating that experiences beyond the classroom in both natural and built environments not only provide opportunities for students to gain first-hand experience in the environment but also enhance classroom-based work. The

assumption is that if learners learn through the environment, they will develop environmental awareness and concern.

Tilbury (1993) argued that even though education *in* the environment enhances learning, it does not necessarily address the socio-economic and political influences on the environment, which are essential components for critical learning.

### **3.5.3 Education for the Environment**

Many authors agree that contemporary environmental education goes further than learning *about* the environment and *in* the environment (Kimaryo, 2011; Loubser, 2012). Education *for* the environment builds on education *about* and *in* environment. It advocates the learning of environmental education which aims at the conservation and the improvement of the environment by ensuring that individuals develop attitudes of concern for the environment, as well as the skills for participating in the environmental protection and improvement (Klein, 1997; Kimaryo, 2011). In this dimension, the learners or the participants should be actively involved in decision-making and problem-solving such as awareness-raising negotiation, persuasion campaigns and rehabilitation of degraded areas (Melville, 2007; Kimaryo, 2011).

According to Loubser (2012), if environmental education aims at producing environmentally literate citizens, education *for* the environment must be part of the learning process. This is because this education *for* the environment is rooted in an ideology which seeks to develop political and social awareness among students. However, even though education *for* the environment is emancipatory in nature, Dorion (1990), Gayford (1987) and Thomas (2005) were of the view that this approach has received least coverage in the school classroom, due to the fact that teachers feel less confident in handling controversial issues and some may lack the skills to conduct such controversial lessons.

However, education *for* the environment is dependent upon education *about* and *in* the environment to provide the skills, rationale and knowledge to support its transformative intentions (Klein, 1997, Fien, 1993). Tilbury (1997) cautioned that teachers who teach solely from an education *for* the environment approach would be

considered to be environmentalists and not environmental educationists. The implication is that teachers should apply all the three dimensions or approaches (education about, in and for), in their teaching, in order to reach the goals of environmental education.

### 3.6 HISTORY OF EE

#### 3.6.1 Globally

According to Atchia (1995: n. p.), the history of the environmental movement can be traced to two events. The first is through the writers such as Rachel Carson, the scientist and environmental activist, whose publication *Silent Spring* (1962) was influential in that it helped to highlight the dangers inflicted upon bird life by industrial pesticides like DDT, which was subsequently banned (Rampedi, 2001). Atchia (1995: n. p.) stated that “A second way to trace environmental history starts with the United Nations Conference on the Human Environment, in Stockholm, 1972 and the subsequent events, many of which were UN-initiated”. Though there were other conferences held regarding the environment, this was the first conference that brought together governments from all over the world, from both developed, developing and under-developed countries. The different events, and outcomes thereof, that gave birth to environmental education are illustrated in Table 2.3 below.

Table 3.1: Events in the history of environmental education

Date	Event	Where	By whom	Outcomes
1962	Publication of <i>Silent Spring</i>	USA	Rachel Carsons. (Environmental Activist)	<i>Silent Spring</i> highlighted the issues around the residual nature of pesticides and their dangers. The outcome of this book was that it influenced the governments to ban the use of pesticides such as DDT, which is also banned in South Africa.
1972	The United Nations Conference on the Human Environment.	Stockholm, Sweden.	The United Nations	Establishment of United Nation Environmental Programme (UNEP). The UNEP’s task was to establish the term “Environmental Education”.
1975	First International workshop on Environmental workshop.	Belgrade, Yugoslavia	UNEP and UNESCO	The delegates ratified the Belgrade Charter, which outlines the basic structure of environmental education.
1977	Intergovernmental	Tbilisi,	UNESCO and	Goals, Objectives and guiding

Date	Event	Where	By whom	Outcomes
	Conference on Environmental Education	Georgia.	UNEP	principles of environmental education were laid. The Tbilisi declaration listed 5 objectives (See Box 1) and 12 principles of EE (See Box 2) that are still widely quoted and applied today.
1987	Publication of the Brundtland Report, also known as Our Common Future		WCED	The report introduced the idea of sustainable development in which environmental protection and economic growth are viewed as interdependent concepts
1992	The Earth Summit. The United Nations Conference on Environmental Education (UNCED)	Rio de Janeiro, Brazil.	UN and country working groups	One of the most significant document that was produced in this conference was Agenda 21. Agenda 21 outlined a programme of action to be implemented by the governments to protect the environment. This document focused on public education, awareness and training, which confirms the role of education and the importance of positioning environmental education in the perspective of sustainable development.
1992	The gathering of NGOs at the Earth Summit	Rio de Janeiro, Brazil.	The international Forum of NGOs and Social Movements.	Treaty on environmental education was adopted. A set of principles for equitable and sustainable societies was formulated as part of the treaty (See Box 3).
2002	World Summit for Sustainable Development (WSSD), also known as Rio+ 10.	Johannesburg, South Africa	UN	The need for socio-ecological, political and economic transformation was emphasised.

Source: (Atchia, 1995: n. p.)

### 3.6.1.1 Objectives of environmental education (Box 1)

Objectives and principles of EE were formulated by the representatives at the 1977, Tbilisi Intergovernmental Conference on Environmental Education held in Tbilisi, USSR (Soviet Russia) (UNESCO, 1977: 26-27). They are as follows:

1. Awareness: to help social groups and individuals acquire an awareness of and sensitivity to the total environment and its allied problems.
2. Knowledge: to help social groups and individuals gain a variety of experiences in, and acquire a basic understanding of, the environment and its associated problems.
3. Attitudes: to help social groups and individuals acquire both a set of values and



feelings of concern for the environment and to motivate them to participate actively in solving of environmental problems.

4. Skills: to help social groups and individuals acquire the skills necessary for identifying and solving environmental problems.
5. Participation: to provide social groups and individuals with an opportunity to be actively involved at all levels in working towards the resolution of environmental problems.

#### 3.6.1.2 Principles of environmental education (Box 2)

As recommended at the Tbilisi Conference the following are the principles of Environmental Education.

1. View the environment in its totality.
2. Follow an interdisciplinary approach.
3. Sensitise learners to the environment, teach knowledge and skills, and clarify values.
4. Look at major environmental issues from a local, national and international perspective.
5. Focus on current and potential environmental situations, and at the same time maintain a historical perspective.
6. Help learners discover the causes and symptoms of environmental problems.
7. Give learners the opportunity to plan their own learning experiences and to take decisions.
8. Ensure it is an on-going process.
9. Emphasise every individual's responsibility towards the environment.
10. Emphasise the value of co-operation for solving environmental problems.
11. Emphasise the complexity of environmental problems and so make people realise that there is a need for critical cognitive skills.
12. Use a large number of teaching approaches and strategies for teaching and learning.

#### 3.6.1.3 The NGO forum principles (Box 3)

Some principles of environmental education for equitable and sustainable societies:

1. Education is the right of all; we are all learners and educators.
2. Environmental education, whether formal, non-formal or informal, should be grounded and innovative thinking should occur in any place or time, promoting the transformation and construction of society.
3. Environmental education is both individual and collective. It aims to develop local and global citizenship with respect for self-determination and sovereignty of nations.
4. Environmental education is not neutral but is value-based. It is an act for social transformation.
5. Environmental education must involve a holistic approach and thus an interdisciplinary focus in the relation between human beings, nature and the universe.
6. Environmental education must stimulate solidarity, equality, and respect for human rights involving democratic strategies and an open climate of cultural interchange.
7. Environmental education should treat critical global issues, their causes and interrelationship in a systematic approach and within their social and historical context. Fundamental issues in relation to development and environment, such as population, health, peace, human rights, democracy, hunger, degradation of flora and fauna, should be perceived in this manner.
8. Environmental education must facilitate equal partnership in the processes of decision making at all levels and stages.
9. Environmental education must recover, recognise, respect, reflect and utilise indigenous history and local cultures, as well as promote cultural, linguistic and ecological diversity. This implies acknowledging the historical perspective of native peoples as a way to change ethnocentric approaches, as well as the encouragement of bilingual education.
10. Environmental education should empower all peoples and promote opportunities for grassroots democratic change and participation. This means that communities must regain control of their own destinies.
11. Environmental education values all different forms of knowledge. Knowledge is diverse, cumulative and socially produced and should not be patented or monopolised.

12. Environmental education must be designed to enable people to manage conflicts in just and humane ways.
13. Environmental education must stimulate dialogue and cooperation among individuals and institutions in order to create new lifestyles which are based on meeting everyone's basic needs, regardless of ethnic, gender, age, religious, class, physical or mental differences.
14. Environmental education requires a democratisation of the mass media and its commitment to the interests of all sectors of society. Communication is an inalienable right and the mass media must be transformed into one of the main channels of education, not only by disseminating information on an egalitarian basis, but also through the exchange of means, values and experiences.
15. Environmental education must integrate knowledge, skills, values, attitudes and actions. It should convey every opportunity into an educational experience for sustainable societies.
16. Education must help develop an ethical awareness of all forms of life with which humans share this planet, respect of all life cycles and impose limits on human's exploitation of other forms of life.

Source: (Irwin & Lotz-Sisitka, 2005: 43-44)

From the preceding discussion, it is apparent that environmental education has a multi-variate position in the broader education arena. It is seen as a sub-field, a subject, and a cross-curricular concern amongst others. Thus, there is no definitive position of the both the structure and status of EE and there are a variety of opinions on which there is yet no unanimous position.

### **3.6.2 Origins of EE in South Africa**

According to Ballantyne (1987: 7), the historical development of Environmental Education in South Africa has been recorded in detail by Irwin (1984). Irwin states that "Environmental education evolved from conservation education which was more informal in conservation centres used by schools and communities to a more conceptualized formal processes shaped by 'acute political, social and economic factors as well as ecological concerns'" (Irwin, 2003: 138). In other words, pre-1994

environmental education focussed more on conservation education (Ferreira, 1998). Le Roux (1997: 47) wrote as follows to explain environmental education before 1994:

... the environment was initially seen as a natural ecosystems and early responses to the environment crisis thus focused on protecting endangered wildlife in nature reserves. It was assumed that people needed to be taught ecology and be made aware that nature was at risk.

According to Rampedi (2001), “veld schools”, mostly in Transvaal, offered outdoor education to realise the goals of conservation education. Melville (2007) claimed that the old Transvaal Education Department formed the veld schools mentioned above as their own exclusive outdoor education programmes and she believed that these “veld schools” were formed “in their attempt not to embrace environmental education” for what it really means (Melville, 2007: 19), but were used as a political tool to teach White boys the Nationalist doctrines of the then government. With regards to veld schools in South Africa, De Lange (2004: 78-79) explained that “Veld schools (field centres) were established by the Department of Education, with the aim of exposing children to the wonder of creation, information about the environment and the aims of Christian Nationalism”.

The interest in conservation education started as early as the 1960s, driven by non-governmental agencies. However, according to Irwin (2003), until 1989 there was no nationwide, state attempt to include EE into the formal curriculum. Table 2.1 of this thesis (Events in the history of environmental education) indicates that for a period spanning the late 1970s and 1980s, most of the world appeared to be distracted from the situation – perhaps in the hope that these serious problems would disappear or that they really did not exist anyway. This is in agreement with Orr’s (2004: 9) argument that human beings are ignorant by nature. He stated:

The advance of knowledge always carried with it the advance of some form of ignorance. For example, in 1929 the knowledge of what a substance like chlorofluorocarbons (CFCs) would do to the stratospheric ozone and climate stability was a piece of trivial ignorance as the compound had not yet been invented. But in 1930 after Thomas Midgely, Jr., discovered CFCs, what had been a piece of trivial ignorance became a critical life-threatening gap in human understanding of the biosphere. Not until the early 1970s did anyone think to ask “What does this substance do to what?” in 1986 we discovered

that CFCs had created a hole in the ozone over South Pole the size of the lower 48 U.S. states; by the early 1990s, CFCs had created a worldwide reduction of ozone. With the discovery of CFCs, knowledge increased, but like the circumference of an expanding circle, ignorance grew as well.

The first attempt to include EE in the formal curriculum in South Africa, according to Mosidi (1997) and De Lange (2004), was the 1989 White Paper on EE. De Lange (2004) and Mellville (2007) state that this 1989 White Paper was tabled in the South African Parliament, after years of resistance from conservatives in some departments of education. This document embraced most of the Tbilisi Principles and the internationally accepted concept of environmental education. However, Clacherty (1993: 56) pointed out that “the White paper was never enacted in parliament, [and] was not broadly inclusive, resulting in little implementation in formal curriculum”.

In 1992, the Environmental Education Policy Initiative (EEPI) was launched to develop an education curriculum policy within the formal education arena. The significant outcome of this launch was the inclusion of EE in the White Paper on Education and Training, as one of the key principles (Le Grange, 2002). The principle states:

Environmental Education, involving an inter-disciplinary, integrated and active approach to learning, must be a vital element of all levels and programmes of the education and training system, in order to create environmentally literate and active citizens and ensure that all South Africans, present and future, enjoy a decent quality of life through the sustainable use of resources” (RSA, 1995: Principle No. 20: 22).

In 1996, there was a further development, the Environmental Education Curriculum Initiative. Le Grange and Reddy (1998: 12) wrote:

The Environmental Education Curriculum Initiative (EECI) was established in 1996 to take the initiatives of the EEPI from policy to curriculum development and to ensure that environmental concerns form part of the new outcomes-based approach to learning in South Africa.

The launching of Curriculum 2005 by the then Minister of Education in March 1997 indicated and marked a significant change in the history of education in South Africa

(Enviro Feature, 1997: 3). This new curriculum envisaged replacing the content-based education with outcomes-based education and teacher-centred pedagogies with learner-centred pedagogies. In addition, all programmes of learning were organised by cross-curricular themes (phase organisers) such as environment, entrepreneurship and personal development (Le Grange, 2002). The phase organisers, according to Lotz, Tselane and Wagiet (1998: 5), “provided a context and focus through which specific outcomes [could] be achieved at all levels and phases within General Education & Training”.

“Environmental educators in South Africa viewed the phase organiser (environment) as a useful “vehicle” for including the environmental activities in all programmes, for General Education and Training. However, the Curriculum 2005 Review Task Team, appointed by the then Minister of Education, Kader Asmal, in 2000, recommended that phase organiser be removed from Curriculum 2005. The National Education Ministry accepted this recommendation. Despite this, in his media response to the review committee’s report, Minister Asmal stated that environmental education would form an important part of a revised curriculum” (Le Grange, 2002: 84). Consequent to that, out of a concern that EE would not feature in the revised curriculum, he established the National Environmental Project for General Education and Training (NEEP-GET).

The main objective of the NEEP-GET was to ensure that environmental education was integrated throughout the curriculum for the General Education and Training (GET) band. In the Department of Environmental Affairs and Tourism (DEA&T) project document for NEEP-GET (2001: 13), it is written that “Developed in partnership with the Danish government, the NEEP (GET) aims at inter-sector co-operation in ensuring that environmental considerations are addressed in every learning area in the new national curriculum.” In support for the environment and NEEP, Kader Asmal appointed an environmental education advisor (Dr Razeena Wagiet) and a team consisting of the Ministry of Education, the Department of Environmental Affairs and Tourism and the Department of Water Affairs and Forestry, to work on plans for NEEP.

According to De Lange (2004: 66-67), Wagiet’s task included:

- The development and publication of the Enviro Days 2000 booklet to provide schools with orientation and contact details to celebrate different environmental days, outlined by the Minister.
- The initiation and development of a concept plan on the development of policy and strategy for environmental implementation on different levels of the education and training system, including General Education and Training (GET) and Adult Basic Education and Training (ABET).
- A formal partnership between the Department of Education and the Department of Environmental Affairs and Tourism, at Chief Directorate level, to implement environmental education in the context of the education system. This was reflected in the establishment of a pilot project in environmental learning within the context of Curriculum 2000 for Grades 4 and 8. Initial plans indicated that this would involve the development of resource materials and the establishment of EE support teams in the provinces to work with teachers. It also involved a research process to develop a research report for the implementation of environmental learning within the context of Curriculum 2005.
- Plans to establish and expand greening projects which encouraged schools to improve their environmental management, were also implicated.

According to Swart (2009: 63-64), “the project’s activities ended in December 2003 and the objective was achieved as environmental education is now a principle applied in the curriculum for all learning areas”.

As a follow-up to the programme conducted through NEEP-GET, guidelines for incorporating environmental learning in the lessons were developed in all learning areas and supplied to the teachers (DoE, 2004b; NEEP-GET, 2004). Melville (2007) agreed that the outcome of the NEEP-GET was the inclusion of EE in all learning areas in the formal curriculum (National Curriculum Statement) and formal qualifications for environmental education practitioners have been approved by the South African Qualifications Authority (SAQA).

From the literature reviewed, it appears that nothing much has been accomplished in the form of programmes for the Further Education and Training (FET) band. Dube (2012: 94) claimed that “programmes such as the NEEP-GET have assisted the Grades R-9 teachers to translate policy to practice, whereas no such programmes

have focused on the Gr 10-12 teachers at a national level”. Similarly, research seems to have focussed on the implementation of environmental education in the GET band, for example, research conducted by researchers such as Ballantyne (1999), Lotz-Sisitka and Raven (2001), Le Grange (2003) and Maila (2003). The situation becomes compounded when it comes to special schools. The teachers in special schools seem to have been thrown into the abyss. They are requested to adapt the lessons to suit the needs of those who experience barriers to learning, but programmes such as those that were rendered for the GET band to help teachers to translate the policy are minimal or non-existent when it comes to the FET phase and especially when it comes to special schools.

In the next section I discuss different ways of including the in the formal education.

### **3.7 DIFFERENT WAYS OF INCLUDING EE IN THE CURRICULUM**

UNESCO (1977) proposed a number of models through which EE could be incorporated into the Secondary School Curriculum or educational programmes. It [EE] can be included as:

- an independent subject;
- across curricular issues permeating the whole curriculum hence integrated into existing subjects; or
- a theme organised around significant issues and problems.

Any of these three approaches can be used, but one needs to take cognisance of the fact that every approach has its strengths and weaknesses. The strengths and weaknesses of each approach are briefly highlighted below.

#### **3.7.1 EE as an Independent Subject**

EE can be included in the school curriculum as an independent subject. The advantage of this approach is that EE can have its own syllabi and time allocated in the school timetable and would be taught like any other subject such as English. However, like everything else, there are limitations. As an independent subject, Rusinko (2010) argued that it will have a narrow focus and not be related to other subjects. Another argument against this approach is that not everybody will study it if learners are given the option to choose the subjects they want to study (Kimaryo,



2011). Also an argument levelled against this approach is that curricula of schools are overcrowded (overloaded), and adding another subject would worsen the situation (Powers, 2004).

To cap it all, it has been stated that the aim of EE, which is to re-establish the relationship between man and the environment, cannot be achieved by studying a single, stand-alone subject (Gough, 1997).

### **3.7.2 Integration of EE into Other Subjects**

Another approach to including EE in the school curriculum is to integrate EE content into all the school subjects as a cross-curricular issue. This approach is called a multidisciplinary one, and in other cases, it is referred to as a whole curriculum approach to EE (Lacey & Lomas, 2013). This is a popular way of integration in a curriculum, where a theme or a topic is addressed through the lenses of different subjects.

Many researchers such as McClaren and Hammond (2005) support this holistic approach to environmental education. They claim that it facilitates exchange and collaboration among different subjects which makes learning meaningful. Additionally, it has been argued that integrating EE into other subjects will ensure that a large number of learners will be exposed to EE (Goodson, 2013). However, it has been argued that this approach also has a downside. Though it covers a wide a scope, it is argued that it demands a lot of time and resources and skills on the part of the teacher (Pellegrino & Hilton, 2013).

### **3.8 BARRIERS TO THE IMPLEMENTATION OF EE**

For any programme or project to be effectively implemented, the impediments or barriers need to be identified first in order to come up with ways to overcome them. According to Le Roux and Maila (2004), these barriers could emanate from:

- Constraints related to the status and relevance of EE;
- Constraints related to support of active environmental learning; and
- Constraints related to learning support materials.

These constraints are discussed below. While this section relates to challenges experienced in mainstream schools, it can be assumed that the same challenges apply in special schools, although there are additional challenges in social schools.

### **3.8.1 Constraints related to the status and relevance of EE**

Le Roux and Maila (2004) identified the following constraints in respect of the status and relevance of EE:

- Inadequate knowledge about the environment and environmental issues;
- Lack of understanding of the relevance of EE;
- The “add-on” status of EE and a lack of recognition of the fact that environmental learning is integral to the curriculum; and
- Constraints related to learning support materials.

### **3.8.2 Constraints related to the support of active environmental learning**

Le Roux and Maila (2004: 239) identified the following constraints related to the support of active environmental learning:

- Need for support in the development of learning programme units;
- Lack of monitoring of the implementation of workshop processes in practice;
- Inability to generate a whole-school approach to active environmental learning;
- Lack of support on the part of school management in respect of the introduction of environmental learning into the curriculum;
- Lack of support and assistance on the part of educators in respect of the implementation of environmental education;
- Lack of coordination of partner support; and
- Lack of educator confidence in implementing environmental learning.

### **3.8.3 Constraints related to learning support materials**

Le Roux and Maila (2004) identified the following constraints in respect of learning support materials:

- Lack of learning support materials;
- Lack of funds with which to purchase learning support materials; and
- Lack of experience in the developing of environmental learning support materials.

The perception that the provision of learning support must be in the form of tangible support tools is a further constraint. Most of the educators think that resources and material must be provided by the Department of Education all the time. Kimaryo (2011: 168) wrote: “The problem of teaching and learning materials could be minimized by teachers being innovative and using material from the environment or developing their own materials”. She further explained that for teachers to be able to be creative and innovative, they need to be trained or workshopped.

In summary, challenges can be classified into two categories: external and internal challenges. Le Grange and Reddy (1998) claimed that external barriers emanate from forces outside the school, such as poor educational resources, and lack of pre-service teacher education in EE. As far as the internal barriers are concerned, it is said that they are school-based. An example of internal barrier as given by Maila (2000) is, to name but one, lack of time and preparation. The elimination of barriers, whether they are of an external or internal nature, is vital to ensure effectiveness of EE programmes.

### **3.9 CHALLENGES EXPERIENCED BY TEACHERS IN IMPLEMENTING EE IN SPECIAL SCHOOLS INTERNATIONALLY**

There have been many studies conducted on inclusive education and curriculum adaptation for learners with mental or psychological barriers to learning, such as autism and other cognitive learning disabilities. A point to be borne in mind is that many physically disabled children have no problem with cognitive learning, yet they are still labelled as ‘special needs children’ who need to be accommodated in separate establishments.

#### **3.9.1 Inclusive Education**

Meijer (2003: 4) found that inclusive classrooms exist throughout European countries. The evidence also suggests that what is good for pupils with Special

Education Needs (SEN) is good for all pupils. Within the area of inclusion of pupils with SEN, challenges are experienced in dealing with behaviour, social and/or emotional problems, while dealing with differences or diversity in the classroom is one of the biggest problems within European classrooms. Stubbs (2002: 19) presented the findings of a comprehensive study undertaken on inclusive education in several countries in Africa. She found that both mainstream schools and segregated special schools had failed to promote the rights of children holistically, or to provide relevant, appropriate and quality education for all children. Although intentions may have been good, she concluded that “Notwithstanding the best intentions, it is conceded that all too often the result (of special programmes, specialised institutions, special educators) has been exclusion; differentiation becoming a form of discrimination, leaving children with special needs outside the mainstream of school life and later, as adults, outside community social and cultural life in general”.

A similar situation prevails in Ireland where students with special educational needs are often accommodated in special schools (National Council for Curriculum and Assessment (NCCA), 1999: 10). There is a wide range of special schools catering for various types and levels of disability, including sensory impairment and physical disability. These special schools cater for students both at primary and post-primary levels. The majority of these schools accommodate students with a mild or moderate general learning disability. The NCCA (1999: 40) advocated, however, that special needs learners need to have as much access as possible to the mainstream curriculum with curriculum adaptation that includes thematic approaches, sensory experiences and flexible assessment arrangements that do not necessarily include summative, written examinations.

Although these studies focus on learners with a range of cognitive learning disabilities, conclusions from those studies can be applicable to physically disabled learners in that research indicates that lessons should be multi-faceted, flexible, and that there should be an awareness of individual needs without assuming that every learner will respond positively or in the same way.

### **3.9.2 Environmental Education for Special Needs Learners**

EE often takes place outside (McLarnon, n. d.; Liddicoat as cited in Rydberg, 2015: 1; Stavrianos & Spanoudaki, 2015) which means that planning and communication are essential. Collaborative team planning has been identified as one of the key factors enabling the development of flexible, inclusive classroom arrangements (Meijer, 2003). Communicating with parents and students ahead of time may also help students to be more prepared, be less affected by a change in routine, and ultimately be more successful too. Liddicoat (as cited in Rydberg 2015: 1) advocated that environmental education could accommodate many learning styles, encourage respect for difference, and teach students to help one another. McLarnon (n. d.), who conducted his study in Canada, was concerned with the social justice philosophy of education and argued that outside education “needs to be accessible, affordable and distributed with equity”. In this regard, Liddicoat (as cited in Rydberg, 2015: 1) advocated the implementation of the principles of universal design for learning in which designing activities and preparing adaptations requires knowledge of the students, of the lesson content, and of the place where the lesson will take place. Universal design means designing activities to enable students of many different abilities and backgrounds to participate in their own ways and learn at their own levels.

Although their study was not specifically focused on environmental education, Hemmingson and Borrell (2001) found that in Swedish schools, children with physical disabilities experienced barriers to participation in both the physical and the social environment. Most of the barriers arose from the way in which school activities were organised and carried out. For example, students had to move to different classrooms depending on the subject taught. This created difficulties with access to the students’ personal equipment that, typically, was installed in a single classroom and transfer from room to room was also problematic where there was a mobility impairment. They found that failure to provide adequate environmental adjustments resulted in restricted participation or even exclusion from some class activities. Teachers and students therefore need a flexible physical environment and a comprehensive plan to meet the needs of students with special needs. All teachers need to be informed about the students’ needs and how to make appropriate adaptations. They suggested that health care professionals, with knowledge about

how to compensate for disabilities by making environmental adjustments, could play an important role in supporting teachers. It seems trite to say that environmental education also requires flexibility in and adaptation of the physical environment in which EE takes place. When adapting activities for inclusive settings, it should be remembered that each individual is unique, and for students with physical impairment this can become a very complex exercise. This can further be compounded when physical impairments are also related to medical conditions, such as epilepsy, as noted in a scoping study in the UK (Davis & Florian, 2006).

Liddicoat (as cited in Rydberg, 2015: 1) maintained that environmental education should be hands-on and multisensory (including the use of modern technology) and stated that this encourages critical thinking and inspires thoughtful action. It requires that students work together to learn and make a difference. In support of the use of ICT for special needs students, Charikleia, Paraskevopoulos and Pantis (2011) who conducted a study in Greece, suggested that virtual field visits could allow people with physical impairments to access information about endangered species, habitats and ecosystems. Moreover, the integration and socialisation of people with disabilities on a social and environmental level could be enhanced by their access to environmental knowledge, the development of environmentally friendly attitudes, the understanding of important environmental problems and their solutions. Charikleia *et al.* (2011) found that there was considerable potential for people with disabilities to work in the field of nature conservation, for example, conducting monitoring programmes, participating in awareness programmes and engaging in conservation actions.

Armstrong, Armstrong and Spandagou (2011: 35) concluded that the reality is that “the goals of equity and equality of opportunity remain distant for many people particularly in the developing world”. They recommended that the educational experience of students with special educational needs should reflect what is available to their non-disabled peers. In particular, they emphasised co-operative and group work that encourages peer learning. They also suggested that a whole school approach should be adopted. Instead of treating the individual student with special needs in isolation, they suggested that planning should be done for the class or group as a whole and that the learning opportunities that exist for all children should be identified.

The focus of the current study is, therefore, of significance and will reveal the challenges experienced by special school teachers who are teaching physically disabled learners.

### **3.10 CHAPTER SUMMARY**

This chapter highlighted the history of EE globally and in South Africa, its goals, principles and how it should be taught in schools in order to realise the set goals of EE. This chapter has also revealed the problems that are encountered by teachers when they teach EE in South Africa and globally (the rest of Africa, Europe, Sweden, Greece and Canada). The same problems appear to be experienced in all education systems, particularly for special needs learners. The next chapter details the research methodology used in conducting this study.

## CHAPTER 4

### RESEARCH METHODOLOGY

#### 4.1 INTRODUCTION

Creswell (2013) argued that before the researcher embarks on the research journey she must consider certain things such as the research paradigm, research methodology or design and the methods to be employed to answer the research questions. Gesne (2011: 5) defined a paradigm as a “framework or philosophy of science that makes assumptions about the nature of reality and truth, the kinds of questions to explore, and how to go about doing so”. Before a researcher chooses the research paradigm, one has to know her views about ontology (truth about reality) and epistemology (philosophy of knowledge). According to Krauss (2005: 758), “Epistemology is intimately related to ontology and methodology; as ontology involves the philosophy of reality, epistemology addresses how we come to know that reality while methodology identifies the particular practices used to attain knowledge of it”. Literature reveals that there are two dominant research paradigms, namely positivism and interpretivism.

To reiterate, the way the researcher views ontology and epistemology will determine the research paradigm. Positivists think that there is only one reality and to understand the world the researcher needs to conduct tests and experiments to describe reality (Sarantakos, 2012). Such researchers are called quantitative researchers. On the other hand, the interpretivists believe that there are multiple realities, and based on that they believe that to gain knowledge about the world, the researcher has to employ different methods such as interviews or observations to describe reality (Andrews, 2012). Those who take this path in research are called qualitative researchers.

The purpose of this chapter is therefore to describe the research paradigm that underpins this study, the research methodology (theory and methods) employed in this study. Burns & Grove (1998: 745) state that “Methodology and research design direct the researcher in planning and implementing the study in a way that is most likely to achieve the intended goal. It is a blue print for conducting the study”.



The study was conducted to find out the challenges experienced by the special school teachers when they teach and modify some of the lessons for the benefit of learners who experience barriers to learning due to their physical disability. To achieve the goals of my study, the qualitative research paradigm was used and the research approach for the study was multiple case studies conducted in four special schools. The instruments used to collect data were observation and semi-structured interviews. To analyse and interpret the interviews, the phenomenological approach was employed. These aspects are elaborated below.

## **4.2 RESEARCH PHILOSOPHY**

This study has been designed as a phenomenological investigation. Phenomenology is a means of scientific investigation which was developed by Husserl in the 18<sup>th</sup> century who is regarded as the father of phenomenology. He developed his in order to protect humanity from being depersonalised by the natural scientists through scientism and experimental research. At first, all forms of human research were conducted through logic and reason. Then the development of the natural sciences emerged which preferred experimentation. The results of such experiments which were performed using objects and animals would then be applied to human beings. It was as a form of protest against this practice that phenomenology was introduced (Viljoen & Pienaar, 1971). Thus, it was a counter movement to the naturalists 'experimentation'. For phenomenologists, the experimentation method dehumanised man whom they regarded as the only ontic and ontological entity (Viljoen & Pienaar, 1971).

### **4.2.1 Definition of Phenomenology**

The word phenomenology is derived from the Greek word *faínesthai* which means "bring to light" (Van Rensburg, Landman & Bodenstein, 1988: 489). In this study, challenges that face the teachers in special schools when teaching EE are the phenomena under scrutiny. According to Lester (1999), phenomenology is the study of experience from the perspective of the individual, 'bracketing' taken-for-granted assumptions and usual ways of perceiving. According to Giorgi (1994: 212), bracketing is a process whereby "one simply refrains from positing altogether; one looks at the data with the attitude of relative openness". Creswell (2013) stated that

phenomenological research does not focus on theory building, but the tenets of phenomenology attempt to build essence of the experience from the point of view of the participant.

Creswell (2014: 14) defined phenomenological research as “a design of inquiry coming from philosophy and psychology in which the researcher describes the lived experiences of individual about a phenomenon as described by the participants”. Van Manen (1990) concurred that, in phenomenology, experience is the starting point. In this research approach, factual accuracy is not of significance as the focus is on the person’s lived experience of what it is like to teach EE in special schools. Given the emphasis, phenomenological studies do not attempt to generate wider explanations; rather, their focus is on providing research accounts for individuals in a specific setting.

Since the primary source of data in phenomenology is the life world of the individuals being studied, data were gathered in the form of in-depth semi-structured interviews, and participant observations. Stanley and Wise (1993) claimed that the studies that draw upon a phenomenological approach, generally gather data in the forms mentioned above.

#### **4.2.2 Steps in Phenomenological Research**

Phenomenologists are reluctant to give prescriptive or definite steps for conducting phenomenology research, claiming that such an act kills creativity on part of the researcher (Bums & Grove, 1998), but guidelines are provided by people such as Van Manen (1990), Giorgi (1975) and the others to help novice researchers to get going.

Phenomenological research can be quite confusing, especially for the novice researcher like me. The reason for the confusion is in part, that there are many phenomenologists who have common views but also have their differences. They differ in some aspects like ‘bracketing’. Husserl (1960) claimed that researchers are capable of being unbiased, neutral and impartial when they conduct research, but Heidegger refuted that claim, as he did not believe that people can put their

philosophies and assumptions in abeyance or bracket their presuppositions about the phenomenon under study (Heidegger, as cited in Reiners, 2012).

When I started my study, I set out to use descriptive phenomenology advocated by Husserl and modified by Giorgi (1975), but the steps I initially thought of using to analyse data were those provided by Van Manen (1990) who is a follower of Heidegger, who it turns out does not believe in bracketing as Husserl does. According to Creswell (2013), Van Manen posited that bracketing may be a difficult thing to do for the researcher simply because interpretations of the data always incorporate the assumptions that the researcher brings to the topic. I almost fell into a trap of mixing ideologies, but finally I chose Husserl's phenomenology which believes in suspension of all suppositions (bracketing), because I share the same sentiment as Finlay (2009: 8), who claimed that

...phenomenological research is phenomenological when it involves both the description of the life-world or lived experience, and where the researcher has adopted a special, open phenomenological attitude which, at least initially refrains from importing external frameworks and sets aside judgements about the realness of the phenomenon.

The phenomenologists, as stated before, avoid to “ward off any tendency toward constructing a predetermined set of fixed procedures, techniques and concepts that would rule-govern the research project” (Van Manen, 1990: 29). Giorgi (1975) as cited in Brink, van der Walt and van Rensburg (2012), however, provided guidelines for descriptive phenomenological research, since there are no clear guidelines on this approach. His version of descriptive phenomenology involves some of the following steps:

- The first step is to choose participants or individuals who have all experienced the phenomenon in question. In my study, all the participants taught in special schools, teaching physically impaired learners, and they all taught Life Sciences (which has EE themes) at the FET Phase. In short, all the participants had the experience of teaching learners with impairments.
- Bracketing: In this research I investigated the problems experienced by teachers who are teaching Life Sciences to learners in special schools. I discussed my own experiences of teaching EE with learners who are physically impaired since I

am also a teacher in a special school and teach the same subject as the participants. According to Creswell (2013), this transparency is significant, because the readers get to learn about the researcher's experiences, and can judge for themselves whether the researcher focused solely on the participants' experiences in the description without bringing himself or herself into the picture. This can help to validate the study.

- Data collection: A researcher must use data collection methods that involve individuals who have experienced the phenomenon, and must use methods such as interviews, participatory observations, and policy documents. The interview questions must be asked in such a way that they elicit responses that would best describe the experience. In short, the operative word in descriptive phenomenology is 'describe, describe and describe!' The participants must be allowed to tell their own stories. An example of a guiding interview question could be "please describe to me what went through your mind when you realised that you had to teach Environmental Education to learners who are physically impaired?"
- Analysing: The researcher reviews the data again and again until there is a common understanding. Analysing entails contrasting and comparing the final data to determine which patterns or themes emerge. If the knowledge is to be of relevance to other researchers, it must be understandable and clear and must detail the relationships that exist.
- Describing: The researcher must pay careful attention to description and provide a dense description of his/her findings, together with a clear audit trail, that is the particulars of how he/she collected, captured and analysed the data.

### **4.2.3 Interpretivism**

The philosophical assumption underpinning this study is derived from the interpretive paradigm. According to Haralambos and Holborn (2004), interpretivists seek to understand the meanings that constitute the actions. They claimed that people do not automatically react to external stimuli as positivists claim.

Motorists who see a red light will not automatically stop in response to this stimulus. They will attach a meaning to the stimulus before acting, having

established the meaning of the stimulus to their own satisfaction, the motorists will then decide on how they wish to respond (*ibid.*: 871).

This idea could also apply to teachers. Teachers should not follow the curriculum like robots; rather they should study the curriculum documents and then choose whether to reject, modify or embrace the curriculum.

To sum up, an interpretivist is primarily interested in the way participants construct versions of reality in an attempt to understand their world. This reflects a tradition in social science that fundamentally depends on “observation undertaken in people’s natural settings, interacting with them in their own language and on their own terms” (Kirk & Miller, 1986: 9).

Merriam (2014) was of the view that research is always motivated by interests and values. The “practical knowledge interest” (a term devised by Habermas, 1984 as cited in Shaw, Briar-Lawson, Orme and Ruckdeschel, 2010: 138) in this study is to develop a deeper understanding of the challenges that teachers face in special schools when teaching EE and to suggest some possible modifications to their lessons to cater for the learners who experience barriers to learning. Cohen and Manion (2004) pointed out that practical knowledge interest informs an interpretive approach to research as it intends to seek greater clarity, understanding and interpretation of phenomena within contextual areas. It is anticipated that by using this interpretive perspective, relevant themes will emerge that both address the research questions and highlight alternatives or improved teaching methods of environmental education in special schools in South Africa.

### **4.3 RESEARCH DESIGN**

Punch (2005: 239) stated that:

Some questions can only be answered using quantitative methods, and some can only be answered using qualitative methods. Thus questions affect method. But it can also work the other way: to propose certain methods is to imply certain types of questions. Thus method can also affect questions. The important thing is the matching of question with method – using quantitative methods for quantitative questions, and qualitative methods for qualitative questions.

Regardless of whether a study is qualitative or quantitative, neither design is regarded as more valuable than the other. The main purpose of the study determines which research design should be used and, accordingly, the type of research methodology to be employed. The best design therefore is always the one that is most appropriate for the purpose of the study. Ritchie, Lewis, Nicholls and Ormston (2013) supported this argument by stating that the data sought control the research design, be it qualitative or quantitative.

Since the intention of this research was to seek to understand the challenges that are faced by the teachers in special schools for physically impaired learners in teaching Environmental Education and adapting the mainstream curricula when implementing environmental education, a qualitative research paradigm was the best option and was thus chosen for this study. Exploring teachers' experiences of how they implement environmental education, helps both to understand the problems they encounter in special schools, and to develop and evaluate interventions for improving their teaching world.

According to Merriam (2014), qualitative research has the following characteristics:

- Firstly, qualitative researchers are interested in understanding the meaning people have constructed of their experience;
- Secondly, the researcher is the primary instrument for data collection and analysis. The advantage of this is that the qualitative researcher can clarify issues;
- Thirdly, qualitative research usually involves fieldwork;
- Fourthly, qualitative research primarily employs an inductive research strategy; and
- Finally, the product of a qualitative study is rich in description (thick description).

A qualitative paradigm was chosen for this study because the researcher wanted to provide a rich narrative description of events in a natural or spontaneous setting, in contrast to quantitative research which aims to provide hard numbers to classify phenomena in a strictly controlled and clinical way. Rather than finding out *how many* special school teachers there are, qualitative researchers would want to find out *how* they are coping with teaching special needs children (Merriam, 2014). In

short, the qualitative researcher's questions lead to an understanding of other people's experiences.

#### **4.4 RESEARCH APPROACH – CASE STUDY**

Creswell (2013: 97) described case study research as “a qualitative approach in which the investigator explores a real life, contemporary bounded system (a case) or multiple bounded systems (cases) over time, through detailed, in-depth data collection involving multiple source of information”. Gay, Mills and Airasian (2011: 443) also described case study research as “qualitative research in which researchers focus on a unit of study as a bounded system” (e.g., individual teachers, a classroom, or a school). Another definition comes from Merriam (2014: 40) who viewed case study research as a strategy for doing research which involves empirical investigation of “a particular contemporary phenomenon within its real life context using multiple sources of evidence”.

All of the above definitions indicate that a researcher who wants to use case study approach must understand the language associated with case study research. The concepts above are discussed to give clarity on the meanings with regards to case study approach. Knowing and understanding the terminology associated with case study approach is as important as is structure to the biologist:

- Particular: this means that a researcher must be interested in a particular case or cases, (e.g. a researcher may be interested in how one person or people survived a tsunami).
- Case: is a phenomenon occurring in a bounded context. In this study, the cases are the “challenges that are experienced by Grade 10 Life Science teachers in selected FET special schools in South Africa when they teach EE topics to learners with physical disabilities”.
- Bounded: the case or cases must be bounded to avoid too much data collection. This simply means that the researcher must define what will and what will not be part of the study. Yin (2003) indicated that placing boundaries on a case helps to prevent a study from becoming too broad and difficult to analyse as a result. “...If the phenomenon you want to study is not bounded, not identifiable within a specific context, it is not appropriately studied as a case study” (Gay, et al., 2011:

444). In this research, the boundaries of the cases were defined by the schools themselves (special schools) and the teachers who work there (Grade 10 teachers, teaching Life Sciences). In this study, the principals and the learners could have been included, but because I wanted to bind the case, I only chose the teachers. This was done in order to give the teachers in special schools a voice, for there is no study that has been done before that details their experiences of adopting or adapting the mainstream curriculum.

- Contemporary phenomenon: this simply means that the phenomenon under study must be something that is currently happening, not something that happened in the past. For example, in this study, the phenomenon is currently taking place. Teachers in South Africa are currently faced with the situation of having to teach an additional subject called EE, which was introduced post-1994 as one of the topics in subjects such as Life Sciences.
- Real life context: for the researcher to investigate the phenomenon, s/he must go where the phenomenon is taking place. In other words, the phenomenon must be studied in its natural context (Creswell, 2013). In this research, I went to Gauteng and Eastern Cape Provinces to investigate the problems encountered by teachers in special schools when teaching EE to learners with physical disabilities.
- Multiple sources of evidence: in order to get a rich description of the phenomenon under study, the researcher needs to employ multiple sources of data such as interviews, document analysis, participant observation, direct observation, archival records and physical artefacts as identified by Yin (2013). Not all sources are relevant in every case study. In this study, I used analysis of policy documents (as discussed in Chapters 2 and 3), observations and interviews. Baxter and Jack (2008) believed that multiple sources in case study make certain that the phenomenon is not only looked through one lens but rather through a variety of lenses which allows for multiple layers of the phenomenon to be revealed and understood. The significance of multiple sources of data is that validity and reliability of the study are well established (Creswell, 2013) through a process of triangulation.



To maximise richness and accuracy of data, this study used case study approach. A hallmark of a good qualitative case study is that it presents an in-depth understanding of the case (Creswell, 2013). The need for choosing a case study approach stemmed from the desire to capture an understanding of challenges and practices in teachers' classrooms when they teach EE to the learners with disabilities. Although there are ethnographic case studies, Yin (2013) warns against confusing case study with qualitative methods using the ethnographic case studies. He distinguishes ethnographies from case studies in that ethnographic study is conducted over a longer period in the field. The interesting point about ethnographical research is that the researcher is subjected to the potential danger of becoming native, since the researcher spends extensive period in the field collecting data. The meaning of 'native' is explained under observation section of this chapter. Case studies, by contrast, are conducted within a shorter defined period. In this case study, I only took one week per school to collect the data that was necessary to answer the research questions.

#### **4.4.1 Different Types of Case Studies**

Researchers need not only know the research design they want to employ; they also need to know their intent in conducting the research, for the intent determines the type of research selected. In case study, for example, there are different types of case studies suited to different research intents.

Stake (2005) identified three types of case studies:

- Intrinsic– aimed at understanding a particular case because the case itself is of interest because it has particular features or because it is extraordinary and is therefore not representative of others.
- Instrumental– aimed at providing insight into an issue or problem or to develop an existing theory.
- Collective– a number of cases are studied jointly in order to understand a phenomenon, population or general condition. This is often referred to as a multiple-case study. Leedy and Ormrod (2013) argued that at times researchers study two or more cases – often cases that are either similar or different in certain key issues – to make comparisons, build theory, or propose generalisations. In short, multiple case studies look at the same case but in different contexts.

In this study, the challenges that are met by Grade 10 teachers in special schools when teaching EE were looked at in different schools or environmental contexts. As a result, a multiple case study approach was thus adopted.

According to Yin (2003), when a study contains more than a single case, it is referred to as a multiple case study. Yin (2003: 47) also argued that multiple case studies can be used to either “(a) predict similar results (a literal replication) or (b) predict contrasting results but for predictable reasons (a theoretical replication)”. Just like any other social phenomenon, multiple case studies have their own advantages and disadvantages. One of the advantages of this approach is that evidence gathered from this approach is robust and reliable, but a disadvantage of this method is that it can be time-consuming and expensive to conduct (Baxter & Jack, 2008).

In this study, the case studies were carried out at four different Special Schools which offer Life Sciences at Grade 10 level, in South Africa. Life Sciences was chosen because this is one of the learning areas that has substantive environmental content integrated into the subject. Two schools were chosen from the Eastern Cape Province and the other two were from the Gauteng Province. Because there are few special schools that follow the mainstream curriculum and that offer the Life Sciences subject which is the main focus of the study, I had to move from the Eastern Cape Province to the Gauteng Province to collect data from similar schools. This was quite an expensive and tiring exercise. I therefore concur with Baxter and Jack (2008) when they say case studies can be expensive to conduct and time consuming.

#### **4.4.2 Significance of a Case Study**

According to Baxter and Jack (2008), case studies are valuable in research in that they allow a researcher to collect data from different sources which could help to illuminate the case. A multiple case study approach was important in this study because the experiences and challenges of different teachers teaching in different special schools were explored in terms of their real life situations, as well as their individual subjective experiences (Cohen & Manion, 2004). In this study, a case study approach allowed the tone of voice of teachers in special schools to be heard.

#### **4.4.3 Limitations of the Case Study Approach**

Since the study focused on a 'hand-picked' purposive sample (not randomly selected) of teachers in special schools in South Africa, specifically from the Gauteng and Eastern Cape Provinces, the findings cannot be generalised to the whole population. The reasons are that the results cannot be replicated in a different setting. This is because individuals, situations and conditions of each school are very different from one another. Different contexts yield different outcomes. We can, however, make inferences from the results as to how this can be applicable beyond the case study context (Creswell, 2013). According to Le Roux (2001), case studies can also help in forming new ideas for further research.

In this multiple case study, I did not aim to generalise my findings, as I am aware that situations and conditions in different schools are not the same. Rather, I aimed to identify common themes and point out significant differences that may emerge from the examination of each case and provide abundant descriptions of the experiences of the teachers in special schools in adapting the mainstream curriculum when implementing environmental education in the curriculum.

#### **4.5 SELECTION OF PARTICIPANTS**

According to Explorable.com (2015), "a research population is also known as a well-defined collection of individuals or objects known to have similar characteristics. All individuals or objects within a certain population usually have a common, binding characteristic or trait". The population for this study was all teachers in special schools who were teaching environmental education topics in the Grade 10 Life Sciences curriculum.

In this study I choose only the teachers who teach Life Sciences in special schools, for they are in a better position to articulate their experiences as it relates to the phenomena being investigated – the challenges of teaching EE in special schools.

In summary, the informants for this study consisted of 5 teachers who teach Life Sciences in special schools. One school had two grade 10 teachers teaching Life Sciences. Both these teachers were included in the study. The other three teachers came from three different schools where only one teacher teaches Life Sciences at

the FET phase per school. This is so because the number of learners in special schools is small compared that of mainstream schools.

One may argue that the sample size was too small, but given the fact that there are few special schools that follow the mainstream curriculum, and there is no possibility of or need for generalisation, this was a reasonable size to elicit useful results for a qualitative inquiry. Åkerlind (2012) maintained that this kind of research requires only a limited number of participants given the vast amount of data that emerges from even one interview. He said the focus is on qualitative issues not quantitative ones. Ritchie, *et al.* (2013) also claimed that a qualitative case study requires an information-rich, in-depth, contextually-based description about the phenomenon being studied. A large sample would therefore be irrelevant to the purpose of the study.

#### **4.6 DESCRIPTION OF CASE STUDY SCHOOLS**

Researchers are rarely able to investigate an entire population of individuals who interest them, so they must select a sample of individuals to study (Chambliss & Schutte, 2015). There are 491 special schools in South Africa (School Guide, 2015); there are 42 in the Eastern Cape and 160 in Gauteng. Of these, in Gauteng, 12 are secondary schools. In the Eastern Cape Province there are 4 secondary schools that follow the mainstream curriculum. The 4<sup>th</sup> school is my school and since I am not conducting action research, my school was not chosen. The 3<sup>rd</sup> school does not offer life sciences which is the main focus of the study. In all, four schools were selected for this multiple case study research, two schools were selected from the Eastern Cape Province and the other two were from the Gauteng Province. The schools are described below.

##### **4.6.1 Case Study One: Summer School (Teacher A)**

###### **4.6.1.1 Description of Summer School**

Summer School (pseudonym) is a very large co-educational school for learners with special education needs, situated in a historically white-dominated area in the Eastern Cape Province. It is well known for its excellent grade 12 results. In terms of the recent educational policy for inclusive education, this school serves as a resource centre in the community for learners with special education needs. These

special needs arise mainly from the following: learners with cerebral palsy and other physical disabilities. The school comprises all grades, starting from Pre-Primary to Grade 12, and the special needs learners follow the same curriculum prescribed for mainstream education. In this school there are two languages of instruction, English and Afrikaans. The school is very well-resourced and maintained. The beautiful trees and the singing of birds render the school environment very conducive for learning and teaching. The total number of the teaching staff is 50, comprising 45 female teachers and 5 male teachers who are all White with the exception of one Black female teacher. The school enrolls 300 learners a year. The learners, unlike the teaching staff, represent the “rainbow nation” of South Africa, coming from all races.

#### 4.6.1.2 Profile of Teacher A

Teacher A (pseudonym) is a 31-year old white female teaching at Summer School (not the real name), a school situated in Port Elizabeth in the Eastern Cape Province, South Africa. She started teaching at Summer School in 2008. Her home language is Afrikaans. She teaches Life Sciences, Agricultural Science, Natural Sciences and Arts and Culture. Teacher A mentioned that she could also teach Life Orientation and Technology. Although teacher A teaches at a special school, she did not have any special training on special needs education. She only applied to teach at the school because there was a vacant post, but once she got there she realised that she belonged there and, in her opinion, she should have started teaching there from the beginning of her teaching career. Her teaching qualifications include a Bachelor’s degree in Education (B.Ed.) and an honours degree in School Management, which she obtained at Nelson Mandela Metropolitan University (NMMU). According to Teacher A, she has training in EE. When she was completing her BED her main subject was Life Sciences, which had EE topics integrated into the course. Other than that she does not have formal qualifications such as a certificate, diploma or degree in EE.

#### 4.6.1.3 Profile of teacher B (Summer School)

Teacher B (pseudonym) is a white male teacher who also teaches at Summer School. His class caters for Afrikaans-speaking learners only. When I visited to the school, he had been teaching there for four years. He teaches Natural Sciences, Life Sciences, Life Orientation and Technology. When asked why he applied to work in

the special needs school, his response was that he had always wanted to teach in a special school because of his background in Human Movement Sciences. He did an honours degree in Biokinetics, which focuses on the rehabilitation of injuries. According to Teacher B, because School A caters also for cerebral palsied (CP) learners, the post fitted his profile well and that was the main reason why he applied for the post in the school. His qualifications are an honours degree in Human Movement Sciences (HMS) obtained at NMMU and a Post Graduate Certificate in Education (PGDE), obtained from the University of South Africa (UNISA). There was a module in the PGDE, which dealt with the education of the special needs learners. Apart from that, he gained the experience of dealing with special needs learners, when he did his HMS degree, but more on the physical aspects of disability and not in the form of education. Teacher B also does not have a certificate or any specialised qualifications in EE, but has knowledge of EE indirectly through one of the modules in the Life Sciences course which formed part of his studies.

#### **4.6.2 Case Study Two: Winter School (Teacher C)**

Winter School (pseudonym) is also a special school, situated in a historically Coloured-dominated area, in the Eastern Cape Province. The school caters for the physically-challenged learners only. The learners currently enrolled at the school come from the Coloured and Black communities. The school only enrolls 150 learners per year and offers academic subjects from Grade R-12, and it is fairly well-resourced. The medium of instruction is English. The playgrounds are very clean. The teaching staff comprises 18 female teachers and 2 male teachers. The teachers are all from the Coloured race.

##### **4.6.2.1 Profile of Teacher C (Winter School)**

Teacher C (pseudonym) is a female coloured teacher, teaching in Winter School (pseudonym). When I arrived at the school, she was in her 20<sup>th</sup> year of teaching at the school. Though she enjoys teaching in the special school, she does not have formal training in the field of special needs education, nor does she have any training on curriculum adaptation. She indicated that she gathered her experience in teaching special learners over the years. Her highest qualification is a Higher Diploma in Education. Her major subjects were Biology and English. She also does not have formal training in Environmental Education.

### **4.6.3 Case Study Three: Autumn School (Teacher D)**

Autumn School (pseudonym) also caters for physically-challenged learners from Grade R-12. The school is situated in a historically Black area in Gauteng province. It offers academic subjects and is attended by Black learners only. It is a township-school with Black teachers speaking different local languages such as Sotho and Zulu, as do the learners. The school is not well-resourced, but the environment looks clean and well-maintained. The school enrolls 186 learners per year. There are 20 teaching staff with 19 female teachers and 1 male teacher.

#### **4.6.3.1 Profile of Teacher D**

Teacher D (pseudonym) is a Black female teacher. She started teaching in the Autumn School in 1986. She teaches Natural Sciences, Maths and Life Sciences to Grade 8-10 learners. She was introduced to the school by her sister who worked there as a cleaner, and fell in love with the special schools. When there was a vacant post, she gladly applied to the school. Her qualifications are B.Ed. honours degree and she also has a certificate in sign language. However, she does not have a qualification in EE, but claims that she majored in geography, which has environmental topics embedded in the subject.

### **4.6.4 Case Study Four: Spring School (Teacher E)**

Spring School (pseudonym) is a special school in the Gauteng Province. It is now regarded as a resource school. Like Autumn School, it is situated in a historically Black area and is attended by Black learners only. The teachers are also Black. The school is not only big, but is also well-maintained. The environment is conducive for teaching and learning. The teaching staff comprise of 49 teachers, 15 male teachers and 34 female teachers. The school enrolment at the time of the research was 477 learners, made up of 235 male students and 242 female students. The school is also well known of its high academic achievement standards.

#### **4.6.4.1 Profile of Teacher E**

Teacher E (pseudonym) is a Black female teacher, born and raised in Swaziland. Her highest qualification is Bachelor of Science degree. She started teaching in the Spring School in 1996. She has no formal qualifications in EE, but stated that she did

attend a 3-day workshop in EE. She teaches Life Sciences in Grade 10-12 and chemistry in Grade 12. She has no training in the field of special needs education.

Summer School is a very big school when compared to other schools in the study. It is well resourced in terms of human resources too. The school has all the therapists needed by the learners, which is not the case in the Winter, Spring and Autumn schools. Weber (2007: 13) states that “teachers with access to better resources, that is teachers in the former whites-only schools, are more responsive to educational change than teachers in poor schools”.

#### **4.7 DATA COLLECTION METHODS**

How to collect data is always related to the research method employed. In a case study there are six types of data collection, namely document analysis, archival records analysis, interviews, direct observation, participant observation and analysis of artefacts. Liamputtong (2013) stated that one of the goals of a case study research, is to understand the complexity of a case in the most complete way. To meet the goals of the case study research, I employed three data collection methods, namely:

- Interviews;
- Observations (Moderate participation as explained below) and
- Policy documents

The use of many instruments in data collection allows for triangulation of the results. Liamputtong (2013) stated that triangulation in case study is important in that it gives the researcher different perspectives about the phenomenon, because different collection methods such as interviews, policy documents and observation are employed which enable the researcher to view the phenomenon through different lenses. Each method reveals its own aspect and parts of social reality. “For example, an interview may show people’s motives but does not allow the researchers to witness their behaviour. An observation will reveal behaviour, but we may not know about peoples’ motives for that behaviour” (Liamputtong, 2013: 210). In short, triangulation serves the purpose of verifying data produced by different data collection approaches as the data may be confirmed when the same outcomes are



revealed. Case studies are likely to be much more convincing and accurate if they are based on several (different) sources of information.

#### **4.7.1 Interviews**

An interview is an oral, in-person question-and-answer session between a researcher and an individual respondent as opposed to a questionnaire which is a written collection of survey questions to be answered by a selected group of research participants (Gay, *et al.*, 2011). “A great deal of qualitative material comes from talking with people whether it be through formal interviews or casual conversations. If interviews are going to tap into the depth of reality of the situation and discover subjects’ meanings and understandings, it is essential that the researcher be unobtrusive, in order not to impose one’s own influence on the interviewee” (Woods, 2006: n. p.) To that end, the best technique for this study was the semi-structured interviews. Brink, van der Walt and van Rensburg (2012) stated that, during a semi-structured interview, the interviewer must ask a certain number of specific questions, but can ask probing questions to mine deeper into the responses given by the participants. In this study, specific questions as well as probing questions were asked. The questions are found in Appendix 1. Digital recordings were used to secure an accurate account of the conversations to avoid losing data since it is practically impossible to write down everything during the interview. The advantage of digital recording, according to Bryman (2012), is that the recordings can easily be played back repeatedly without risking losing the information as was often the case with cassette tape recorders. The audio recordings were then transcribed for analysis. According to Seidman (2013), transcribing interviews has the following advantages:

- It helps to correct the natural limitations of our memories and of the intuitive glosses that we might place on what people say in interviews;
- It allows a more thorough examination of what people say;
- It permits repeated examinations of the interviewees’ answers;
- It opens up the data to public scrutiny by other researchers, who can evaluate the analysis that is carried out by the original researchers of the data; and

- It therefore helps to counter accusations that an analysis might have been influenced by a researcher's values or biases. It allows the data to be reused in other ways from those intended by the original researcher.

#### 4.7.2 Observations

Brink, *et al.* (2012) stated that observation is a technique for collecting descriptive data on behaviour, events and situations. The emphasis during observation is on "understanding the natural environment as lived by participants, without altering or manipulating it" (Gay, *et al.*, 2011: 381). The significance of this method, according to McKernan and McKernan (2013), is that observations provide researchers with ways to check for non-verbal expression of feelings, experience first-hand how the participants communicate with each other and how much time is spent on various activities. Woods (2006: n. p.) stated that participant observation has the following advantages:

- It blends in with the natural activity;
- It gives the researcher access to the same places, people and events that are taking place;
- It gives access to the documents relevant to the role, including confidential reports and records;
- It facilitates the use of mechanical aids, such as tape recorders and cameras;
- It provides personal first-hand experience of the role and thus heightens understanding of it; and
- It makes a worthwhile contribution to the life of the institution.

Brink, *et al.* (2012) stated that observation can be categorised according to the researcher involvement, namely, non-participatory, passive observation, moderate participation, active participation and complete participation. In this study, moderate participation was used as a tool to collect data. It turns out that there is more than meets the eye when it comes to observation as a tool for collecting data. According to Gay, *et al.* (2011), participation observation is more than just than arriving at a site and taking notes of what one sees. On the contrary, participant observation is a complex method that has many components as revealed in Table 4.1 below. There are decisions to be made by the researcher. The researcher must decide what

stance of participant observer he/she will take. Table 4.1 below provides five different types of observations summarised below in table 4.1.

Table 4.1: Observation type chart

<b>Type of Observations</b>	<b>Level of Involvement</b>	<b>Limitations</b>
<ul style="list-style-type: none"> <li>• Non-participatory</li> </ul>	No contact with population or field of study	Unable to build rapport or ask questions as new information comes up.
<ul style="list-style-type: none"> <li>• Passive Participation</li> </ul>	Researcher is only in the bystander role	Limits ability to establish rapport and immersing oneself in the field.
<ul style="list-style-type: none"> <li>• Moderate Participation</li> </ul>	Researcher maintains a balance between “insider” and “outsider” roles	This allows a good combination of involvement and necessary detachment to remain objective.
<ul style="list-style-type: none"> <li>• Active Participation</li> </ul>	Researcher becomes a member of the group by fully embracing skills and customs for the sake of complete comprehension	This method permits the researcher to become more involved in the population. There is a risk of “going native” as the researcher strives for an in-depth understanding of the population studied.
<ul style="list-style-type: none"> <li>• Complete Participation</li> </ul>	Researcher is completely integrated in population of study beforehand (i.e. he or she is already a member of particular population studied)	There is the risk of all levels of objectivity, thus risking what is analysed and presented to the public.

Source: Spradley (1980: n. p)

I am of the view that the researcher needs to take into account his or her own personality before choosing the stance he or she will employ. For an introvert, for an example, a complete participation stance can pose a number of problems as it is a struggle for an introvert to socialise or to be part of the group.

The participant observation stance I took in this research was that of a moderate participation researcher. In other words, my stance was situated between passive and active participant observation. Even though I was with the teachers and the learners during the observations, I did not engage in teaching activities at all, but during the field work activities, I engaged with the learners and even helped with pushing some of those who are wheelchair users around the field. Otherwise I sat unobtrusively observing the events. I believe this data collection method accords with the intention of this research – to remain objective and let the data speak for itself. The moderate participation researcher is able to maintain the balance between the outsider and the insider roles. Such a stance enables the researcher to remain objective when collecting data and avoid being native (Brink, *et al.*, 2012). According to Bryman (2012: 445), “Going native refers to a plight that is supposed sometimes to afflict ethnographers when they lose their sense of being a researcher and become wrapped up in the worldview of the people they are interviewing”. An example would be if the researcher wants to understand how gangsters live but ends up being a gangster himself and never finishes his research.

In short, observations and interviews were used to collect primary data for this study from the four selected schools, Summer, Winter, Autumn and Spring. The classroom observation guide can be found in Appendix 2. Table 4.2 shows the total number of observations and interviews that were conducted in each school.

Table 4.2: Number of observations

School	Summer	Winter	Autumn	Spring	Total
Observations	4 x 2 = 8 (2 teachers)	4	4	4	20
Interviews	2 x 2 = 4 (2 teachers)	2	2	2	10

#### 4.8 DATA ANALYSIS AND INTERPRETATION

A phenomenological approach underpinned by the philosophy of Husserl was used to analyse data obtained. In addition, Giorgi’s phenomenological method was drawn on to aid data analysis. Giorgi, as one of Husserl’s followers (as cited in Mc Phail, 1995), argues that the fundamental principle of the phenomenology approach is that

the researcher must remain true to the facts as they unfold before them. In order to achieve this, Giorgi (1975) developed a few steps that need to be followed by the researcher during data analysis.

Many phenomenologists have developed different steps to ensure that the researcher remains true to the phenomenon. Foremost amongst these is Van Manen, but in my study I chose to follow Giorgi’s way of analysing data, because I found it to be straightforward, uncomplicated and succinct. However, it is important to note, there are many phenomenological methods which focus on the description of lived experiences and meaning, but which do not follow Husserl. Husserl (1960) emphasises reduction or bracketing, as discussed in 4.2.1. Apart from the fact that I found Giorgi’s method simple and straightforward, I chose it because I also believe in the practice of bracketing. The bracketing process according to Finlay (2009) is often misunderstood as being an effort to be objective and unbiased. Instead, bracketing means that the researcher aims to be open and is always willing to perceive the world differently (Creswell, 2013). Giorgi’s (1975) phenomenological method is outlined in Table 4.3 below:

Table 4.3: Steps in data analysis

No.	Description
Step 1	Bracketing and phenomenological reduction
Step 2	Delineating unit of meaning
Step 3	Clustering units of meaning to form themes
Step 4	Summarising each interview, validating it and, where necessary, modifying it
Step 5	Extracting general and unique themes from all interviews and making a composite summary

The participants in this study are teaching in special schools. I also teach in a special school. To ensure that I was not biased, I took a conscious effort to remain objective and unbiased. I bracketed all the experiences I have about teaching in a special school and the knowledge I have about the history of special schools in South Africa in order to take a fresh look at the data. During the interview I did not agree or disagree with the participants – I allowed the data to speak for itself. In sum, I remained true to the phenomenological slogan “back to the things themselves”.

Following the completion of the interviews, I transcribed them. I then listened repeatedly to the audio interviews to get a sense of each participant's perspective, while I was reading the transcripts to ensure accuracy of the transcribed audio recordings. After that I extracted units of meaning from each interview that relate to the research questions, so that the data can be dealt with in manageable portions. This was also done without a critical reflection on my own personal experience.

The units of meaning were clustered to form themes. This was done by highlighting the phrases or statements that spoke to each participant's experience. After preliminary identification of themes, I then summarised the themes. With the themes identified, I wrote a composite summary reflecting common and individual themes.

#### **4.9 TRUSTWORTHINESS OF RESEARCH**

Trustworthiness has grown to be a crucial concept as it enables investigators to explain the virtues of qualitative terms outside of the parameters which are generally used in quantitative research. The purpose of trustworthiness in qualitative research is to support the argument that the inquiry's results are "worth paying attention to" (Given & Saumure: 2008, n. p.).

Lennie (2006: 30) was of the view that the following strategies can lead to the rigour and trustworthiness of the research:

- Community participation, engagement and communication methods that develop relations of mutual trust and open communication;
- Using multiple theories and methodologies, multiple sources of data and multiple methods of data collection;
- Ongoing meta-evaluation and critical reflection;
- Critical assessment of the intended and unintended impacts of evaluations using relevant theoretical models;
- Using rigorous data analysis and reporting processes;
- Participant reviews of evaluation case studies, data analysis and reports.

In order to ensure trustworthiness, a corroboration of multiple techniques for this case study was used. Multiple data collection methods enable the researcher to triangulate data in order to strengthen the findings and conclusion, thereby reducing the possibility of doubt. Interviews were audio-recorded and transcribed using digital

media. Observations were used to record practical aspects in the learning processes and to corroborate information obtained from interviews.

#### **4.10 ETHICAL CONSIDERATIONS**

Punch (2005: 75) states that, “all social research involves consent, access and associated ethical issues since it based on data from people about people”. This demands that a researcher exercises extreme caution and treads carefully when it comes to the participants involved. Dean (1954: 233) believes:

A person becomes accepted as a participant observer more because of the kind of a person he turns out to be in the eyes of the field contacts than because of what the research represents to them. Field contacts want to be reassured that the research worker is ‘a good guy’ and can be trusted not ‘to do them dirt’ with what he finds out.

This research involved teachers in selected special schools in South Africa. It was easy for me to assume that since I am also a teacher in a special school, ethical issues would not pose a problem when visiting other schools as I would be familiar with the context. I could not have been more wrong. Issues of consent, access and confidentiality are discussed below.

Consent and confidentiality are the obvious ethical issues that need to be considered by any one intending to conduct a social research (Wilson, 2013). The ethical considerations used in this study conformed with UNISA’s College of Education Research Ethics Committee requirements, from which an ethical clearance certificate was issued to undertake this study (see Appendix 3).

- Access – permission was sought from individual principals, firstly via email and then through a follow-up phone call. To abide by the ethics rules, before I began my fieldwork, I requested permission from the Department of Education to conduct research in the provinces where the schools are situated, namely Gauteng and Eastern Cape Province. Written permission was granted without any problems (Appendix 4). Permission was also obtained from the principals of the four schools at which I collected data (Appendix 5).
- Consent – consent was obtained from all participants in writing. Each participant received a letter outlining the research and a consent form for their records, as

well as the consent form that is held for verification if needed. Once I had received permission from the principals, I sought informed consent from the teachers to participate in this study. I also indicated to the teachers that their participation was voluntary and that they were free to withdraw from the study at any time (Creswell, 2013; Wilson, 2013).

- Confidentiality – confidentiality was assured to all participants. Names of the schools were disguised, as well as the names of participants by the use of pseudonyms.

#### **4.11 CHAPTER SUMMARY**

This chapter discussed the research paradigm, the research methodology and data collection methods employed in this study. The selection of participants was described and the schools and teachers selected were profiled. The next chapter reports the research findings.



## CHAPTER 5

### PRESENTATION OF RESULTS

#### 5.1 INTRODUCTION

In this chapter, I present the findings of the study. The main goal of this study was to investigate the challenges experienced by teachers in implementing Environmental Education (EE) aspects in the Grade 10 Life Sciences curriculum in special schools in South Africa.

The findings relate to the research questions posed in chapter one of this thesis.

1. How do teachers feel about the inclusion of EE in the curriculum?
2. What challenges do teachers at special schools in SA face in implementing EE?
3. What do teachers understand about the philosophy behind the inclusion of EE in the curriculum?
4. What support do teachers at special school receive for implementing EE?
5. What teaching and learning resources are used to implement EE at special schools in SA?
6. What teaching strategies are used by teachers at special schools in SA to implement EE?

The interviews were divided into four categories. The first category includes a biographical description, teaching and learning, teaching and learning resources and workshops conducted by the Department of Education, respectively. I used the phenomenological approach to analyse data, as explained in the previous chapter. The findings of the interviews were divided into themes and each theme had different categories. The different categories were further analysed into subcategories which describe them. The results are presented diagrammatically using tree diagrams as shown below in Figure 5.1.

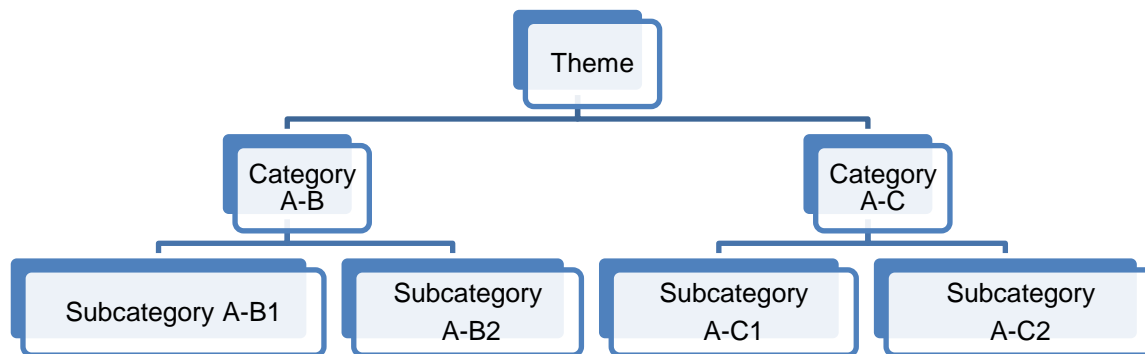


Figure 5.1: Overview of the model used to present results from the interview questions.

In presenting the results, each category is further described and illustrated with examples from the teachers' responses which are written in quotation marks, which indicates they are the direct words spoken by the participants. This is to make certain that the participants' voices are heard and not that of the researcher. The teachers were labelled Teacher A, B, C, D and E to protect the confidentiality of the participants.

## 5.2 OBSERVATIONS REGARDING SCHOOLS AND STAFF

In sum, the findings about the schools' background reveal that schools in South Africa strongly reflect society's political philosophy and goals. This is evident in the way the schools were built and resourced pre-1994. Pre-1994, the previous model C schools good infrastructure and school premises were very big compared to Black, Indian and Coloured schools. In addition, the schools were well resourced. However, when it comes to the teaching of EE, all the participating schools experienced the same problems. They all lacked the necessary resources to teach EE effectively.

The participant teachers operated at the same level. This clearly indicates that in this study the background history of the schools did not have any significant impact on how teachers teach EE. This is because they all faced the problem of having to teach the relatively new subject EE to the special learners without the adequate training and relevant resources supplied by the Department of Education.

As far as the educators were concerned, from my observation, Teacher A was hard-working and always willing to go the extra mile when necessary. An indication of this was her willingness to teach Life Orientation and Technology. Teacher B exhibited

qualities of a calm person, he was soft spoken, like other teachers in the study, he did not have training in special needs education, notwithstanding that, he seemed to be enjoying teaching in a special school. Judging from her facial expressions, when she talked about her special learners, Teacher C, even though she never had any training in the field of special needs education, enjoyed teaching the special needs learners very much. She also indicated that, when she applied for the vacancy at Winter School, she had no idea of what special schools were all about, but nevertheless had no regrets that she applied for the post, because her experience has been a fulfilling one. Teacher D, gave an impression of an organised person. Her desk was well organised and everything I asked from her was readily available. She also seemed to have passion for the special needs learners. Even though teacher E had no training in special needs education, she fitted well in the school, she was very calm and kind and spoke to the learners in a calm and sweet voice.

### **5.3 ANALYSIS OF INTERVIEWS**

#### **5.3.1 Teaching and Learning**

##### **5.3.1.1 Inclusion of Environmental Education in Life Sciences**

When asked to describe how they felt about the inclusion of EE into Life Sciences; most of the teachers indicated that they were excited and pleased about this integration, with the exception of one teacher who felt that EE was challenging since it involved fieldwork activities. Outdoor activities posed a difficulty for special learners who need support each time they do fieldwork activities. From the analysis of the results they gave, two categories emerged, which are namely 'Fieldwork' and 'Knowledge'. From the two categories, six subcategories emerged as shown in Figure 5.2. The category on fieldwork was characterised into four subcategories: learning by doing; first-hand knowledge, enhancing learning and challenging. The category on knowledge was characterised by two subcategories: new knowledge and positive attitude and behaviour.

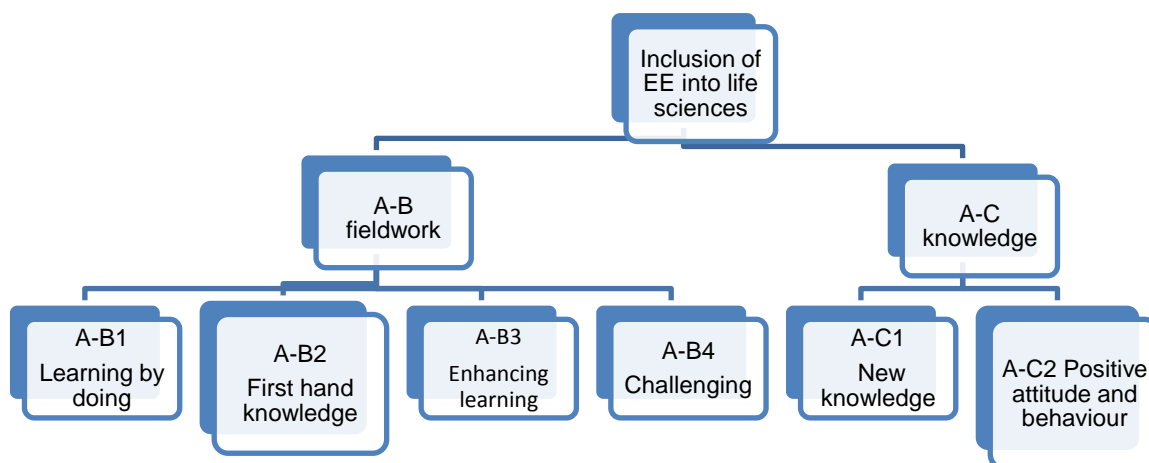


Figure 5.2: The teachers' views on the inclusion of EE into Life Sciences

#### 5.3.1.1.1 A-B Fieldwork

All the teachers in this study, namely, Teachers A, B, C, D and E thought that the inclusion of EE into Life Sciences was a good move by the DoE. Teachers, A, C, and E in this category thought it was a good idea to include EE topics in Life Sciences. The aspects which the teachers were concerned with in this category were learning by doing, gaining first-hand knowledge, enhancing learning and the challenges that are associated with fieldwork activities.

- A-B1 Learning by doing

Considering the importance of the inclusion of EE in Life Sciences, the learner-centred approach in teaching was the central idea there. Teacher C in this category felt that if the learners went into the field more often learners would not be mere passive receivers of knowledge, but would be actively involved in acquiring knowledge and they would learn by dynamic engagement. This is evident in the statement given by one teacher who said:

I felt excited because I thought now we are going out and the learners can explore like I have done taking them to the Addo Game Park. And now we would like to do more things like that, so that they can go out in the environment and explore for themselves, instead of just sitting there and hearing all these things... (Teacher C).

- A-B2 First-hand knowledge

In the previous subcategory, Teacher C was concerned with learning by doing. In this subcategory, the same teacher revealed that she was concerned about the need for learners to gain first-hand experience in discovering knowledge. She went on to say:

...I would encourage other teachers to take the children out on field trips, because when I have taken them to the Game Park, they could see all the biomes.

- A-B3 Enhancing learning

In this subcategory, one teacher perceived the inclusion of EE in terms of enhancing learning. Teacher A said:

Well, when I look at it, I was quite excited about it, because our children in special schools find it difficult to learn about organs such as heart, etc. With EE, I find out that the work is more practical and easy for them to understand.

Teachers A and C indicated that the environment can be used as a resource for teaching and learning and that when used as a resource, it enhances learning and makes learning easier and more relevant due to its practical nature.

- A-B4 Challenging

While other teachers felt good about the inclusion of EE into Life Sciences, Teacher E felt that the inclusion of EE topics into Life Science is very challenging, in that special needs learners, especially those who are wheelchair bound, demand a lot of support. The teacher also felt that fieldwork activities take much of their time as teachers since they are performed after school hours. The teacher said: "The subject is very challenging because the learners have to do fieldwork, and we have learners who are wheelchair bound, who will need the assistance of other learners when it comes to activities such as measuring the field or to collect samples of plants, etc. so the learners need more support a lot. Also fieldwork activities take up much of our family time, because the fieldwork activities are done after school. Really fieldwork requires a lot of sacrifice from the teachers".

This finding suggest that teachers feel constrained in doing fieldwork due to the fact that there are no porters to wheel around the learners and give support to those learners who need assistance in the field. The fact that the teacher identifies this as a constraint, clearly indicates that porters in special schools are a necessity. Teachers and learners should not be compelled to render assistance to other learners as that could distract them from teaching and learning in the field.

#### *5.3.1.1.2 A-C Knowledge*

In this second category, some teachers, B and D perceived the inclusion of EE in Life Sciences in terms of the learners gaining new knowledge of new environmental concepts which could help them to understand the environmental problems such as global warming, or the depletion of the ozone layer in a better manner.

- A-C1 New knowledge

Teachers B and D felt that gaining new knowledge about environmental issues would eventually lead to behavioural change towards the environment. In support of the argument above, two teachers voiced their views by saying:

I had no problem with the introduction of EE, because of my geography background. When it was introduced, I felt excited because the learners are going to gain knowledge about their environment and about the problems that are caused by human beings to the ozone layer etc. (Teacher D).

I felt pleased. I really felt happy because I feel it is quite an important topic for the learners to learn, because nowadays they need to know about things such as global warming... (Teacher B).

- A-C2 Positive attitude and behaviour

Gaining new knowledge about the environment is the first step towards behavioural change towards the environment as indicated in Chapter 2, Section 2.9.1. Teacher B went on to say "...so that they can take care of the environment and that is one of the focuses in the classes is to teach learners how to look after the environment". The response from the teacher suggests that he assumes a positive correlation between the two subcategories, in that if one acquires the knowledge about environmental problems such as global warming, one would automatically develop a positive attitude towards the environment, thereby taking care of the environment, as illustrated in Figure 5.3.

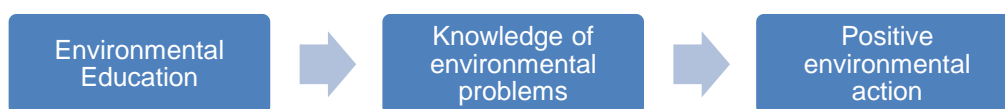


Figure 5.3: Assumption of positive correlation between acquired knowledge and environmental action.

### 5.3.2 Inclusion of EE – An Add-on Subject?

Probing further into the inclusion of EE into Life Sciences, the participants were asked to state whether they felt EE was just an ‘add-on’ subject or if they thought it had any value in education. All the teachers agreed that EE adds value to education. From the analysis of the results, three categories emerged, new knowledge, positive attitudes and creation of job opportunities. The three categories are further divided into three subcategories – environmental knowledge of different ecosystems, development of positive attitudes towards the environment, and job creation opportunities respectively, as illustrated in figure 5.4.

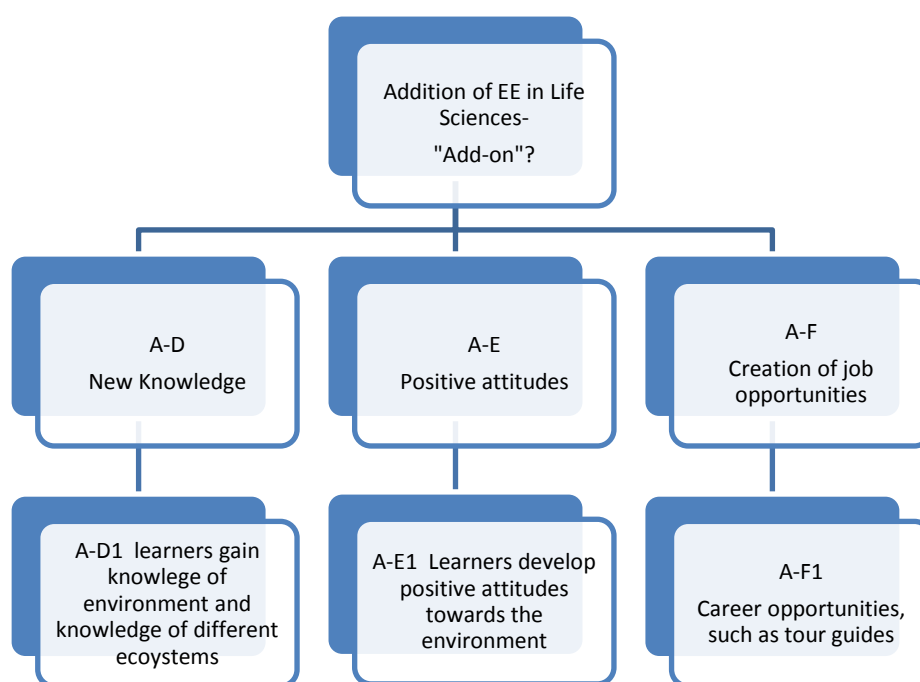


Figure 5.4: Teachers’ perceptions on the inclusion of EE as an ‘add-on’ subject

### 5.3.2.1 A-D Knowledge of different ecosystems

The aspects Teachers A, B and D were concerned about here were gaining knowledge about the environment as well as the different environmental ecosystems.

Realising the importance of gaining knowledge about the environment and learning about the different ecosystems was the major focus. The teachers clearly realised that the biophysical environment forms a significant part of human nature and that the two co-exist. The teachers said:

It adds value; it is not just an 'add on'. Definitely, it is a very important part of Life Sciences. As much as you need to study about the human body and all that, you also need to know about life not in the human body but let's say life on the outside, like the environment – life that is happening in the ecosystem (Teacher B).

I think it has value in education because the learners need to know about their environment, I really do not think it is just an add-on-subject (Teacher A).

I think it does have value in education processes, because you know, Life Sciences is about life, and when we talk about life, we are not only talking about human beings only. We also talk about plants and if there's been pollution for example of the environment, depletion of ozone layer, you see now this links with the plants (Teacher D).

### 5.3.2.2 A-E Positive attitude

In this subcategory, Teacher C considered the inclusion of EE in terms of developing a positive attitude towards the environment. She perceived gaining knowledge of the environment and of the different ecosystems as very significant. Here she felt that the inclusion of EE in Life Sciences makes a significant contribution in as far as developing positive attitudes towards the environment that would eventually lead to positive actions and feelings towards the environment. Teacher C said:

I think it is good to be included because the learners learn eco-tourism at school and they know the value of the tourism sector in our country. They know that lots of money comes from the tourists and as such would be compelled to look after their environment in preparation for the tourists.



### 5.3.2.3 A-F Creation of job opportunities

In the final subcategory, Teacher E looked at the value of EE after the learners have left school; she thought EE could lead to job creation. Teachers C and E viewed the inclusion of EE topics in Life Sciences as an opportunity for the learners to gather knowledge that would equip them for work or careers after leaving school. The teacher in question said:

I think it has value in education in that it has opened up some career opportunities for the learners in the sense that, like for an instance, being tour guides and working in nature reserves. Even though our learners have physical challenges, our government expects that these learners do these jobs. The government expects that each sector employs a certain number of disabled or challenged people. They are no longer restricted, those who can do the job can go and do it (Teacher E).

### 5.3.3 Difference between Nature Conservation and EE

It appeared that all the participants had no understanding of the differences between the two concepts of nature conservation and EE. This is apparent from the following statements:

I don't know what was then and what is now. (Teacher A)

I have no idea. (Teacher B)

That's difficult for me to say. (Teacher C)

I have no idea. I only came to South Africa after 1996. (Teacher E).

Teacher D stated: "To me, there is no difference. The only difference I see, is the difference in names only. It is just naming, because when you go to the content, the content is the same".

Little seems to have changed from pre-1994 when the "veld school" system was in place as discussed in Chapter 2, Section 2.12. These findings are worrisome in that EE and nature conservation are two different concepts with different approaches of teaching and assessment. These findings also raise a concern, because the way one views EE impacts on teaching and assessment methods. If teachers regard EE as the same as nature studies, the likelihood is that their teaching methods would

not change in line with the requirements of EE. Teachers as agents of change should be knowledgeable about the subjects they are teaching. From the teachers' statements, it is clear that in order for teachers to teach EE effectively, they need to be schooled about the differences between the two concepts.

### 5.3.4 The Challenges experienced by Teachers in Special Schools in Teaching EE

All the participant teachers admitted that they do teach EE. However, they felt that they are not doing justice to the subject. They felt constrained by many factors, which are documented below.

When the teachers were asked to describe their challenges and experiences regarding the teaching of environmental education to their special learners, they all gave different answers. The analysis of the results revealed six categories, namely: curriculum related aspects, learner related factors; teacher related factors, policy related factors, administration related and office based educators related. The six categories have nine sub-categories. All these aspects are discussed with reference to different aspects as indicated in Figures 5.5.1 and 5.5.2. The figure has been split because of the density of information.

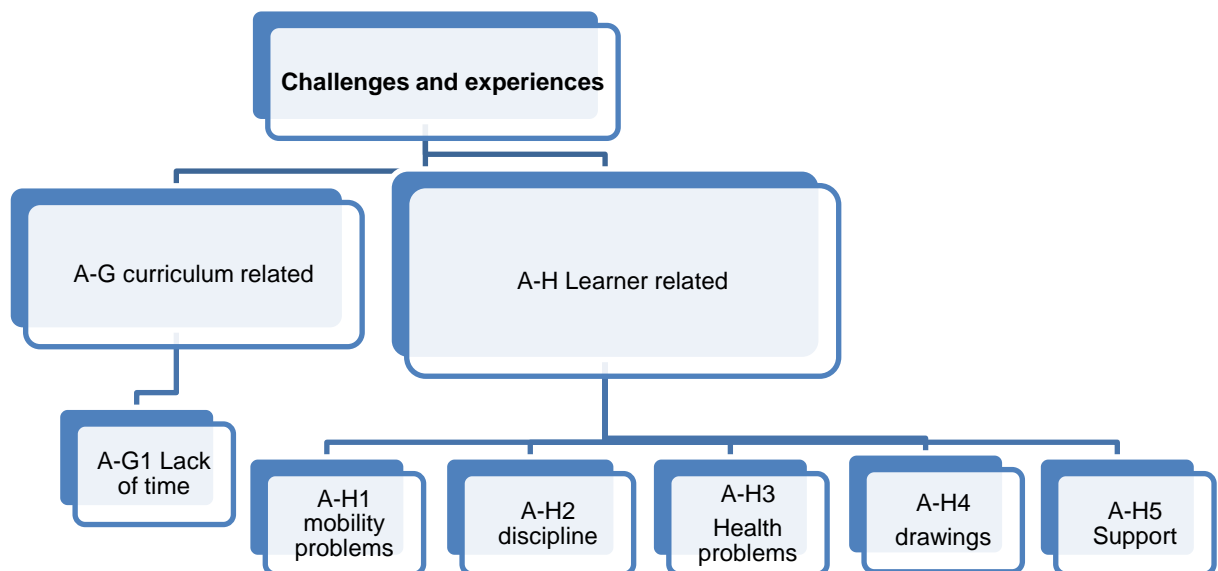


Figure 5.5.1: Barriers facing teachers in special schools when they teach EE to special learners

#### 5.3.4.1 A-G Curriculum related factors

Teachers A and C believe that the time allocated for a practical subject like EE is not sufficient, given the amount of work that needs to be done. They claim that, with their physically challenged learners, it becomes a problem to do everything within the specified time allocation on the timetable due to mobility problems. Their concerns regarding the time allocated to EE can be seen in the following statements:

- A-G1 lack of time

I feel the time allocated to EE is very short. Remember we have learners who are wheelchair bound and some use rolators, crutches and crawlers. We need to make sure that everything is in working order and we also need to make certain that the lesson takes place within the specified time on the time table. Firstly, we need to prepare them for the outing, but by the time we reach the field in our school yard, the period is almost over. And we can't keep borrowing periods from our colleagues each time there is a need for fieldwork activities. I so wish environmental studies periods could be extended. I swear one period is not enough. But *sjoe*, what would happen? Does that mean Life Sciences must have longer periods than other subjects? *Sjoe!* I don't know...hey? (Teacher A)

The second response is indicated below.

Time is my number one enemy, because the learners enjoy the activities outside the classroom. But in a special school we depend on number of staff personnel to get things done. We work as a system. Before we undertake field work activities, we need to make sure that the care-givers are available to assist with those who are wheelchair bound, who cannot push themselves. Sometimes, it becomes a mission to get the care-givers when we need them, because they could be elsewhere, helping other learners. Our care workers are overworked and short-staffed. Their job is so involved. Our learners are not only physically challenged; some are also incontinent. So the caregivers, apart from pushing the wheelchairs, also change nappies of those who are incontinent and have bowel problems. And nappy change can happen anytime and we therefore cannot rush them. By the time we are nice and ready, ah! The period is almost over. That really frustrates me, because I would go home after school having not accomplished my goals for that day,

like you saw what happened yesterday, you ended up pushing that boy yourself. Do you see what goes on in special schools? In-fact you should know because you are also teaching in a special school, *neh...uhm*. (Teacher C).

Teachers A and C in this subcategory were concerned about the time allocated for teaching environmental education. They argued that EE demands practical work and no reasonable amount of practical work can be done in one period, especially with special needs learners who require extra time to get to and from the field due to their physical disability.

#### 5.3.4.2 A-H Learner related aspects

The category on a learner-centred approach was broken down into four subcategories: lack of mobility, discipline, health-related issues, and drawings. The majority of the teachers, as already indicated said that they were excited when they realised that Environmental Education had been integrated into school subjects such as Life Sciences. In the same study however, they also revealed their frustrations with regard to the teaching of EE. They claimed that they are constrained by many factors, such as mobility problems of the learners, discipline of the learners when outside the classroom and health-related problems of the learners.

- A-H1 Mobility problems

The aspects of teaching which the teachers, A and B, were concerned with in this category include mobility problems: Responses are as follows:

*Uhm*, there's nothing specific except for mobility. If we go out to the field, it must be friendly to all learners so that they can all move easily. Also, it is not easy to go hiking because some of the learners won't be able to do that. (Teacher A).

*Sjoe*, when I have to go to the field to do the field work activities, I think twice, as most of our learners need assistance. Most of them use wheelchairs, and even though some use wheelchairs, there are those who can't push themselves. Those learners rely on other learners for moving around. Some use crutches but are very slow (Teacher B).

However, Teacher C claimed to have no problem wheeling her children around. She said:

So far not really, I have not encountered problems, because most of the places are now even wheelchair friendly, so I have not really found it difficult to take my kids wherever I need to go and to explore the environment.

- A-H2 Discipline

Teacher C raised the issue of discipline when they are out on the field with learners. She said: "...But discipline becomes a problem. Some learners are very naughty especially when they are outside the classroom".

- A-H3 Health problems

In this subcategory, Teacher C was more concerned about the health problems of the learners. The teacher mentioned the following:

Teaching of environmental studies demands that we do fieldwork activities or field trips. My problem is that during the field trips, there are always interruptions on the part of the learners. The learners who are incontinent, those who have bladder problems miss out a lot, because they constantly want to be taken to the loo. And if the field trip is located where there are no toilets, the learners become very uncomfortable and as a result they never concentrate. As a result, most of the learners who have such problems do not want to go on fieldtrips because they fear the embarrassment of wetting themselves and so forth. That is the situation, ma'am. If they do go, they starve themselves, they don't even drink, because they are always thinking about their problems. As a result, I sometimes feel there is no need for fieldwork if the learners would be subjected to such miseries.

A follow-up question was asked to find out about who takes the learners to the bathrooms during the fieldwork lessons. The teacher responded that other learners assisted.

This finding suggests that Teacher C feels restricted in doing fieldwork activities, due to the ill-health of the special needs learners. Her response also revealed that those who are incontinent or have bowel problems are helped by other learners who are also physically impaired. This raises serious concerns because learners are not

trained to take care of other learners. This finding also suggests that porters need to be employed in special schools to take care of the learners, especially those who are wheelchair bound, incontinent or have bowel problems.

- A-H4 Drawings

In this category, Teacher D was concerned about the kind of questions that are asked during the external exams, which require that the learners draw. Her main concern was that some learners who have shaky movements are disadvantaged by the very system that preaches curriculum adaptation. The teacher concerned said:

The only challenge would be when, for an example, come to do things such as graphs, because some learners are cerebral palsied. If you have got to ask a CP learner to draw a bar graph, it won't be straight. You see with the bar graph all the bars have got to be of the same breadth. But with them because of the way they are, is going to be difficult just like a partially-sighted learner, for an example an Albino, because of the eyes, it will be difficult for them to have the straight one.

The disturbing issue is that post-1994, we still have questions that come up during the final exams that discriminate against those who cannot draw good diagrams or who cannot draw at all due to their disability. This calls for the policy makers to ensure that policies are implemented for the benefit of all the learners irrespective of their disabilities. Policies on curriculum adaptation should not only be good on paper, they have to be implemented, otherwise what is the point of developing such policies?

#### 5.3.4.3 AI-L Challenges and experiences

Figure 5.5.2 below presents an overview of what is discussed in the following section.

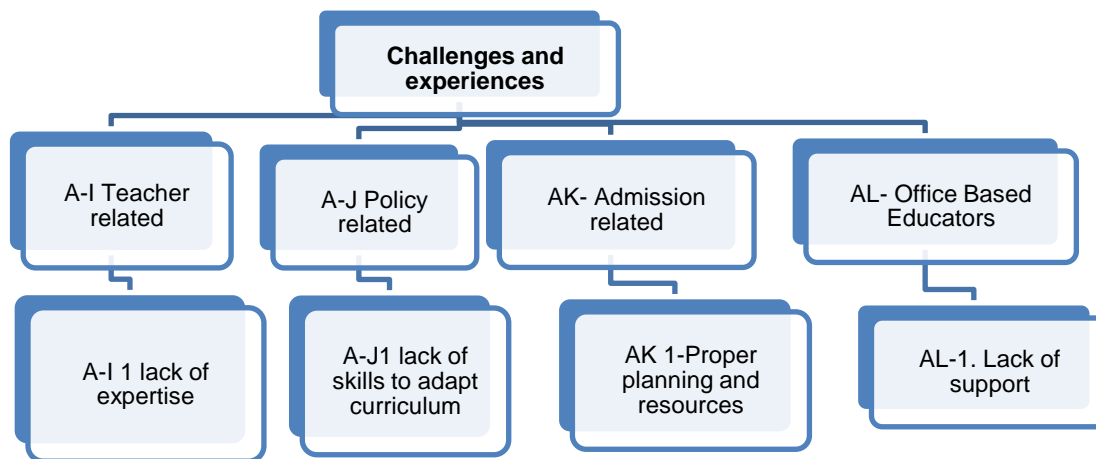


Figure 5.5.2: Barriers facing teachers in special schools when they teach EE to special learners

#### 5.3.4.3.1 A-I Teacher related aspects

While the teachers in the last category were concerned with learner-related factors, the teacher in this category was concerned about her competency in the teaching of EE. The teacher clearly realised that effective teaching of any subject depends on her knowledge and pedagogical content knowledge of the subject. Teacher C admitted that she has no formal qualifications in EE and she indicated that the lack of formal training in the field contributes to ineffective teaching of EE. However, she also indicated that she tries her best to be a good teacher by studying each chapter before she presents it to the class. This is what she said:

Environmental education is very challenging to me because I have to study the chapter before I go to class. You see, during my training there was no environmental studies, so I don't have formal training in environmental studies. My majors were Biology and English. Biology then did not have topics on environmental studies. So I struggle! And I don't want to lie, I did attend CAPS training in environmental studies, but the training only lasted three days, what can be learned in three days?" (Teacher C).

The teacher concerned attributed her lack of expertise to teach EE to a lack of formal qualifications in EE and inadequate in-service training that was conducted by the Department of Education which lasted only three days. This was an interesting consideration, because other teachers in this study also indicated their unhappiness

with the three-day workshop they had attended; they thought the three-day workshop was too long. She, however, thought three days was too short.

This finding reveals that most teachers who studied Biology pre-1994 have no knowledge of EE. This suggests that teachers need on-going in-service training in order to do justice to EE, instead of only three-day workshops for a relatively new topic or subject such as EE.

However, Teacher C commands respect, for she has shown her dedication to teaching and, in particular, the teaching of EE, as she was recorded saying, "I have to study the chapter before I go to class".



#### 5.3.4.3.2 A-J Policy related factors

In this subcategory, Teacher A was concerned about her lack of qualifications to teach EE effectively. This particular teacher felt constrained by her inability to apply the policies on inclusive education and to make necessary curriculum adaptations. In her class there is a learner who cannot use his limbs at all as he is a quadriplegic. The teacher feels helpless and frustrated. One may argue that the teacher feels she should know something about inclusive education and curriculum adaptation since she teaches in a special school.

- A-J1 Lack of skills to adapt the curriculum

Teacher A expressed her inability to help the learners who experience barriers in class due to their disability in the following manner:

Not always being sure of how to involve the learners, because there are those who are quads who can't use any of their limbs, and as a teacher, teaching in a special school, I am supposed to know how to involve the learner, because we are always told that we must adapt the lessons for those who are experiencing difficulties in school. But I really do not know how to adapt the lesson to involve him. I feel sorry for the boy. I can't help but feel I am neglecting him, but what can I do?

The inability of the teacher to help the learner in question can be attributed to the failure of the Department of Education to monitor and assist in the implementation of their policies. Policies on inclusive education that deal with curriculum adaptation are in place, but the teachers feel neglected because, as indicated in this study, they have never been trained on curriculum adaptation. The result is that there are learners who just sit there and watch other learners learn.

This is a conundrum in that the teachers who are agents of change feel constrained by the social structures such as policies to reach their goals. They want to help the learners who experience barriers to learning, but are unfortunately unable to translate the policies on curriculum adaptation. This suggests that teachers in special schools need in-service training on curriculum adaptation and necessary support to implement it.

#### *5.3.4.3.3 A-K Administration-related*

In this category, Teacher D was concerned about her schools' ability to plan school activities on time.

- A-K1 Planning ahead

Teacher D regarded proper planning in the school as very significant when it comes to EE. She said:

Excursions require proper planning and resources such as money. If we do not plan ahead and diarise everything, it becomes a problem for us to do fieldwork activities in that particular year, because we cannot just up and go. The school has to put aside money for the trip, etc.

This finding suggests that the whole school should be on board when it comes to practical subjects that require practical work like EE. The load should not rest squarely on the teachers that teach EE.

#### *5.3.4.3.4 A-L Office-based educators*

In this category, Teacher E revealed her dissatisfaction with the way the office-based educators render their support and services to the teachers with regard to the teaching of a new subject such as EE. She said:

We do not get enough support from our EDOs (Education Development Officers), we were only trained for only three days, when EE was first introduced.

Teacher E felt that they had been thrown in at the deep end and have to fend for themselves. The three-day workshop was not enough for a relatively new subject such as EE. It is a fallacy to think that teachers are always ready to deal with curriculum changes. Teachers need to be empowered in every subject they teach. This suggests that once more that in-service programmes are a must, especially when it comes to a new subject.

### **5.4 PHILOSOPHY UNDERPINNING THE CURRENT CURRICULUM**

The participating teachers did not know the difference between the philosophy that underpinned the previous curriculum (positivism) and the one that currently

underpins CAPS (social constructivism). Some teachers in this research study received their tertiary education post 1994, so they claim they cannot tell the difference between the philosophies that underpinned the previous curriculum, which was positivism and the one that is currently underpinning the curriculum, social constructivism. Likewise, the older teachers, who received their tertiary education pre 1994, could also not tell the difference between the two philosophies. Also one teacher who was born and bred in Swaziland did not know the difference between the two. The exception was one teacher who gave her version of the differences between the two.

Their responses were:

Have no clue. (Teacher B).

No I don't know the difference. (Teacher A).

No Idea at all. (Teacher C).

Teacher D said:

If you look at CAPS and then compare it with the previous curriculum, the NCS, you will notice that CAPS emphasises usage of text book, whereas in OBE they were saying there was no actual prescribed textbook. And CAPS, to me is like a system which was used during the apartheid regime, whereby we were just using textbook method. Right now, they are emphasising that every teacher must have a text book in front of her. Each and every learner must also have a prescribed textbook, whereas in OBE, they used to say there is no prescribed textbook. To me the present method they are using is just the same as the method that was used for teaching us in the old dispensation. In other words, I should think that our government, our ANC government is now accepting that the very system that was used by the apartheid regime worked.

Teacher E said:

We were not really taught the differences. When the workshops were conducted, the main focus was on our learning areas-on the changes and additions that were made and that is all, also I came to South Africa after 1994, I therefore cannot tell what was practised before 1994.

The responses given by all the participant teachers are a cause for concern in that teachers should know the theory and the philosophy that underpins the school curriculum they are expected to teach as it influences what goes on in the classroom. In other words, the theory and philosophy give direction to the teacher on how to teach and how to assess the learners. Furthermore, the knowledge of the philosophy underpinning the curriculum helps the teacher to assess her/his own work on whether he or she is or not interpreting the goals of the curriculum correctly.

The teachers' responses reveal that teachers need a crash course on theories and philosophies that underpin school curriculums. It is a fact that teachers are not philosophers, be that as it may, teachers need some form of empowerment with regards to the philosophies and theories that underpin the curriculum. This is so because, every educational system and instructional programme contains a philosophy and a theory of learning.

## **5.5 TEACHING AND LEARNING SUPPORT**

### **5.5.1 A-M Support from the DoE for Teaching EE**

In this aspect, the teachers were asked to describe the support they receive from the Department of Education when it comes to the teaching of EE. In the analysis of their responses, three categories emerged, namely, "No support", "Inflexible forms of assessment" and clusters. From the three categories, three subcategories emerged, as shown in figure 5.6. The category "No Support" was categorised by two subcategories "CAPS training only" and "lack of special education background". The category on inflexible forms of assessment was also characterised by one subcategory which is, "the undifferentiated forms of assessment for all learners", that is, learners who are able bodied (main stream learners) and those who are physically challenged. The category on clusters was categorised by one subcategory, "grouping of teachers in clusters".

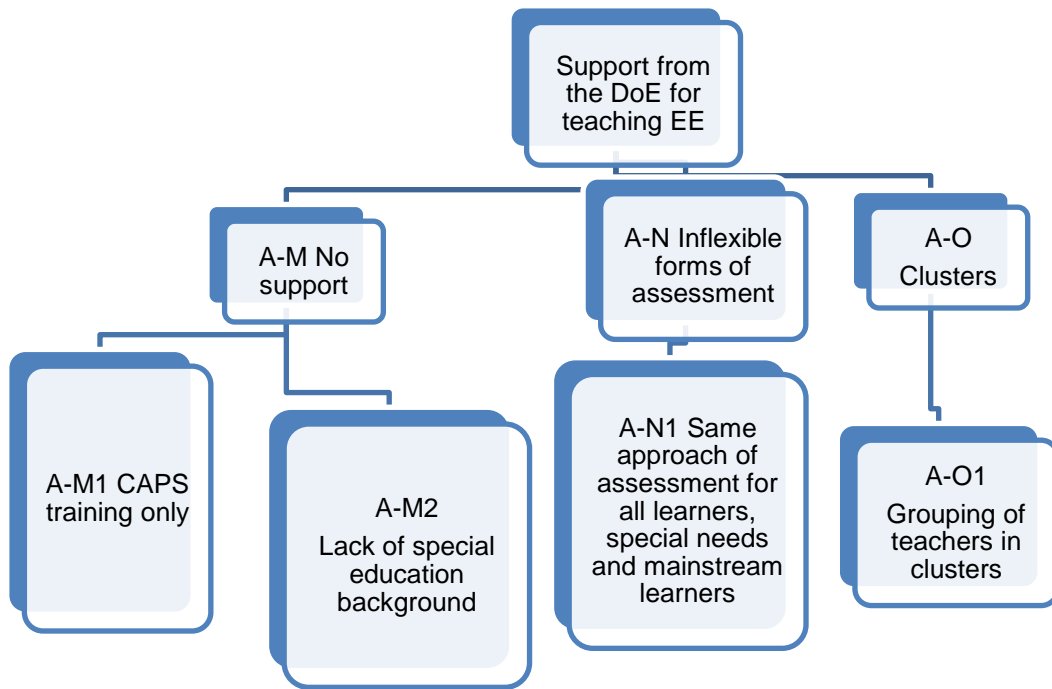


Figure 5.6: Support from the DoE for teaching EE

#### 5.5.1.1 A-M1 CAPS training only

Teachers A and B indicated that they did receive training on CAPS, but claimed that they have never received resources that would help in the effective teaching of EE. In their own words, the teachers said:

“I have to admit, we had CAPS training and that was about it. The school itself provided us with the projector and laptops to use in the class, but not the department” (Teacher A).

“*Sjoe uhm...* the only support I can think of is the curriculum support in the CAPS training that we received. Where they tell us just more of what is expected of us to teach the learners. There was no other support really regarding the resources to teach environmental studies” (Teacher B).

#### 5.5.1.2 A-M2 Lack of special education background

In this category, one educator (Teacher D) was concerned about the lack of expertise in the field of special education by the subject advisors who are supposedly should be giving support to the teachers in special schools. She said:

You know what? The whole statement is included in the policies, but it actually does not work – why doesn't it work? It is because the people who are supposed to come and give support are the very same people who do not have the background at all in special education. We have for an example a subject advisor who knows nothing about curriculum adaptation, who knows nothing about braille and who knows nothing about sign language' (Teacher D).

#### 5.5.1.3 A-N Inflexible forms of assessment

Teacher C was concerned about the lack of support from the district officials to help in the fight for equal opportunities for all learners to experience success. Policy documents on curriculum adaptation and inclusive education have been produced and they address the issue that the teacher is concerned about. However, inflexible forms of assessment are still being practised to date and clearly this unsettles the teachers.

#### **5.5.2 A-N1 Same Approach to Assessment for all Learners**

What is revealed in this category is that learners in special schools are treated the same way as learners in the mainstream. Unfortunately, this should not be the case. From the Teacher C's utterance, it is clear that teachers in special schools are not happy with the way the final exams are set. This calls for those who set examinations to revisit their assessment approaches so that every learner is presented with the same opportunities to succeed. Teacher C expressed her opinion by saying:

I have not gotten any support from the department, because last year with my grade 12 learners, I have written reports to my subject advisor even, especially about the drawing because we had a child who was a quad, who could not do anything with his hands and especially when expected to draw. How does that child draw? Someone must draw for him! And they say they going to come back to me, up until now no one came back to me. Because they do not have a clue of what is going on in special schools. There was a drawing last year, okay yes we had the scribes, but I mean if a child..., as for me, I cannot explain to you how to draw a thing. Do you understand what I mean? Say for an instance, an ozone layer, how are you going to say it if someone does not even know the subject, because I can't be the scribe for

you, because obviously I'm going to draw the right thing. Really how do you instruct a scribe to draw? I really felt sorry for that child, but hey what can we do, when no one is prepared to help the teachers in special schools?

### **5.5.3 A-O Clusters**

#### **5.5.3.1 A-O1 Grouping of teachers in clusters**

In this last category, Teacher E brought up the issue of clusters when they attend the workshops. She stated that:

I know of no support from the DoE. Maybe that support is indirectly, I am not exactly sure. Because what they have done, is...we have formed clusters. In those clusters where you will find different teachers from different schools come together to discuss the approaches of teaching EE. But with me, the challenge I have is that there is no other special school around. So the way I benefit is very minimal, because I have to take first their ideas and then I have to adapt the lessons for my learners.

The concern raised by the teacher indicates that teachers who teach in special schools are painted with the same brush as teachers in the mainstream. When they attend workshops, they are grouped with teachers who have no knowledge about teaching a special learner.

#### **5.5.3.2 Support and resources to teach EE**

To be certain about the level of support the teachers receive from the Department of Basic Education, I asked a follow-up question simply to probe whether they are getting enough support or none at all. In this subcategory all the teachers indicated that they were neither receiving any form of support nor resources for the effective teaching of EE to learners with barriers. The teachers gave the following responses:

No not from the department (Teacher A).

No (Teacher B).

Well no, we don't get resources from the department (Teacher C).

No, not all, our officials lack the expertise to give support (Teacher D).

“The only support we got when we attended the three-day workshop, was in the form of cluster formation. We were grouped in groups and in those groups we discussed different approaches on how to teach EE. However, there were no resources supplied. But I always find out that I am not getting any help, since I am always grouped with the mainstream educators” (Teacher E).

#### **5.5.4 Workshops**

When the teachers were asked to express their feeling about the workshops conducted by the Department of Education regarding the curriculum adaptation of EE, they gave the following responses:

I have no problem with that, I think our subject advisor did a good job (Teacher C).

I feel they give us a lot of information and how to teach, but also they stretch it out too long. What they give us they can do it in one day, but they stretch it over 3 days in CAPS training. I wish they can shorten it (Teacher A).

I have not been to such a workshop, as I say it was CAPS training only. (Teacher B).

To me they are just a waste of time. Time wasting in the sense that they are conducted in the afternoons. As a special education teacher, the pace at which my learners are working is not the same pace as learners in the mainstream. I have got to go an extra mile and to me they waste time, because I want to have afternoon classes. You will find out that a lesson that maybe takes an hour in the mainstream to complete, I take two hours to complete it, which means I have to teach in the afternoon. But you will find out that we are expected to attend to the subject advisors, because they normally come after school and they expect us to concentrate, tired as we are. And on Saturdays, again I have to come and teach my learners, so I totally do not have time. To me, it is time wasting, because I mean I am trained as an educator and I have realised that when they say training, they come with manuals. This very manual I can read it on my own. Now somebody comes and just stands there to read the manual to me. I can read, I don't have a problem reading. To me, it is time wasting, unless they can just give us the manuals and say go and go through this' (Teacher D).



For four years in my district, we did not have a facilitator. The current facilitator was employed only in 2014 and it is difficult to get support from the DoE if we don't have a facilitator. In short, I am not happy with the support we get from the DoE (Teacher E).

The above interview statements indicate that teachers are not getting enough support from the department of education in terms of workshops. Also another interesting point that was raised is that when the workshops are done, they take up teachers' time, for they are conducted after school.

## **5.6 STRATEGIES EMPLOYED IN TEACHING EE**

Effective teaching of EE aspects in the Grade 10 Life Sciences curriculum demands innovative teaching methods. When the teachers in this study were asked to briefly share how they teach EE, the analysis of their results revealed five themes, namely: repetition, practicals, pictures, fieldwork and content summaries. The teachers in their own words remarked on the following:

We do a lot of repetition. We find out about pre-knowledge and from there we would always add something practical like the little activity when they quickly ran out of the class like they did just now. If we can't do something practical, at least show a picture or try to explain on the board, try to be more visual for them (Teacher B).

Our classes are adapted to a more practical view, so we would, as you would see later, we would go into the veld and I would show them instead of just explaining to them, the different soil types and different biomes. We would go and see what we can find outside so it is a lot of a practical work than just out of the textbook. Also I would summarise for them, because having to look at the text book they don't know where to start their summaries, so I summarise for them (Teacher A).

Like I said I have taken them to the Addo Game Park. The game rangers and people explain and they could see and they had a little bit of understanding of what was explained to them. They did not sit there; they did enjoy the outing. So I think if you take them and they see it instead of just talking to children and they don't have a clue (Teacher C).

I normally do not penalise them. I just look if the learner has an idea of what I am talking about. Let us say for an example, if the learner has to draw a pie graph. I mean he has to draw a proper circle and divide it, but you will find that even if the learner uses protractor, it will not be correct one. Those are some of the challenges that I will come across, but because I know the learner, then I don't have a problem, I know that the learner knows what it means to draw that thing' (Teacher D).

When we have to go out to the field to collect whatever is needed for the lesson of the day, I do that on their behalf. I bring the stuff to them, just show them and describe to them how I have collected those and then do demonstrations for them (Teacher E).

All the teachers in this study are to be commended for trying innovative teaching methods when they teach EE to special needs learners. However, one teacher indicated that she summarises the lessons on behalf of the learners, claiming that the learners could not do such an activity on their own. The question that arises is whether she is not undermining or defeating the purposes and goals of developing in the learners creative writing skills that are needed by the learners.

### **5.6.1 Lesson Adaptation**

In order to ensure that the teachers understood the question on curriculum adaptation of EE aspects, they were asked to describe how they adapt some of their lessons to cater for those who are severely handicapped. The teachers indicated the following:

No training for curriculum adaptation (Teacher A).

Like he told us, we must try and take the children to Game Parks and that is one thing I have tried to adopt by taking them out (Teacher C).

They gave us CAPS training, but they did not specifically tell us how to adapt certain lessons (Teacher B).

I translate most of the time for those who are hard of hearing, because sign language is different from written language. But I have never received any support from the EDOs; instead we, the teachers from my school demonstrate to the EDOs. They can't help us, because they know nothing

about the special schools. The posts or positions they are occupying were politically created. They do not qualify to be heading special schools. During their visits to my school, they cry when they see how I teach my special learners or when they see my learners. Instead of them helping, they cry. I do not have time for tears. I need help (Teacher D).

Our school starts from Grade R to Grade 12. When we have to adapt the curriculum, we must guard against many things, and if possible we must avoid it. Because of lowering the standard. We do not want to adapt it so much that we lower the standard and put the learner at a disadvantage. It works well in the lower grades but not at FET section. Here in the FET section we would rather resort to certain teaching and learning strategies (Teacher E).

All the teachers in this regard indicated that they had never been trained on curriculum adaptation for special need students. The responses given by some of the teachers (A, C and E) are indicative of those who really do not understand what curriculum adaptation means. Teacher C understood curriculum adaptation to mean field trip activities. According to her, taking the learners to Addo Game Park was curriculum adaptation. Another teacher (Teacher A) said she had never been trained on curriculum adaptation. Yet when they were asked to describe how they felt about the workshops conducted by the Department of Education for teaching EE and curriculum adaptation, she expressed that the workshop was too long and wished that it could only take one day instead of three days. This also indicates that the teacher in question confused CAPS training in general with curriculum adaptation or does not know the meaning of curriculum adaptation. Another disturbing finding was when Teacher E admitted that she avoids curriculum adaptation, since she did not want to lower the standard. Teacher D claimed that there was no way that they can be assisted by the EDOs in curriculum adaptation, since the EDOs lack the knowledge that is significant in as far as providing assistance to teachers in special schools.

## **5.7 LESSON OBSERVATIONS: SUMMER SCHOOL**

After conducting interviews with the teachers on how they teach EE and how they adapt certain lessons to cater for the learners who are experiencing barriers to

learning, I observed some of the actual lessons. In the following descriptions, a selection of the lessons that were observed are described below.

### **5.7.1 Lesson description**

Teacher A teaches Life Sciences in the science lab. In her class there are 20 learners, 13 girls and 7 boys. The two out of the 20 learners are severely physically impaired and use special devices such as electronic wheelchairs. The learners' tables are arranged in rows. The lab is relatively well resourced and well organised, but there were no resources displayed for environmental education. Cupboards are clearly labelled and well organised.

#### **5.7.1.1 Lesson 1**

Unit: Studying abiotic factors – Studying soil.

Skills focus: Identifying soil types from its texture.

The lesson which I observed was on soil-types. The duration of the lesson was 40 minutes

- Introduction of the Lesson

After greeting the learners 'Mrs A' started by explaining to the learners the objective of the lesson, which was to identify different types of soil from their texture.

- Exposition of the lesson

Immediately thereafter the teacher explained the role played by the soil on earth. Then the learners were instructed to go to the field to collect different types of soil. This is in line with what the teacher expressed during the interview when he said that he employs fieldwork activities when he teaches EE. In the field, I observed that the learners were having fun, they were noisy and laughing out loud. An additional observation was that those learners who were wheelchair-users were not able to reach the ground to collect the different types of soil, they were helped by other learners and by the teacher. I also helped in the wheeling of one learner who is a wheelchair user, but nonetheless they seemed to be enjoying the fieldwork activity outside of the classroom.

- Conclusion of the lesson

Back in the classroom the learners were told that they would continue with the lesson the next day, because the period was almost over. In short, on that specific day the learners could not go ahead with the activity of conducting simple tests to classify the soil due to time constraints. This bears testimony to the time constraints that the teachers raised as one of the challenges they encounter when they have to do fieldwork activities.

#### 5.7.1.2 Lesson 2

Skills focus: Identifying soil type from its texture

- Introduction of the lesson

The teacher wrote the objectives of the lesson on the board. The teacher told the learners that they were going to conduct simple tests to classify the soil they had collected the previous day.

- Exposition of the lesson

The teacher wrote on the chalkboard the instruction on how to conduct such tests. She wrote:

1. Roll a bit of wet soil into a ball. Then try to roll the ball into a sausage shape. Bend the sausage into a ring.
2. If the sausage breaks as you bend it, the soil is sandy.
3. If the sausage bends slightly and then breaks, the soil is loamy.
4. If the sausage bends easily, the soil contains a lot of clay.

Although every learner was actively involved, there were few learners who were not fully engaged. They kept looking in my direction and talking to me. All in all, however, the lesson went well.

- Conclusion

At the end of the activity, the learners were asked to bring plastic bottles the next day for the experiment on the water-holding capacity of the different types of soil namely: clay, loam and sandy soil.

### 5.7.1.3 Lesson 3

Unit: Studying soil

Skills focus: Measuring the water-holding capacity of soil.

- Introduction

The teacher greeted the learners and immediately wrote the objective of the lesson on the chalkboard: “measuring the water-holding capacity of the soil.”

- Exposition of the lesson

The teacher then asked the learners to take out their bottles in order to begin the activity. However, for some reason, the whole class had forgotten to bring the bottles as was requested by Mrs A. The activity could not go as was planned, but the teacher decided to do a demonstration lesson instead on water-holding capacity. In short, the learners ended up observing the experiment instead of doing the experiment themselves as envisaged by the teacher. Mrs A used a two litre bottle, prepared by herself to conduct the experiment. There were no resources supplied by the Department of Education to conduct the lesson on water-holding capacity of the different soils. This observation was in agreement with what the teachers expressed when interviewed that they do not receive any support nor do they receive resources from the DoE to teach the relatively new subject, EE, which has been integrated into subjects such as Life Sciences.

- Conclusion

At the end of the lesson, the question and answer method was employed to determine whether the learners understood the differences in water-holding capacities of the different types of soils. After that, Mrs A gave them homework based on what was done in class. The homework was written on the chalkboard (see below):

1. In an investigation, a group of learners measured the water-holding capacity of different soils. These are the results:

Soils	Amount of water held
Soil A	120 ml

Soil B	90 ml
Soil C	180 ml

1.1 from the results, identify the soil types A, B, and C. (3)

- Reflection on the lesson

After the lesson, a reflection on the lesson was conducted with the teacher concerned. During the reflection, the following questions were asked:

1. **Researcher:** How do you feel about the lesson and why? Have you achieved what you expected to?

**Teacher:** “I feel I have accomplished some of the goals that I wanted, but also because they did not bring their practical things, I could not do the lesson as planned, so I had a little bit of extra time in the end, which was a waste of time, so I had to demonstrate the experiment to keep them busy, because I can’t keep them unoccupied”.

2. **Researcher:** Did anything go differently to what you expected?

**Teacher:** “Yes, because they did not bring the practical things, so we could not use our time efficiently. We had time left over”.

#### 5.7.1.4 Lesson 4

Unit: Dissection of sheep’s hearts

Skills focus: handling of dissecting kit, observation skills

On the fourth day, the teacher embarked on a new lesson. She brought into the class a cooler bag full of sheep’s hearts for dissecting. Arguably, this was an indication that the teacher was done with EE modules, which I found to be strange, because when I was phoned by Mrs A, inviting me to come for observations, she indicated that they had only started with the EE modules the previous week. The intention was not to make the teacher concerned uncomfortable by asking her whether she was done with the teaching of EE or not; the observation simply carried on as usual and the lesson continued. As the learners were busy dissecting the hearts, I enquired about the learners’ work book to simply see what was covered in the EE modules. I found out that not much was covered on EE. Apart from practical

activities conducted in class and the fieldwork activity that was observed, there were only two written activities.

### **5.7.2 Lesson Description**

In Mr B's class, there are 10 learners, 6 boys and 4 girls. Two out of the ten are severely handicapped. They are wheelchair-bound and are quadriplegics. The learners' desks are arranged in rows. On the walls, there are posters and pictures. The posters relating to EE were posters on global warming and on the ozone layer, drawn by the learners the previous year. There were no posters or pictures that were supplied by the DoE.

#### 5.7.2.1 Lesson 1

Unit: Ecosystems and abiotic factors

Skills focus: Identification and classification of living and non-living organisms.

- Introduction of the lesson

The teacher greeted the learners and completed the attendance register. After completing the class register, he wrote the objectives of the lesson on the chalkboard. The information was written in Afrikaans and presented orally in Afrikaans. Since I do not understand Afrikaans, the teacher was asked to refer to the work being discussed in an English textbook so that I could follow. He then highlighted the topic of the lesson and the activities that were going to be done on that particular day.

- The exposition of the lesson

Teacher B started the lesson by asking the learners to define abiotic and biotic factors. The learners tried their best to define the concepts. The teacher eventually explained the concepts to the learners and they were instructed to look at their textbooks for the definitions. Immediately after that the learners were instructed to go outside to identify biotic and abiotic organisms and bring them to class. This bears testimony to what the teacher said in the interview that he tries to be practical and that he uses fieldwork activities most of the time when he can. The teacher and I



remained behind. After 30 minutes, the learners were back from the school yard, carrying examples of abiotic and biotic factors.

In the classroom, there was a discussion between the teacher and the learners about the roles played by each organism in the ecosystem and how they interact with each other. The discussion was a two-way stream. It was not dominated by the teacher. Questions were asked by the learners as well.

- Conclusion

In order to assess whether the learners understood the differences between abiotic and biotic factors, they were given an activity from the textbook, which instructed them to fill in the table to classify the organisms as abiotic or biotic organisms.

- Reflection on the lesson

1. **Researcher:** How do you feel about the lesson? Why?

**Teacher:** "I feel good. It is a nice lesson to present to the learners, as we are starting with environmental studies. It is always an interesting work and also it is a nice lesson where they interact."

2. **Researcher:** Have you achieved what you expected to?

**Teacher:** "Yes, I feel the learners know the difference between the living and the non-living".

3. **Researcher:** Did anything go wrong in a different way than what you expected to?

**Teacher:** "No, I think everything went pretty well".

4. **Researcher:** Was this lesson typical of what you have been doing in EE? If yes, how? If not how and why? Give me another example of a lesson you did recently that looked similar or different to the one I have just observed.

**Teacher:** "Yes it is ..., the way I teach environmental lessons is more or less in the same manner".

5. **Researcher:** How did you select the activities, explanations and examples that you used in the lesson?

**Teacher:** “The practical evidence was for the learners to go out of the classroom and collect the examples of non-living and living organisms. They enjoy learning outside, so when we get the chance to get outside the classroom, we do”.

6. **Researcher:** Where did you get the teaching / learning materials (e.g., textbooks, charts, posters) that you were using?

**Teacher:** “From textbooks and also from my own that I made up, also the chalkboard for explanations. I also used the resources that were brought back by the learners from the school yard”.

7. **Researcher:** Why did you choose to employ or use them?

**Teacher:** “it’s for them to be outside, to be close to the environment and also just to make it more practical for them”.

8. **Researcher:** How did the materials help you to accomplish what you anticipated to?

**Teacher:** “It’s for the learners, especially the ones who struggle with learning. If learners can physically get something, see it, touch and feel, they can relate to the work as well and it helps them to remember”.

9. **Researcher:** Is there anything else that you would like to share with me?

**Teacher:** “No, I think everything is pretty much said”.

## **5.8 LESSON OBSERVATION: WINTER SCHOOL**

In Teacher C’s class, there are only four learners, two boys and two girls. Three of the learners are wheelchair-bound and one makes use of a walker. One learner arrived late to the class as she had come from the physiotherapy hall – her leg had recently been operated on. She seemed to be in excruciating pain. After the first ten minutes she had spent in class, she started crying and the teacher took her back to the physiotherapist hall. As a result, only three learners remained. The teacher told me that that happens quite frequently. She told me that apart from learners being physically challenged, they also have impending health problems that keep them away from school for weeks and sometimes for months, as they are always in and out of hospital. This correlates with what was raised in the interviews that health problems of the learners pose a challenge especially when it comes to practical modules like EE. She told me that their frequent absenteeism from school poses an

enormous challenge to the teachers as they have to make sure that the learner catches up with the work already covered by other learners.

The desks in Teacher C's class looked very old and were arranged in rows. In front, there was big table and a chair for the teacher. The classroom looked tidy but was in a derelict state. The floor tiles were coming off and some had left bad patches on the floor. In the classroom, there were no signs of pictures or posters hanging on the wall.

### **5.8.1 Lesson 1**

Unit: Man and the impact on the environment

Skills focus: Identification, analysis, recording and communication skills.

- Introduction of the lesson

Teacher C started the day by greeting the learners. Immediately thereafter she asked them to discuss the field trip to Addo Game Park which they had undertaken the previous week. The learners were reserved and very shy. The teacher had to lead them all the time. In short, the conversation was a one-way stream, from the teacher and to the learners. Perhaps they were intimidated by my presence. Nonetheless, they spoke when spoken to and it became clear that they enjoyed the trip to the Game Park.

- Exposition of the lesson

As a follow up to the field trip activity to Addo Game Park, the learners were given a worksheet to fill in. The learners sat quietly filling in the worksheet, but were encouraged to ask questions if they needed to. What was disturbing was the fact that one learner had to leave the classroom even before they started on the worksheet due to pain following an operation on her leg.

- Conclusion

The learners were asked to complete the worksheet at home/hostel. When I asked to see the workbooks of the learners, I was told that they had forgotten them. I was thus unable to see the workbooks to observe how many activities were covered regarding EE. The impression I received was that EE topics were not given the time as stipulated in the syllabus. This was due to the fact that, the exams always start in October, which coincides with the EE topics that are scheduled to be conducted during the third term. Since the very same teachers teach Grade 12, my opinion is that they are always in a hurry to prepare for Grade 12 final exams. Even though I intended to observe the teacher for four days, I could not, because the teachers in the school were preparing for Grade 12 exams and so I could not impose upon this crucial time.

- Reflection on the lesson

After the lesson, a reflection took place with the teacher:

1. **Researcher:** How do you feel about the lesson? Why?

**Teacher:** “I feel good – I feel I have reached my goals, because they gave me feedback”.

2. **Researcher:** Have you achieved what you expected?

**Teacher:** “Yes, my trip to Addo Game Park was a good idea, because as you saw the learners were able to contribute in the class discussion because they can remember everything that was explained to them by the game rangers”.

3. **Researcher:** Was this lesson typical of what you have been doing in EE? If yes, how? If not, how and why. Give me an example of a lesson you did recently that looked similar or different to the one I have just observed.

**Teacher:** “I try to take them out of the classroom as much as I can. But we seldom go out of the school yard, because most of our learners need medical attention and supervision and in our school we have few caregivers to look after the learners. If we take the caregivers out of the yard, other learners will be left without caregivers”.

4. **Researcher:** Where did these activities, explanations come from? (Workshops, textbooks, meetings etc.)

**Teacher:** “I have taken most of the examples of the outing, because it was with the previous unit and I just add on those and referring back ... can you remember this and that and the activities were taken from the textbook”.

5. **Researcher:** Where did you get the teaching/learning materials (e.g. textbooks, charts, posters) that you were using?

**Teacher:** From the textbook bought by the school.

6. **Researcher:** “How did the materials help you to accomplish what you anticipated to?”

**Teacher:** “Focus is a very good book. It explains every topic well and the activities there are very good”.

7. **Researcher:** Is there anything you would like to share with me?

**Teacher:** “Nothing at this stage”.

## **5.9 CHAPTER SUMMARY**

In this chapter the findings of the study were described. The aim was to explore the challenges that are experienced by the teachers in special schools when they teach EE to physically-impaired learners. To that end, I explored the challenges that they experienced in teaching EE. I also provided their views about the inclusion of EE topics in Life sciences and I documented the role that is played by the department of education in supporting the teachers in special schools, when it comes to the teaching of EE. A discussion of the results will form the basis of the following chapter and will be guided by the three research questions.

## **CHAPTER 6**

### **DISCUSSION OF FINDINGS**

#### **6.1 INTRODUCTION**

The purpose of this chapter is to critically discuss and reflect on the findings presented in chapter 5.

#### **6.2 SUMMARY OF EMPIRICAL FINDINGS**

The research interview questions were divided into three categories. Question 1 focused on teaching and learning, question 2 focused on teaching and learning resources, and in question 3, the focus was on the outcome or benefits of workshops conducted by the Department of Education.

#### **6.3 RESEARCH QUESTION 1: TEACHERS' OPINIONS ABOUT THE INCLUSION OF EE IN THE CURRICULUM**

The results were presented in five main themes. Theme 1 focused on the inclusion of EE aspects in Life Sciences. Theme 2 covered EE as an add-on subject, theme 3 focused on the differences between EE and nature conservation, the fourth theme looked at the challenges experienced by teachers in special schools when teaching EE and the fifth theme focused on the philosophy underpinning the current curriculum, CAPS.

In theme one, the teachers indicated that they were happy with the inclusion of EE into Life Sciences. However, they had different reasons for being content with such a decision. Their reasons can be divided into two categories: the first category was based on fieldwork and the second category on knowledge acquisition. Fieldwork was categorised into four subcategories, namely, learning by doing; first-hand knowledge; enhancing knowledge and challenging. On the other hand, knowledge was categorised into two subcategories: new knowledge and positive attitude and behaviour.

When the teachers were asked to describe their feelings about the inclusion of EE in Life Science, they indicated that they were content with such a move. The analysis of

their responses revealed two categories, namely, Fieldwork and Knowledge. The first category was further characterised by four subcategories, namely:

- Learning by doing;
- First-hand knowledge;
- Enhancing knowledge; and
- Challenging.

In the first category, Teacher C revealed that she was excited that EE was integrated into the Life Science curriculum. She indicated that EE affords learners opportunities to learn by doing in real life contexts, “instead of just sitting...”. The response given by the teacher portrayed a picture of a constructivist teacher. What is a constructivist teacher? A constructivist teacher is a teacher who believes that students should be actively engaged in designing learning experiences for themselves, who encourages the learners to be critical thinkers and learn by doing in real life situations. If this teacher views learning as an activity that is learner-centred, and involves learning by doing, I argue that she has embraced the theory of learning and philosophy (Constructivism) which forms the basis for South Africa’s current curriculum, CAPS. Literature reviewed describes constructivism as a theory that hypothesises that learners create their own understanding of the world not by listening to their teachers, but by actively working within their environments (Haralambos & Holborn, 2004). In sum, the operative words in constructivism theory are “learning by doing”.

What are the implications of learning by doing for teachers and what is the significance of learning by doing with specific reference to EE?

In EE learning by doing is highly advocated. In a UNESCO document (1990: 191) it is stated that:

No amount of preaching to the citizenry about the perils of a polluted environment, the dangers of irresponsible disposal of waste or deforestation and the benefits to mankind of greening the environment will make people act to seek to forestall the environmental degradation unless they are imbued with a deep sense for the common good, a sense of responsibility for maintaining a balanced and healthy ecosystem and strong drive to achieve harmony with nature.

In the White paper on Education and Training (DoE, 1995: 18), it is also stated that “Environmental Education, involving an interdisciplinary, integrated and active approach, must be a vital element of all levels and programmes of the education and training system”.

The implications of the above statements for teachers and education officials with regard to EE are:

- They should expose learners to real life issues and problems, where they would be challenged to use the resources or materials to solve problems; for example, if the lesson is on water pollution, the learners should be taken to a site where there is water pollution, where they will see the negative human impact on the environment, instead of just telling the learners in class about the dangers of water pollution. They should also be given water kits to test the water so that they are able to come up with solutions.
- Education officials should provide resources for the teaching of EE such as water kits. Learners cannot learn how to test water without water kits.

Learning by doing is summed up in the following statement: “If you tell me, I will listen; If you show me, I will see; If you let me experience, I will learn” (Clark, 2010: n. p.).

I commend the teacher for trying to employ innovative teaching skills. The benefits of allowing learners to learn by doing is that they get to experience first-hand knowledge, which in turn enhances learning as was revealed in the second and third subcategories respectively. I agree with the teacher that learning by doing and gaining first-hand knowledge improves the quality of learning. In the lesson I observed after the learners had visited Addo Game Reserve, the learners’ responses to their worksheets were mostly good. In sum, the significance of learning by doing is that it provides the students with opportunities to refine and increase their knowledge, which in turn, allows them to be more confident. In agreement, Scruggs, Brigham and Mastropieri (2013: 54), stated that “learning-by-doing can be a very effective approach to science learning”, but cautioned that at the higher levels, the use of complex textbooks could become problematic. However, teachers should be warned that learning by doing is not synonymous with just getting busy. Taking the learners to the field without engaging their mental faculties does not amount to



learning by doing, but amounts to taking a walk in the field. Learners should be supplied with the correct tools, equipment and worksheets to use in the field. In sum, the teachers agreed with the inclusion of EE in Life Sciences.

However, in the last subcategory one teacher felt differently. She thought the inclusion of EE into Life Sciences posed a problem for the teachers in special schools. Her argument was based on the fact that wheelchair users demand a lot of support when they are doing out-of-classroom activities. She claimed that when it comes down to business such as measuring the field or picking up samples they are helped by other learners (See 5.3.1.1. 1; 5.3.4.2 and 5.7.1.1). The implication was that the wheelchair-user learners are, in a way, “distracting” other learners during fieldwork. This reveals a serious problem in the special schools that there is lack of personnel or inadequate personnel in special schools such as porters and caregivers, who should be assisting in wheeling around the learners and providing learner support. In my view learners are not supposed to be the guardians of other learners in the school, as this will distract them or interfere with their learning progress and since they are not trained to be caregivers, they could put the lives of other learners in danger. This study has helped in revealing the plight of learners and teachers in special schools when they do fieldwork exercises, that using the teaching staff only in special schools is not enough, which suggests that porters should be employed to assist during fieldwork exercises.

In the second category, knowledge, two subcategories emerged, namely, new knowledge and positive attitude, which are discussed below.

In the first subcategory, the teachers revealed that the inclusion of EE into Life Sciences would assist in imparting knowledge about environmental problems which could in turn lead to positive attitudes and behaviour towards the environment as was indicated in the second subcategory (See 5.3.1.1.2). In another study conducted by Charikleia, Paraskevopoulos, Pantis (2011: 245) they also reported that “[t]he acquisition of environmental knowledge and the development of environmentally friendly attitudes, leads to the participants’ cognitive development and enhances their understanding of environmental problems and their solution...”. My argument is that this is not automatic, in that information about environmental problems does not necessarily lead to a positive attitude behavioural change. As an example, the AIDS

virus was discovered years ago and the information about how the virus is contracted was disseminated to the world; but even now we still have people dying of AIDS, irrespective of the information available. The same applies to environmental problems. Despite everyone knowing that a hole has developed in the ozone layer, which is caused largely by the emission of CFCs, we are still producing products that pump CFCs into the environment. What is the problem with our education? According to Orr (2004), we need a new kind of education that is imbued with the sense of responsibility; an education system that will produce graduates who can think critically, are able to identify problems, analyse them, classify the problems, report the problems and then come up with the solutions to the problems. Imparting of information is not enough and EE is now

at the stage where gaining knowledge about the environment is accompanied by active learning and experiential encounters with environmental issues. It has come to be defined as a process through which we might enable ourselves and future generations to respond to environmental issues in ways that foster change toward sustainable community life in healthy environment (IUCN, 1971: 7).

Theme two focused on the inclusion of EE as an add-on subject. The results showed that the teachers do not regard the inclusion of EE into Life Sciences as just an add-on subject. They thought EE had added value to the modules integrated into Life Sciences. Their reasons were threefold: the introduction of new knowledge, the development of positive attitudes and behaviour towards the environment and the potential for job creation.

Theme three focused on teachers' knowledge about the differences between nature conservation and EE. The results as documented in 5.3.3 of chapter 5 showed that the teachers did not know the differences that exist between nature conservation and EE. The teachers did not even try to explain the differences with the exception of one teacher who gave an incorrect interpretation. The implication is that teachers have to change the way they teach in order to realise the goals of EE, which are totally different from the goals of nature studies or nature conservation that existed pre-1994. Raselimo and Wilmot (2013: 5) were of the view that "whilst teachers are important agents of change, those who cling to outdated forms of instruction may be a hindrance to curriculum innovation".

In sum, this study has revealed that teachers believe that if learners acquire knowledge about the environmental problems such as global warming, they would develop a positive attitude towards the environment which in turn would lead them to taking care of the environment. In my opinion, this linear-mode, behaviourist approach is unfounded. Also this study has revealed that teachers view the environment as an entity. According to Tani (2006), there are three different ways in which individuals and societies view the environment: those who view environment as an entity, perceive environment as something which is not linked to man. To clarify and elaborate on Tani's claim, Kimaryo (2011: 25) states "one can compare this way of understanding environment with the way we see the moon, the stars or the sun". In this study, the teachers claimed that they were happy about the inclusion of EE aspects into school subjects because learners were going to learn about environmental issues such as global warming and about the environment. I argue that this is a simplistic view of the environment, in that the teachers were only concerned about the physical component only of the environment. In the New Zealand Guidelines (Ministry of Education, New Zealand, 1999: 5), it is stated that "Education can give people the environmental education, ethical awareness, values, attitudes, skills and behaviours needed for sustainable development. To do this, education needs to explain not only the physical and biological environment, but the socio-economic environment and human development". In other words, the environment needs to be considered in its totality, not only certain aspects thereof. This study has revealed that teachers need to be helped to understand the different views of the environment, because the way one views the environment will influence the way one treats the environment.

### 6.3.1 Inclusion of EE as an Add-On Subject

To probe further about the status of EE in Life Sciences, I asked the teachers if they thought of EE just as an add-on subject to increase the load of teachers. Their responses revealed three categories: new knowledge, positive attitudes and creation of jobs. They all revealed that they did not regard EE as an add-on subject. The first two categories will not be discussed here, for they have already been discussed under the previous question. I will only discuss the third category which has one subcategory-career opportunities.

When Teacher E was asked about the status of EE in Life Sciences, she claimed that she did not regard EE as an add-on subject, but that it was valuable in education in that learners get exposed to real life situations that could encourage the learners, after graduating from school, to pursue careers in environmental spheres such as in environmental and natural resources (See, 5.3.2.3). I am also of the view that if environmental education is implemented successfully in schools, we would have environmentally literate citizens as was intimated by Kimaryo (2011). The advantage of that is that they could work in all the sectors. “Environmental education professionals work in parks, nature centers, non-profit organizations and schools. They teach students and citizens about important environmental issues in order to encourage behaviors that can mitigate or solve environmental problems” (Study.com, 2016: n. p.; Charikleia, *et al.*, 2011) The implication of this, is that environmental education would not only be confined in schools, but would be accessible in all sectors, catering for all, including those who have already left school and adults. In sum, if schools succeed in producing environmentally literate learners, the fight against environmental problems, such as global warming could be won, as they are man-made and not created. To add, Maluleke (2015: 22-23) argued that “Citizens who are environmentally literate are able to make wiser decisions that take into account the effects of development on their environment. Furthermore, they can work actively to reverse environmental degradation. Finally, they can manage and use the country’s natural resources more wisely and democratically”.

### 6.3.2 Differences between Nature Conservation and EE

All the participant teachers did not know the differences between nature studies and environmental education. They did not even try to describe the differences, for example one teacher gave an incorrect interpretation of the differences that exist between the two. Teacher D claimed that there was no difference between the two concepts, she went on to say that the only difference that existed was in name only. She was adamant that the content was the same. The literature reviewed revealed that these concepts are very different, not only in their names as the teacher claimed, but also in the way they are supposed to be taught and where they are taught. In support of my claim, Irwin (2003: 138) wrote: “Environmental education evolved from conservation education which was more informal in conservation centres used by schools and communities to a more conceptualised formal

processes shaped by “acute political, social and economic factors as well as ecological concerns”.

Le Roux (1997: 47) in agreement with Irwin, regarding the differences that exist between EE and nature conservation wrote as follows:

The environment was initially seen as a natural ecosystem and early responses to the environment crisis thus focused on protecting endangered wildlife in nature reserves, it was assumed that people needed to be taught ecology and be made aware that nature was at risk.

The results point to the fact that the changing of concepts or rapid changes of curricula tend to confuse the teachers, teachers in this study could not tell the difference between nature conservation and environmental education. (See 5.3.3). Prew (as cited in DoE, n. d.: n. p.) argued that “We need to realise that education reforms need to get bedded down: each reform needs at least 10 years of implementing before one can determine if they worked or not”. In the same document it is said that when Zimbabwe introduced the new curriculum in the 80s, it was never dumped on the teachers and learners, but was gradually introduced over a period of 10 years, which according to this document, helped to maintain a smooth transition from the previous curriculum. In agreement, Fullan (1993: 46) stated that “effective curriculum change and implementation requires time, personal interaction, in-service training, and other forms of people-based support”. I agree with the above statements that curriculum changes need to take a process, however I hold a different view when it comes to the changes that took place in the South African curriculum. I commend the DoE of South Africa for having taken decisive steps to change the OBE curriculum which was deemed unsuitable for the South Africans (See 1.1.1). Had we waited for 10 years as suggested above, before “dumping” OBE, where would our teachers and learners be emotionally and otherwise, in a country that lacks the resources that were needed in order to meet the goals of Outcomes Based Education? My view is that, it does not have to take 10 years to notice when things are not working, especially when it comes to crucial matters such as the education of the nation. Curriculum change is not a bad thing, instead it shows that curriculum developers are constantly working, always evaluating the pros and the cons of the introduced curriculum. In my view, this is a healthy sign of

curriculum developers doing their job, because at the end of the day, the education system must aim to produce learners who will be able to function well in their societies. However, what needs to happen is to make certain that when curriculum changes happen, teachers are empowered as alluded by Fullan (1993: 46). Dumping a new curriculum on teachers without clear guidance on how to reach its goals and the necessary support in terms of resources and ongoing workshops can be detrimental to both the learner and the teacher, in that if a teacher's mind set does not encompass change, the outcomes envisaged by the new curriculum will not be realised. In agreement, Pillay (2014: 73) stated that "a new curriculum cannot be advocated by means of a few workshops as there is a need to obtain a thorough understanding of exactly what is it to be done and how to do it". In addition, Heckman (1997: 121) believed that "to bring curriculum to practice is a daunting task, which one learns and adapts over time. It is therefore imperative for educators to receive adequate training to prepare them for the implementation of the new curriculum". This study has helped in pointing out that teachers need to be educated about the differences between environmental education and nature study or nature conservation, in order to clarify the confusion about the two concepts. Nature study or nature conservation as was discussed was underpinned by the philosophy of positivism, which differs from the philosophy that underpins the current curriculum, constructivism, as revealed in Table 7.1.

#### **6.4 RESEARCH QUESTION 2: CHALLENGES THAT TEACHERS IN SPECIAL SCHOOLS FACE WHEN TEACHING EE**

Theme four focused on the barriers to teaching EE in special schools. The findings of the study revealed that there are major barriers resulting from curriculum-related factors, learner-related factors, teacher-related factors, policy-related factors, administration-related issues and office-based educator-related issues.

These categories in turn revealed nine subcategories which included lack of time, mobility problems, discipline, health problems of the learners, drawings, lack of expertise to teach the subject, lack of skills to adapt the mainstream curriculum, planning ahead and lack of office based educators support. These findings support the study conducted by Maila (2003) in the mainstream schools that the teaching of environmental education poses a serious challenge to teachers and educators. The

problem, however, becomes compounded when it comes to special schools as revealed in this study (See figures 5.5.1 & 5.5.2).

#### **6.4.1 Time**

On curriculum related issues the teachers argued that the time allocated to one period of an EE subject that requires innovative teaching skills such as fieldwork, was insufficient (See 5.3.4.1). This strongly suggests that the time period for subjects that require fieldwork activities such as EE should be revisited.

All the teachers highlighted the time constraint of a 40-minute lesson in my findings. The results of this study are similar to the study conducted by Kimaryo (2011) in Tanzania. Kimaryo reported that the teachers in her study were not happy with the 40-minute slot for a subject that involves active learning. In another study conducted by Pace (2003: 28-35), time and inadequate teacher training were identified “as the major obstacles to the integration of environmental education principles in the classroom”.

If teachers in the mainstream are not content with the 40-minute period, one wonders how frustrating it must be for those who teach in special schools. I therefore concur with the teachers that EE which needs participatory activities and investigative skills does not work in special schools. The time slots for all subjects, as a matter of fact, in special schools should not follow the timetable that is followed in the mainstream schools. My argument is based also on the fact that even during the lessons which did not require fieldwork, I observed that learners needed to leave the classroom constantly which impacts heavily on the teaching time which is already minimal (See 5.8). In support of my claim, in a study conducted by Mpinga (2005: 90) in a special school for the physically impaired learners, he also found that

The learners' health is one of the challenges the educators have to face. Educators always release the learners during the lessons to take their medication and others are removed from the classes because they are also to undergo operations and this in a way delays the learning progress and educator's plans.

This study therefore suggests that the time slots for all subjects in special schools should be revisited. I am also of the view that the learners should be allowed to write

each grade over a period of two years. This could be achieved by dividing the subjects taken in the grade over a period of two years. This could alleviate the stress on the learners who spend most of their times in and out of hospitals. This could be extended even to grade 12. The learners could write 3 subjects and perhaps the other subjects could be written the following year.

#### **6.4.2 Mobility Problems**

The study also revealed that apart from curriculum related challenges, teachers felt constrained or challenged by learner related issues, which included lack of mobility, discipline, health related issues and the need for drawings that form part and parcel of external examinations.

Concerning the learner-related factors, the teachers were concerned with the mobility of the learners, discipline and health-related issues. With regard to mobility, they argued that the physical disability of the learners becomes a problem when they have to do fieldwork activities, in that they cannot go out hiking or walking to field sites such as rivers. When it came to discipline, they said that learners become unruly when they are outside the classroom (See 5.3.4.2). This finding suggests that teachers should be exposed to management skills via workshops, so that they are in a better position to control the learners outside the classroom, because fieldwork has been described by the teachers as very significant in the teaching of EE.

Included in the subcategory of mobility problems were the problem of fieldwork and participatory activities such as hiking. Hiking is described as an excellent way for learners to experience nature away from roads, buildings and industrial areas. It also encourages learners to challenge themselves physically. However, teachers should accept the reality that learners who are physically impaired, especially those who are wheelchair-users may not be able to do what the able-bodied learner in the mainstream school is capable of and therefore teachers should think of alternative ways of experiencing nature which do not include hiking, such as use of videos and films (Hall, Healey & Harrison, 2002). Since South Africa is still a developing country, educators need to make do with small, achievable tasks. Little things like planting seeds and nurturing them can bring a sense of achievement and bring the learners closer to nature. Adaptation is synonymous with impairments – if the learners cannot reach the soil because they are wheelchair users, raised gardens should be erected. (See the picture below of a raised garden).





Figure 6.1: Raised garden beds for the comfort of wheelchair users

Source: (Pinterest.com, n. d.)

However, having said that, teachers in special schools also need to guard against excluding learners from fieldwork due to their impairments. If, for an example, the nature of someone's impairment or disability means that even with the use of aids and adaptations they would not be able to carry out essential functions, it would be regarded as permissible to exclude them from an activity (Healey, Jenkins, Leach & Roberts, 2001). In the same breath, teachers must not exclude learners from fieldwork activities on the basis of assumptions. Physically challenged people have climbed Mt Everest as evidenced below. Arunima Sinha lost her leg after she was thrown from a moving train by robbers in 2011, and was able to climb Mt Everest.



Figure 6.2: Arunima Sinha and Mt Everest

Source: (Sinha, 2015)

### 6.4.3 Health-related Issues

Concerning the health-related factors, the teachers argued that health issues pose a problem when they have to embark on fieldwork activities or undertake field-trip activities. The reasons they gave reveal that some of the learners are not only

physically challenged, but also have additional health issues related to their disability such as bladder and bowel problems (See 5.3.4.2). This is only a fraction of the problems that special needs children face so one can imagine how difficult it would be for teachers when their class includes children with sight or hearing problems as well.

In the subcategory of health-related issues, Teacher C revealed that learners who are incontinent do not drink water on that particular day, lest they wet themselves and that those who experience bowel problems starve themselves on the day of fieldwork. The teacher stated that she would rather not go on fieldwork if the learners are going to be subjected to such conditions (See 5.3.4.2).

The challenges that are revealed by the teachers, namely the mobility and health problems in the above subcategories mirror the way society views disability. The teachers viewed the learners' impairments through the medical model of disability (Rieser, 2014). The teachers were concerned with the disability of the learners instead of finding solutions or concerning themselves with the removal of the barriers that hinder the learners' full participation. According to the literature reviewed there are two models of disability, which describe how disability is viewed, namely the medical model of disability (cf. Figure 2.2) which was employed during apartheid to place learners in special schools and the social model of disability (cf. Figure 2.3) (DoE, 2006). According to Carson (2009), the social model of disability was a counter move by the disabled people themselves in response to the barriers that are created by society which made them feel marginalised. The question is, what are models of disability? According to Healey, *et al.* (2001), models of disability, like all models are representations of reality and, in this case, reality of disabled peoples' life experiences.

Educators and policy makers should avoid looking at the impairments of the learners through the lens of the medical model of disability, which only sees something wrong with the learner. They should look at the impairments of the learners and ask themselves what could be done to remove the barriers which continue to exclude disabled learners from equality of opportunity. They could also ask what could be "reasonably" done to modify or adapt the area to be visited or what support systems does the learner need in order to participate fully in the field. Teachers should also

familiarise themselves with documents that pertain to special needs education such as the White Paper 6 (DoE, 2001) and the SIAS document which was developed in order to give guidance on how to assess the level of support the learners need (DoE, 2005b).

#### **6.4.5 National Examinations**

Another challenge that concerned teacher C and teacher D, as was revealed in this study, was how the national examinations are set. The analysis of their responses pointed that the status quo of special schools in South Africa still remains the same in that, there are no changes in the way the special schools are treated. Teacher C maintained that during the National Final Examinations in the Life Sciences question paper there are questions in the section on EE that are discriminatory in nature, questions that require the learners to draw diagrams such as pie charts, bar graphs etc., including the learners in special schools (5.3.4.2 and 5.5.2). I agree with Teacher C in that when the exams are set, there seems to be no thought or consideration for learners in special schools, who face barriers due to their impairments. The status quo remains to date. This is after 1994, when policies have been reviewed and some repealed in favour of special schools and special needs learners who experience barriers to learning. I argue that this runs parallel to the documents analysed, such as the, “White Paper 6” (DoE, 2001), which illustrated the Department’s commitment to the provision of educational opportunities to all, including learners with barriers to learning, which also committed the state to the achievement of equality and non-discrimination.

In the Guidelines for Inclusive Learning Programmes (DoE, 2005a: 35), some ideas of adapting the materials or differentiation in method of presentation are indicated as follows:

- Adapt the teaching methodology to the needs of specific learners;
- Consider the format in which the task is presented, e.g. the complexity of graphs, diagrams, tables, illustrations, or cartoons. A range of strategies can be followed to make these accessible to learners who experience barriers to learning of whatever nature, such as:
  - Picture or diagram simplified or shown differently without compromising complexity of question

- Picture or diagram replaced by written description
- Picture or diagram supplemented by written explanation
- Picture or diagram replaced with a real item or model
- Unnecessary picture removed
- Amount of information reduced
- Measurements altered
- Inherently visual material replaced with equivalent non-visual material.

#### **6.4.6 Teacher-Related Factors**

The seventh subcategory focuses on teacher-related factors. This category is characterised by the subcategories described in terms of lack of expertise on the part of the teacher. Teacher C mentioned that she did not feel confident to teach EE. The teacher mentioned her lack of expertise as one of the constraints in the teaching of EE. She admitted that although she is a qualified teacher, who majored in Biology and English, EE did not form part of Biology during her training (5.3.4.3.1). What has compounded the problem is the fact that she had never had any in-service training. These findings support the study that was conducted by Le Roux and Maila (2004) that teachers lack confidence in implementing environmental learning, due to lack of qualifications. Janse van Rensburg and Lotz (1998a), also found that teachers lacked the knowledge to teach EE and that according to them they “were just teaching in a vacuum”.

The participant who talked about the teacher-related barriers referred to issues of lack of expertise. The teacher argued that she lacked the expertise to teach EE due to a lack of a formal qualification in EE and to a lack of in-service training regarding EE (See 5.3.4.3.1). This suggests that teachers need to be presented with opportunities for professional development focused on EE so that they can develop a strong environmental education knowledge base, which is necessary for the effective teaching of EE.

#### **6.5 RESEARCH QUESTION 3: UNDERSTANDING THE PHILOSOPHY OF EE**

The next category focusses on policy-related factors. Here one teacher revealed that she lacked the skills and knowledge to adapt the mainstream curriculum needed in special schools to support the learners (See 5.3.4.3.2). They claimed that the quadriplegic or cerebral palsied learners do not benefit from EE activities, and they

are unsure of how to involve them in classroom activities. They also argued that they do not know how to assess them, because much of the work in EE is practical, it involves taking measurements and the learners are sometimes expected to present their projects in form of graphs (See 5.3.4.3.2). This suggests that teachers in special schools lack the expertise to translate the policies of inclusive education and curriculum adaptation. This highlights the issue that they need to be empowered in these areas in order to be able to cater for all learners. The next theme focused on the philosophy underpinning the current curriculum. The results showed that teachers in this study have no knowledge about the philosophy underpinning CAPS.

In this category, the teachers were asked to briefly articulate their views about the philosophy that underpinned the previous curriculum and the one that currently underpins CAPS. One teacher argued that CAPS is just the same as the previous curriculum and that there is no change in the teaching and learning styles and that the only change is in name only. She claimed that CAPS emphasises textbooks as was the case pre-1994. She went on to say that the ANC government must be realising that there was nothing wrong with the apartheid education system, which was underpinned by positivism (See 5.4). This finding is very disturbing and calls for early intervention in the form of workshops. This suggests that teachers need to be grounded in the philosophies that underpin the school curriculum.

This again highlights the plight of teachers in special schools that they lack the support from the Department of Education. The teacher indicated that she did not know how to adapt some of the lessons in the spirit of curriculum adaptation. The question is whose fault is it? Policies do not clearly articulate how the teachers should modify or adapt the mainstream curriculum for special schools. In agreement, Erradu (2011: 38-39) stated that "In order to overcome barriers to learning, the curriculum must be differentiated and the assessment standards modified to support these learners. How this must be done is not spelt out clearly in Education White Paper 6 or in the NCS or CAPS". In the Guidelines for Inclusive Learning Programmes (DoE, 2005a), as discussed earlier, it is stated that teachers should, for example, simplify the diagrams or show them differently without compromising the complexity of the question – without giving one example of how such an exercise should be done. I would think that when a curriculum changes teachers should be given as much support as possible. It is wrong to assume that teachers are always

ready to deal with curriculum changes. The teachers therefore feel despondent and helpless. According to Nel (2007), numerous documents were developed such as SIAS (DoE, 2004a) and Conceptual Operational Guidelines for the Implementation of Inclusive Education: District Support Teams (DoE, 2005c), with the notion that all teachers in South Africa would be in a position to identify learners with learning barriers as well as aiding them in any educational context. The findings of this study reveal that, although the policies are in place, the policies are not articulated in measurable outcomes and that policy implementation is not monitored in South Africa. In agreement, Lizer (2013: 25) said, "The curriculum designers in South Africa seem to be focusing mainly on the desired results of the curriculum and unmindful about the how part of its implementation". In short, this study has revealed that teachers in special schools who are supposed to be authorities when it comes to curriculum adaptation, know nothing about it (See 5.6. 1). This reveals that teachers in special schools need help in the translation of the policies on curriculum adaptation into practice.

While the teachers were concerned with policy-related matters in the above subcategory, the teachers in this category felt constrained in teaching EE due to a lack of support rendered by the district officials when it came to teaching this relatively new subject as the only workshop conducted was simply not comprehensive enough (See 5.3.4.3.4). This finding agrees with the research findings by Maila (2002) that teachers feel constrained in teaching EE due to lack of support rendered to them by those mandated to give support to teachers. If teachers are to do justice to the subjects they teach, they should be supported. Teachers' own subject knowledge and understanding in EE, as for any subject, is considered to be the key factor determining their effectiveness as EE teachers. In sum, the responses again reveal the inadequacy of workshops that take only three days to prepare the teachers, when it takes policy makers years to develop such policies.

#### **6.6 RESEARCH QUESTION 4: LEVELS OF SUPPORT**

The interviews aimed at discovering the support the teachers receive when they teach EE. The analysis of the results revealed three categories, namely: no support; the formation of clusters and curriculum adaptation.

Theme two focused on the assessment of the level of support received from the DoE with regard to EE. All the participants indicated that they did not receive any support at all. One teacher went on to say that their subject advisors lack the expertise to give support. These findings indicate that there is an urgent need for in-service training in EE for special needs classes for the teachers – a confident teacher is a happy and productive teacher and this responsibility falls under the Department of Education. Another significant point that cropped up repeatedly was that subject advisors lack the expertise to teach EE and to support teachers in special schools (See 5.5.3.2). So no matter how enabling the policy is, there is no support for teachers on how to implement strategies.

### **6.6.1 Teacher Training**

In theme one, some teachers' responses indicated that they were never trained on curriculum adaptation for children with special needs. One teacher expressed her feelings about the workshops that are conducted by the education officials as a waste of time, because according to her, the facilitators simply read the manuals which the teachers can read for themselves. One teacher also revealed that she was never trained on curriculum adaptation, because in her district they were without a subject advisor for four years (5.5.4). According to curriculum adaptation policies, all learners should have equitable access to learning opportunities. The question is, what is curriculum adaptation? According to Udvari-Solner (1992: 7), curriculum adaptation is "Any adjustment or modification in the environment, instruction or material used for learning that enhances the person's performance or allows partial participation in an activity". This definition sounds good and reads well on paper, but the reality of the matter is that there is more than meets the eye when it comes to curriculum adaptation. The teachers in special school are challenged to change the way they teach in order to accommodate every learner in their classrooms, because as stated in (DoE, 2005a: 35) one size fits all does not work. To add on that they are also expected to have the skills to identify the learners who would need lesson adaptations in certain activities as documented in the SIAS document (DoE, 2005a). Most importantly they would have to be in a position to identify the resources or assistive devices that would be needed by each individual learner to accommodate his or her educational needs.

The implication is that the DoE needs to step up and support the teachers in terms of training in curriculum adaptation and support in as far as the assistive devices are concerned. One cannot talk “curriculum adaptation” without assistive devices. To make an example, if a learner has shaky movements and has no control of his hands, the learner would need a computer that is specifically designed for his condition (not an ordinary computer), so that he is able to write or otherwise his writing would be illegible and that would increase the challenges that are encountered by the teachers in special schools and that could also frustrate the learner as he or she would not be able to write what he or she thinks on paper.

### **6.6.2 Lack of Professional Expertise by Subject Advisors**

In the first subcategory the teachers revealed that the only support they had received regarding the teaching of EE was when they were introduced to CAPS, where they were briefly told how to teach within the CAPS curriculum. The study also revealed that apart from the CAPS training which lasted only three days, they were not supplied with resources for the effective teaching of EE (See 5.5.1.1). My argument is that effective teaching of any subject depends on the availability of resources. The answer to the question asked was revealed by the response of Teacher D who claimed that the department is failing to give proper support to the teachers, especially to teachers in special schools because the officials lack knowledge of special needs education (See 5.5.1.2). To attest to the claim made by Teacher D, Teacher C claimed that when she realised that the Life Science exam papers in the EE section demanded that the learners draw graphs she reported the matter to the subject advisor, but according to the teacher, the subject advisor did not come to the school to investigate the matter in order to give support and guidance to the teacher (See 5.5.2). These findings support the study that was conducted by Du Toit (1996) during the apartheid regime regarding the special schools in South Africa. He claimed that during the apartheid period special schools were characterised by:

- A lack of trained professionals to fill posts in the field of special education and educational support; and
- Inadequately trained teachers

To delve deeper into the issue of support and resources the teachers were asked to rate the level of support they get from the DoE. The teachers again indicated that



they were not receiving any support or resources to teach EE. One teacher indicated that the reasons for the lack of support from the DoE, was because the subject advisors lack the expertise to support teachers in special schools and they know nothing about curriculum adaptation (See 5.5.3.2). This is another indication that special schools are not adequately catered for. The teachers in the special schools are supposed to go with the flow. This finding reveals once more that the status quo remains the same in special schools as was the case during the apartheid era (See 1.1).

### **6.6.3 Clusters**

Teacher E revealed that the support she got when she attended the three-day workshop was in a form of a cluster. She claimed the teachers from the same zone were grouped together to discuss ideas on how to teach EE, which in my opinion was commendable in that the teachers were given the power to own the curriculum. Additionally, Muijs (2008: 63-64) wrote: “Research has revealed that teachers who are part of clusters, experience less stress and difficulty when implementing a new curriculum. Schools particularly in disadvantaged communities benefit from the collaboration as teachers are exchanged, resources combined and leadership shared”. In short, Muijs alludes to the fact that clustering of teachers is beneficial, but the only negative thing about clustering teachers from mainstream schools and specials schools is the fact that, as the teacher put it, teachers in the mainstream are ignorant about curriculum adaptation and by implication would not be in a position to give advice on how to adapt some of the mainstream lessons to benefit a learner in a special school.

In short for curriculum adaptation to work, teachers need to be trained on teaching methods (on how to adapt lessons) and on new assessment strategies for the benefit of special learners, who need lesson adaptations or curriculum differentiation. If the teachers in special schools are not comfortable and confident to deal with what curriculum adaptation lays on their door steps, the likelihood is that they will revert to one size fits all. The results would be disastrous and painful in that the learners would fall victim. In agreement, (Glat & de Oliviera, n.d.: 6) stated that “the development of the single curriculum, without adaptations that take diversity into account, can reinforce the excluding practices, now under the form of abandon and

neglect of those students at “the back of the classroom”, and lead to the dangerous label of learning difficulties”. Since every learner is unique, with different educational needs, the lesson plans prepared by the teachers should be tailored to each learner. In addition, Adams (2000: 1) stated that “...we must avoid falling into the trap of viewing disabled students as a homogeneous group. The process of designing an 'accessible curriculum' for one disabled student will undoubtedly be different, and in some cases at total odds, with that of other individuals”. This is so because if inappropriate adaptations are used, and inappropriate measures of assessment are used for individual learners in the name of “lesson adaptation”, the learners could still be disadvantaged, and what would be the point of lesson adaptation then? This is a mammoth task faced by teachers in special schools and without the intense training of teachers in curriculum adaptation and support from the DoE in terms of assistive devices, even the most enthusiastic teachers as the participant teachers in this study, would not be able to implement curriculum adaptation successfully (See 5.6). Teachers spend years of training in teaching colleges, studying didactics (methods of teaching). In a study conducted by Molepo (2014: 26) it was found that teachers “had two or three years training at colleges and universities and they are expected to learn the new curriculum in two or three days”. Why is it so easy to assume that teachers and those teaching in special schools are always ready to implement curriculum adaptation without formal training or within few days of training?

#### **6.6.4 Workshops**

Some teachers stated that they had never attended workshops on curriculum adaptation for special need schools and some confused CAPS training with curriculum adaptation. Teacher E gave a reason for the lack of training in her district. She stated that in her district they were without a subject advisor for four full years and that without a subject advisor, support of any form or shape is difficult to obtain (See 5.5.4). This revelation should not be taken lightly in that subject advisors are the link between the teachers and the Department of Education. Another interesting point that was raised by teacher D was that to her the workshops that are conducted by the subject advisors are a waste of time, in that when the EDOs conduct such workshops they just read manuals, which the teachers can read for themselves (See 5.5.4). The implication is that the workshops conducted by the EDOs are boring and not inspiring.

This therefore suggests that after the workshops for all the teachers, a follow up workshop solely for teachers in special schools on curriculum adaptation should be a priority and should happen, otherwise the teachers will teach the way other teachers in the mainstream schools teach, which would obviously disadvantage the learners in special schools, who need lesson adaptations.

### **6.6.5 School Administration**

With regard to the administration of the school, the teachers indicated that they were restricted in terms of going on field trips due to the inefficiency of the school management to plan ahead.

### **6.6.6 Subject Advisors**

The last category was characterised by office based support for educators. The teachers revealed that they were not getting enough support from the subject advisors in that they attended a workshop which lasted only three days and that the subject advisors were mostly ignorant about what goes on in a special school (See 5.3.4.3.4). This study has revealed that a three-day workshop for a new subject or topic is insufficient, and that subject advisors need to be grounded or empowered in the field of special needs.

## **6.7 RESEARCH QUESTION 5: TEACHING AND LEARNING RESOURCES**

The sixth question was on teaching and learning resources. The results were presented in three main themes. Theme one focused on the support that is received by the teachers with regard to EE. The second one focused on their assessment of the level of support they receive from the DoE with regard to EE. The last focused on how they teach and adapt some lessons to cater for those who are severely physically challenged or for those learners who might need lesson adaptations.

In theme one, the teachers' responses to the support they receive revealed that they received training on CAPS only and that they had never received any resources for teaching EE. Their responses could be divided into three categories: no support, inflexible forms of assessment and cluster formation. These categories were further divided into the following subcategories: CAPS training only; lack of special needs background; undifferentiated forms of assessment and grouping of teachers in

clusters (See figure 5.6). The results indicated that teachers were trained in CAPS, but they all agreed that they were never supplied with resources for the effective teaching of EE (See 5.5.1.1). In the second subcategory, the teachers revealed that the lack of support in their schools is due to the fact that subject supervisors lack the special needs education background to render the support needed by teachers in special schools (See 5.5.1.2). They also indicated that the forms of assessment that are employed by the external examiners are rigid in that learners who suffer from quadriplegia and those who are cerebral palsied, are not thought of when final exams are set, in that they are compelled to handle questions that require fine motor skills (See 5.5.1.3). These findings suggest that subject advisors need to be trained in special needs education; that curriculum developers in collaboration with those who set final examination question papers should revisit the way they assess learners and that teachers require some form of training regarding different forms of assessment that will cater for every learner. The findings also revealed that mainstream teachers were grouped with teachers from special schools in the workshops, and the topic of curriculum adaptation to discuss strategies on how to teach EE was not covered (See 5.5.3.1). My view is that the collaboration between special and mainstream school educators is a good idea, because teachers get to share ideas, for an instance, on how to tackle certain topics and how best to assess some of the tasks. However, having said that, such a collaboration has its down side too, in that it impacts negatively on the teachers from special schools in that they gain nothing from their colleagues in terms of how to teach and adapt certain lessons for their special learners. In agreement, Schoeman (1997: 3) stated that “mainstream educators are rarely equipped, skilled or qualified to deal with the diversity of learners who are experiencing barriers to learning”.

## **6.8 RESEARCH QUESTION 6: TEACHING STRATEGIES**

Theme three focused on how teachers teach EE and how they adapt some lessons. The results showed that the teachers use mainly repetition; practical examples; pictures; fieldwork and content summaries (See 5.6). This suggests that teachers in this study teach *about* and *in* the environment but not *for* the environment, which is ideal in order to reach the goals set for environmental education. The implication is that teachers are not comfortable or skilled to teach controversial issues (See 3.5.3). My argument is that if teachers are not empowered to teach *for* the environment,

teachers will automatically avoid teaching for the environment. The results would be very disastrous for the environment and the world at large, and in-fact would be a waste of time, in that schools would still continue to produce learners who are not able to avoid environmental problems and who are also not capable to come up with practical solutions to the existing environmental problems, a concern which was raised by Orr (2004). This finding suggest that the DoE needs to conduct workshops on how to teach EE in order for the teachers to realise the goals of EE. EE is no longer about imparting knowledge and getting first-hand experience in the field only, but requires that teachers teach for the environment as well.

In theme two, the participants could not share with the researcher how they adapt lessons as was demonstrated in workshops conducted by the DoE as they had never been trained in this aspect (See 5.6.1).

### **6.8.1 Curriculum Adaptation**

All the participants in this study indicated they tried to employ innovative teaching styles when they taught EE, such as fieldwork, practical, pictures and content summaries. According to the observations made, I agree with the teachers that they try to do fieldwork but my analysis was that they only teach *about* and *in* the environment, they do not teach *for* the environment (See 5.7; 5.8). According to Dorian (1990), Gayford (1987), and Thomas (2005)), teaching *for* the environment has received least coverage in the schools due to the fact that teachers feel less confident in handling controversial issues and that some may even lack the skills to debate such controversial issues.

The teachers were asked to demonstrate how they adapt some lessons in EE to cater for the learners who experience barriers in learning due to their physical disability. This question was asked, because it was assumed that teachers in special schools know how to adapt the mainstream curriculum for special needs learners, but the findings indicated that this assumption was wrong.

Some responses clearly revealed that teachers were never supported or workshopped on curriculum adaptation. Teacher C thought taking learners to Game Parks was curriculum adaptation. Another interesting answer was from Teacher E, who said that she avoids adapting the lessons for fear of lowering the standard of

education. Ryan (2000: 4), on the other hand disagrees with Teacher E; he argued that curriculum adaptation “is not about lowering standards or doing more. It is about doing things differently”. Teacher E also indicated that they try to adapt the lessons in the lower grades, but not in grade 12. She said adapting lessons in grade 12 would be a futile exercise, because at the end of the day, when learners sit for matric exams, the questions are not adapted for them or differentiated as was proposed in the documents such as Guidelines for Inclusive Learning Programmes (DoE, 2005a). According to her, adapting the assessment during the year would disadvantage the learners, for they would not be assessed differently according to their disability during the final exams (See 5.6.1). This is a conundrum in that as much as the teachers need the policy documents to give clarity on what should happen in schools, the very same policy documents constrain the teachers. For example, the teacher wants to adapt her teaching and assessment approaches when dealing with learners who in this case cannot draw, but is unable to do so, because the policies are not clear as to how they should support the learners. This also points to that matric examinations need to be adapted for special needs learners.

The inability of educators to adapt the curriculum for special needs learners is worrisome, because teachers in special schools should be able to translate policies on Inclusive Education and Curriculum Adaptation (See 1.1.3) as they deal with special learners who require different teaching styles and different modes of assessment.

The above finding confirms the realist theory (Archer, 1985) that the structures in our societies influence the agency, in that the individuals take decisions in response to the structures that exist within their societies. The teacher’s decision not to adapt the curriculum was a response to the DoE which was and still using the one-size-fits-all approach when setting final examinations. This study has pointed to the fact that examiners need to work in collaboration with teachers in special schools to avoid setting examination questions that would disadvantage the learners.

## **6.9 CHAPTER SUMMARY**

In this chapter, I have reflected on the data presented in chapter 5 in more depth. I discussed the challenges that are met by teachers in special schools when they teach EE, which requires learning by doing. I also discussed the role that is played

by the DoE with regards to the support and resources rendered to teachers for the effective teaching of EE. In the next chapter I summarise the study and make recommendations for further research pertaining the teaching of EE in special schools.

## **CHAPTER 7**

### **CONCLUSION AND RECOMMENDATIONS**

#### **7.1 INTRODUCTION**

This chapter concludes the research with a discussion on the study, followed by recommendations and limitations from the analysis and findings.

In tandem with the introduction of inclusive education, changes in curriculum also took place. EE was introduced as a theme that runs across school subjects. This study was undertaken to investigate the challenges experienced by Grade 10 teachers, who teach Life Sciences, which has EE topics integrated into it, in selected special schools in South Africa. The research objectives were:

- determine the understanding of teachers of environmental education and their opinions about the inclusion of environmental education in the curriculum;
- investigate the challenges experienced by teachers in implementing environmental education in special schools in South Africa;
- investigate the support provided to teachers to teach environmental education;
- establish what learning and teaching resources are needed and supplied in order to implement environmental education at special schools in South Africa;
- explore the teaching strategies employed by teachers teaching and assessing environmental education in special schools in South Africa.

This chapter provides the conclusions and recommendations.

#### **7.2 THE RESEARCH PHILOSOPHY**

The purpose of phenomenology is to “capture the richness of experience, the fullness of all the ways in which a person experiences and describes the phenomenon of interest” (Marton & Booth, 1997: 117). It is a pragmatic approach in that it explores a particular phenomenon of the world and “looks at human conduct and practice that seeks to account for lived experience” (Van Manen, 1990: 25). This thesis examined the ways in which special-needs teachers experience the teaching of environmental education, with the richness of their experiences being captured in the analysis of the interviews that were held with them. In addition, their “conduct



and practice” was examined as they shared their background and qualifications, as well as how they taught the subject of EE. This was confirmed by the use of observations which supported the teachers’ voiced opinions. The thesis has given these teachers a voice by which their experience is made manifest and will hopefully be considered by the DoE.

This was further enhanced by the use of the four case studies which described the schools at which the teachers were based, providing the necessary context for the phenomenon of environmental education at special-needs schools to be examined. The case studies added the element of realism to the study, and contributed to the trustworthiness of the results.

## **7.3 CONCLUSIONS**

This section draws conclusions from the study on the teachers’ readiness to teach EE in terms of qualifications and training and whether they are equipped to adapt the mainstream education to cater for the learners who might have barriers to learning. The teaching strategies of EE are also discussed. Last but not least, conclusions on the role of subject advisors and the DoE in special schools are provided.

### **7.3.1 Teacher Preparedness**

#### **7.3.1.1 Qualifications**

With regard to teachers, this study found that teachers in special need schools generally lack the relevant qualifications to be able teach EE. The results found in this study are in line with the findings of studies by Kimaryo (2011) and Hendricks (2008). This finding is not something to be taken lightly. The subject knowledge of the educator is a significant factor throughout the learning process. A teacher should know and understand what she is supposed to teach in order to support the learners. In South Africa, according to the White Paper on Education and Training (DoE, 1995), the goals of EE are described as creating environmentally literate and active citizens. I therefore argue that for teachers to realise the goals of EE, they should have a profound knowledge of EE and must be able to teach *about, in, and for* the environment to reach the goals of environmental education. CAPS puts emphasis on depth and content knowledge, which therefore compels teachers to have profound pedagogical knowledge and content knowledge (DoE, 2002b).

The results highlighted the fact that most teachers who studied Biology (which is now referred to as Life Sciences) pre-1994 have no qualifications in EE and that a lack of training and in-service training has compounded the problem which could have been avoided had the teachers been afforded the chance to upgrade themselves. Teachers need to understand what they teach and that the quality of teaching has to start with good subject knowledge in order to support the learners in their quest to construct knowledge. There is no denying that teaching is an art and that it can only be refined, for example, by in-service training and by on-going workshops. This study has also revealed that the content, duration and efficacy of the workshops need to be revisited.

Furthermore, teachers assume that increasing knowledge about the environment would eventually develop in the learners, new forms of understanding and managing the environmental problems. However, this top-down behaviourist approach to learning does not necessarily lead to agency (decision-making action) by the learners on the ground (Florian, 2013). In addition, teachers do not have a holistic view of the environment; they only consider the bio-physical aspect of the environment and they do not know the differences between environmental education and nature study or nature conservation. The implication of this finding is that teachers should be encouraged or empowered to apply all the three dimensions or approaches: education *about*, *in*, and *for* the environment, in order to reach the goal of environmental education, which is to produce environmentally literate citizens (Kimaryo, 2011).

#### 7.3.1.2 The philosophy underpinning CAPS

A key problem is that teachers do not understand the philosophy that underpins CAPS curriculum. Before I discuss the conclusions, I would like to define the following concepts, namely, educational philosophy and theories of learning. I also share my views as to why teachers should care about the theories and philosophies of education. I also illustrate in a table the differences between positivism and constructivism before discussing my concerns with the findings of this study regarding teachers' knowledge of educational philosophies and theories of learning.

What is educational philosophy? According to Lewis (2015: n. p.), “educational philosophy represents answers to the questions about the purpose of schooling, a teacher’s role, what should be taught and by what methods”.

The question that needs to be asked is: Why should teachers and educators care to know about the theories and philosophies that underpin the school curricula? Is knowledge of the school subjects they are teaching not enough? The answer to the question is a resounding **no**, subject knowledge only is not enough, because teaching is praxis and therefore behind every school and every teacher there is a set of related beliefs – the philosophy and theory of learning that influences what and how students are taught. Pre-1994 the philosophy of learning in South Africa was informed by positivism which views knowledge, the role of the teacher in the classroom, the role of the learners in the classroom and assessment differently from constructivism which underpins the current curriculum-CAPS. The key differences, for the purposes of this thesis, are illustrated below in Table 7.1.

Table 7.1: The differences between positivism and constructivism

	POSITIVISM	CONSTRUCTIVISM
View of knowledge	Is seen as inert.	Knowledge is seen as dynamic, ever-changing with experience.
Role of teacher	<ul style="list-style-type: none"> <li>Teacher disseminates information to students: students are recipients of knowledge.</li> <li>Teacher’s role is directive, rooted in authority.</li> </ul>	<ul style="list-style-type: none"> <li>Teachers have dialogue with students, helping students to construct their own knowledge.</li> <li>Teacher’s role is interactive and rooted in negotiations.</li> </ul>
Role of the learner		
Assessment	Assessment is through testing, correct answers	Assessments include students work, observations, and point of view as well as tests.
Learning	Learning is based on repetition.	Learning is interactive,

		building on what the learner already knows.
Materials	Materials are primary books and workbooks.	Materials include primary sources of materials and manipulative materials.

Source: (adapted from Sabarish 2014).

Judging from the juxtaposition of the above philosophies, one can clearly see that social constructivism is learner-centred and that positivism is teacher-centred. According to Elkind (2005), constructivism is the better philosophy.

I argue that if teachers do not have the knowledge of the philosophies that underpin school curricula as was revealed in this study, they would fall into a trap of teaching the way they were taught. Their methods of teaching and assessment would not change.

The findings clearly indicate that teachers are confused, and the confusion stems from the constant changes in the curriculum. With all the changes in the curriculum in a very short space of time, it seems that the underlying philosophies have not been imparted to teachers in order for them to understand the necessity for change. Elkind (2005) claims that for the successful implementation of constructivism as a theory of learning, three types of readiness are needed, namely:

- Teacher readiness;
- Curricular readiness; and
- Societal readiness.

This finding illustrates clearly that teachers need to be helped to acquire the necessary information regarding the differences that exist between positivism and social constructivism.

### 7.3.1.3 Curriculum adaptation

Teachers are unable to adapt or differentiate the lessons to cater for learners who experience barriers to learning. A contributory factor here is that, even though teachers in special schools are expected to go the extra mile by adapting the mainstream curriculum, they are treated the same way as teachers in the

mainstream. There is no extra support as documented in 5.5.3.1 given to them as people who face added challenges by first understanding the new curriculum and thereafter being able to adapt it for learners in special schools. They are just thrown in the abyss.

The findings suggest that the teachers in special schools need to be trained in curriculum adaptation to cater for learners with special needs. The teachers need to know that curriculum adaptation is not synonymous with lowering of standards. The findings also reveal that learners in special schools have to fit into the mainstream education, because teachers indicated that they do not want to adapt their lessons because that would be a futile exercise since the final exams are not adapted to cater for all learners. This points to the need for examinations to be adapted to accommodate learners with special needs. This is a conundrum in that the teacher as an agent of change feels constrained and is an issue that requires urgent redress by the DoE.

#### 7.3.1.4 Teaching strategies of EE

This study has revealed (See 5.3.4.2) that teachers are reluctant to conduct fieldwork activities when they teach EE, which is very significant when it comes to the teaching of EE, since EE involves most of the time outdoor activities. This is so, because they are not aware of models of disabilities such as social and medical models of dealing with disabilities and their implications. The knowledge of these models is crucial, and Healey, *et al.* (2001) claim that such knowledge can help teachers to examine their approach to supporting disabled learners on the field trips. It is, therefore, of utmost importance for teachers as agents of change in society to know the difference between the two models. One's perception of things affects the way one views and reacts to circumstances in general. The same principle applies to teaching. The way teachers perceive learning, would affect the way they engage with the learner in class. If teachers embrace the social model of disability, they would endeavour to remove the barriers that limit the learners' movements instead of avoiding them.

The implications are:

- Learners with impairments are not necessarily sick and subjects of pity, but the barriers to the participation in mainstream activities need to be identified and removed. Healey, *et al.* (2001) clarified this point by giving an example of a person who has lost a leg. They claimed that a person who has lost a limb is not sick, but is disabled in relation to certain activities such as driving a car, which means that there is no need for medical intervention, but what the person needs is a car that is adapted.
- Another implication of the social model is that the concern is less with what medical diagnosis is attached to the disability and more with what they are functionally able to do, and what support they need to overcome any barrier faced.

If teachers had knowledge of the social model of disability and were familiar with documents such as SIAS, they would be in a better position to identify the barriers and would be better equipped to address the learning barriers that the learners face. The availability of caregivers to support the learners would alleviate many of these problems. The result would be beneficial to the learners in that they would not have to, for example, starve themselves on the day of fieldwork in order to avoid toilet problems, as was revealed in the interviews by the teachers, if the learners felt confident that their teachers have what it takes to give the support that is needed during the fieldwork activities.

### **7.3.2 Role of Subject Advisors in Special Needs Education**

There is lack of trained subject advisors to fill in posts in the field of special needs education within DoE, exacerbated by a lack of communication between subject advisors and the teachers in special schools. They are responsible for conducting workshops which are problematic in two ways: they are conducted by poorly-trained facilitators who are not necessarily subject-matter experts and they take place after hours. A third problem is the relevance of the workshops to EE especially with regard to special needs education. This finding suggests that teachers need to be compensated for their time, either in terms of certificates or some other reward mechanisms that will lead to the increment in their salaries, otherwise teachers will continue to have negative attitudes towards the workshops conducted by the Department of Education.

### 7.3.3 Role of the DoE in Special Needs Education

#### 7.3.3.1 Policy implementation and monitoring

With regard to the DoE, this study revealed that it fails to monitor the implementation of policies in relation to special needs education. The big question is: why are educational policies not being implemented as they should be? Why is the education department failing to remove the barriers that affect the learners with impairments? One logical explanation is that there is a gap that exists between the policy makers and policy implementers. From this finding, I conclude that:

- There is little communication between the policy makers and those who are supposed to implement those policies;
- There is a lack of monitoring of the implementation;
- The education officials and curriculum planners are not aware of the social model of disability;
- Most of the curriculum planners and examiners have never had dealings with special needs learners, hence the special needs learners are often neglected or forced to fit into the mainstream curriculum.

This is worrisome in that while impairments may result in restriction and limitations in education processes, which could limit the learners' activities when it comes to environmental education activities, what really are disabling are the discriminatory attitudes resulting in the deprivation of equal opportunities for all learners to succeed. Learners with impairments do not want the easy way out, but want the support and alternative ways to overcome their learning barriers. Interestingly enough, in *White Paper 6: Conceptual and Operational Guidelines for Full Service Schools* (DoE, 2005: 35), it is written that

Many educators still tend to think that it is correct to use the 'one-size-fits-all' approach to teaching. In reality, all educators are faced with a group of learners of which each and every one has his/her unique character, interests, style and pace of learning and working. 'One-size' does not really fit all. Curriculum differentiation should not be an exception, but rather a central method of ensuring curriculum access.

### 7.3.3.2 The “one-size-fits-all” approach

The DoE still uses the one-size-fits-all approach when final examinations are set. It is imperative that teachers for special needs learners should do things differently and they should differentiate or adapt their teaching approaches for the benefit of the learners who experience barriers to learning. However, the question that follows is, what good will it do, if the teachers apply differentiated teaching approaches as indicated above, when the examiners do the exact opposite of what has been documented in the guidelines; and still use the one-size-fits all approach, when setting examinations? My point is that, the question on 4.2.2 of insert A, in chapter 1, could have been asked differently to cater for those learners who cannot draw, as is indicated below; for example, the examiner could draw the graph and then ask the learners to illustrate or identify features or interpret it, as illustrated in Figure 7.1, instead of instructing the cerebral palsied learner to draw. That is inconsiderate of the examiners and such ignorance should not be tolerated in this day and age, where policies on curriculum adaptation have been designed to cater for all. The question papers for mainstream and special schools should be the same, but should adapt certain questions to afford learners who cannot draw the same opportunities to experience success as abled-bodied learners. One may argue that this goes against inclusive education, in that instead of integrating the learners we are segregating them, but this is not the case, as it is all about equal opportunities and acknowledging individual differences.

Figure 1.2, question 4.2.2 read as follows:  
“Plot the data in the table as bar graphs on the same system of axes”.

**Adapted question:**

4.2.2 If you were to plot the information in the table on a graph, how would the x- and y-axes be labelled?

4.2.3 How many bars would you need to use if you were drawing a graph of this information?

4.2.3 Which of the following graphs would best represent the information in the table? (and then a choice of graphs could be displayed).

And so on.

Figure 7.1: An example of an adapted question for learners who are cerebral-palsied and who cannot draw



Until we begin to take deliberate steps to bring about the changes in the way we deal with our learners who experience barriers to learning, change will never happen and this is sad, because as Mbeki (1997: 1) once said:

Among the yardsticks by which we measure a society's respect for human rights, to evaluate the level of its maturity and its generosity of spirit, is by looking at the status that it accords to those members of society who are most vulnerable, disabled people, the senior citizens and its children.

#### 7.3.3.3 Lack of resources

The DoE does not supply the schools with sufficient resources to teach EE (5.5.1.1.). For effective teaching of any subject, resources are a necessity. If teachers are to teach EE well, they need to be well equipped and therefore need to be supported with resources or be taught how to create their own resources.

I argue that the attitude towards the special schools in South Africa has not changed even in the post-1994 era. If the status quo remains the same and teachers are not given proper support, such as on-going workshops and resources to teach EE, teachers will revert to their old ways of teaching, using a teacher-tell method. The CAPS curriculum which is based on social constructivism does not promote this method, but advocates learning by doing, which in turn advocates action by both learners and teachers. As has been alluded to before, "action" is the operative word in EE and no action can take place without proper support and relevant physical resources.

#### 7.3.3.4 Lack of qualifications of support staff

The DoE employs personnel that do not have the expertise to give support to teachers in special schools (5.5.1.2). This finding reveals that there are subject advisors who do not have the background knowledge of special needs education and who therefore are not in the position to assist the educators with curriculum adaptation.

From these findings, it is clear that urgent action needs to be taken, both by the Department of Education and the teachers themselves. Teachers need to understand and be able to deal with the range of diversity they encounter in the

special needs classroom if they are to teach EE across the curriculum effectively (DoE, 2005a: 35). The Department of Education in turn needs to acknowledge that although their policies are good, the implementation thereof is flawed due to a lack of support and instruction to the teachers concerned (DoE, 2005a: 35).

### **7.3.4 Conclusions on Other Findings**

One emergent issue was that porters (assistants) are needed in special schools to give assistance to learners especially when they are doing fieldwork activities, and more caregivers should also be employed. This indicates that additional resources should be allocated to special schools by the DoE in order to provide for the required personnel.

The inclusion of EE aspects into subjects such as Life Sciences should not be seen just as an 'add on' subject, made to make the lives of teachers more difficult, but will enable learners to gain knowledge about the environment and knowledge of the different environmental ecosystems that would lead to the development of positive attitudes, which would encourage positive action towards the environment. The inclusion of EE aspects could lead to job opportunities long after the learners have left school.

## **7.4 RECOMMENDATIONS**

In view of the above conclusions, it is recommended that:

- Teachers should be well equipped to teach EE effectively to learners who experience barriers to learning. Training for teachers should be twofold: to cover the teachers who are already in the field and those who are still studying to become teachers. The teachers who are already in the field should be given adequate workshops and in-service training that should be on-going. Teacher education should ensure that EE runs across all the major subjects of the student teachers. Also curriculum adaptation should be included in their majors. In other words, no student teacher should graduate without the knowledge of EE and how to adapt lessons. This is so because whether the student teachers are employed in special schools or in the mainstream, they are still going to be expected to adapt the curriculum, because the ideal of inclusive education in the mainstream

schools is that a teacher must be well-equipped to meet the varying needs of learners.

- Teachers both in the mainstream and in special schools should be schooled in the models of dealing with disability such as the medical and social models of disability. Such knowledge would change their attitudes or the perceptions they might have about the impairments of the learners.
- The Department of Education should ensure that certain parts of the policies on special needs education are re-written, to give clarity on issues such as curriculum adaptation. The section on curriculum adaptation in the Guidelines for Inclusive Programmes does not clearly state how work requiring drawings or fieldwork which includes gathering samples, for instance, should be simplified or changed. Teachers need to know exactly of what is expected of them. Teaching is a policy-driven activity; if the instructions in the policies are not well articulated or well-described the teachers will resist and reject such policies. Such a reaction can be detrimental to the learners who experience barriers to learning.
- Office-based educators be adequately trained. Most of the office-based educators had never received formal training in EE as is the case with their colleagues who are school-based. Curriculum adaptation does not form part of their training. I therefore strongly recommend that if they are expected to be of service to their colleagues in schools, they need to be the authorities in their departments, otherwise how are they going to render the services needed by teachers if they have no capacity to do so? Office based educators are the link between the teachers and the DoE, which means therefore that for them to clearly articulate the goals of the DoE, they should be well-trained.
- The DoE should employ people with special needs education background to head the special needs division or that the current heads of the department or section be trained so that they are well-equipped to run the division.
- Resources should also be budgeted for, for effective teaching of EE. EE requires learning by doing. As has been argued before, a learner cannot learn how to ride a bicycle without a bicycle. Alternatively, teachers should be encouraged or rather trained on how to make use of the environment as a resource, or be skilled on how to improvise resources.

- When the final examinations are set by the DoE, teachers from special schools should be invited to provide their input, so as to ensure that questions are suitable adapted for learners who experience barriers to learning.
- Teachers should attend courses or training on the philosophy that underpins CAPS curriculum to give guidance to teachers. This is the most significant aspect because the philosophies of education indicate the role of schools in society and how schools, teaching and learning should occur. If teachers do not know what is expected of them they would miss the goals of the curriculum and teach the way they deem fit.
- The DoE should employ more personnel in special schools such as porters and care-givers to assist the learners especially when they are in the field, for fieldwork activities. Teachers in special schools need to be assisted to deal with learners who need high levels of support. As has been revealed in this study, some learners have health problems that accompany their impairments, and therefore need to be supported more than others. Teachers cannot deal with everything as they have to concentrate on teaching.
- Urgent action needs to be taken by the Department of Education to improve teacher training. Teachers need to understand and be able to deal with the range of diversity they encounter in the special needs classroom if they are to teach EE across the curriculum effectively.
- The Department of Education needs to acknowledge that although their policies are good, the implementation of them is flawed due to a lack of support and instruction to the teachers concerned. Perhaps, in acknowledging the problem, the first steps could be taken to effective implementation and monitoring.

## **7.5 CONTRIBUTIONS TO THE BODY OF KNOWLEDGE**

- This study highlights the contradiction between the goals of special education policies as they were originally intended to meet the individual learning needs of learners with special needs and to give support to teachers in special schools with actual implementation.
- This study confirms the realism theory (Archer, 1985) that structure influences agency. In support of her argument, Aston (2012: 4) wrote that “individuals are believed not to be atomised but acting as a result and through the constraints and

structures in which they exist. Behaviour is then not a result of free will but a product of structural factors". In this study, it was revealed that failure by the teachers to adapt the curriculum was a direct response to the DoE which does not differentiate or adapt the curriculum.

- The study also highlights the importance of literature review when conducting research. Had I not conducted literature search, I would not have discovered that there are two schools of thoughts within the phenomenological research approach, which was used in this study to analyse the data collected from the interviews. The literature research revealed that the phenomenologists differ when it comes to bracketing. There are those who follow Husserl (who believes in bracketing) and those who are the followers of Heidegger, who does not think bracketing is feasible.
- In this study it is also pointed out that teachers' views about the environment are very superficial and that they confuse environmental education with nature studies or nature conservation, which impacts the way they teach.
- This research has highlighted that teachers in special school do not know how to adapt curriculum as they are expected to.
- Lastly the study has helped to introduce the models of disability, namely: the medical model of disability and the social model of disability.

## **7.6 LIMITATIONS**

Case studies are limited in that their results are not generalisable to population as a whole; they can only be applied to the individual cases under study.

## **7.7 RECOMMENDATIONS FOR FUTURE RESEARCH**

The study I conducted concentrated on a small segment of learners with special needs, the physically impaired. Due to time limit to research study, other segments such as learners who are hard of hearing, the visually impaired have not been covered in this study. I therefore recommend that

- More research on other segments of learners with disabilities be conducted in order to close the gap that exists between mainstream schools and special schools, and to give adequate professional support to teachers in special schools.

- Longitudinal studies could be conducted to measure the competencies of the subject advisors with regards to special needs education.
- Longitudinal studies could be conducted to measure teacher competencies regarding curriculum adaptation.
- Descriptive research could be conducted into general educators' attitude towards curriculum adaptation.
- An exploratory study could be conducted on how to enhance teachers' pedagogical and content knowledge regarding EE through in-service and preservice training.
- Survey studies could be conducted on teachers' knowledge and perceptions about constructivism that underpins CAPS curriculum.

## **7.8 REFLECTIONS**

- The aim of this study was to investigate the challenges of teaching EE to the physically impaired and the study has revealed that, despite promises and policies to strengthen and support special schools, implementation is almost non-existent. Teachers in special schools still experience challenges in their teaching profession. The status quo of the special schools remains the same as was pre-1994.
- When I started my study, I set out to use descriptive phenomenology advocated by Husserl, but the steps I initially used to analyse data were provided by Van Manen who is a follower of Heidegger, who it turns out does not believe in bracketing as Husserl does. According to Husserl (2013) Van Manen thinks that bracketing maybe a difficult thing to do for the researcher simply because interpretations of the data always incorporates the assumptions that the researcher brings to the topic. I almost fell into the trap of mixing ideologies. However, due to the literature review, I managed to identify and rectify my mistake timeously.
- In my study as I was conducting literature review, I came across constant references to the term "policy gap". Many studies have reported repeatedly that there is a policy gap between the policy makers and policy implementers. The evidence to my claim can be found in Kallaway (1998) and Jansen and Christie (1999). I have also mentioned policy gap in this study and without discussing the

causes of this policy gap between the policy developers and the policy implementers, I just want to know, what will it take to close the gap that is continuously victimising the people with impairments? By not supporting teachers in special schools, we are sending a message that learners with special needs must either fit into the mainstream curriculum or drop out of school. My opinion is that we have come to accept the structures that we have built in our society as normal. We need to realise that the structures in our society that render us inconsiderate, are man-made and therefore they can be challenged and the sooner we take deliberate efforts to remove them, the better for all.

- The truth about special schools is that they are part of the schooling system and that disability is real and it knows no boundaries. Unless we claim back that which makes us human beings (*Ubuntu*) and take conscious decisions to dissolve the structures in our society that separate people from one another, we lose our humanity.

“It takes an open minded individual to look beyond a disability, and see, that ability has so much more to offer, than the limitations society tries to place upon them” (Hensel, 2015, n. p.).

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## **APPENDIX 1: INTERVIEW GUIDE**

### **Section 1: Personal background and experiences.**

- Please tell me about yourself, your educational background and work experience. (What educational qualifications and number of years teaching in a special school, what subject/subjects are you teaching.)
- How did you come to work in a special school? Did you want to teach in a special school or it happened that a vacant post was in a special school?
- Do you have any special training within this field? If so what?
- Have you had training in Curriculum Adaptation?
- Do you have Environmental Education qualifications? If so, what?

### **Section 2: Teaching and learning**

Post 1994, there were many educational changes. One of those changes was the introduction of Outcomes Based Education (OBE), which demanded that teachers change the way they teach and learners were expected to change the way they learn. The teachers were required to be the scaffolds and were discouraged from being the gate keepers of all knowledge. The learners were expected to discover knowledge on their own with little intervention from the teachers.

- Could you please describe to me your first reaction when you were faced with such a challenge?
- Please share with me the difficulties you had to go through with regards to the new paradigm shift.
- Have your teaching methods changed since the introduction of OBE. If so how and why? If not, what is causing the resistance?
- In the current Curriculum and Assessment Policy Statements (CAPS), Environmental Education like it was in OBE is introduced as a topic in subjects like Life Sciences. When you first realised that you had to teach an additional topic/subject called, Environmental Education, please describe in detail how you felt.

- Could you please give me your views about the inclusion of EE in Life Sciences? Do you think it is just an add-on subject made to increase the load of the teachers or do you think it has a value in education processes?
- Describe to me the differences between the Nature Study or Nature Conservation that was taught in the South African Schools pre 1994 and the EE that is included across the curriculum currently.
- Describe to me the challenges and the experience/s you have encountered in teaching environmental education to your special learners.
- For interest's sake. Please share your views about the philosophy that underpinned the previous curriculum (Positivism- which was teacher centred) and the one that is currently underpinning CAPS (Social Constructivism – which is learner centred).

### **Section 3: Teaching and Learning Resources**

One of the major changes in education post 1994 was the change in attitudes towards the special schools. The government of South Africa committed itself to take the education of special learners very seriously. Teachers in special schools were also promised total support when it comes to teaching and learning.

- Tell me about the support you receive from the department of education in as far as the teaching of the new subject EE is concerned.
- In your own assessment do you think you are getting enough support and resources to teach EE?
- Could you please describe to me how you teach EE and how you adapt some of the lessons to cater for the learners who are experiencing barriers to learning

### **Section 4: Workshops**

- Explain to me how you feel about the workshops that are conducted by the Department of Education, especially when it comes to curriculum adaptation of a new subject like Environmental Education?
- Describe how to adapt at least one lesson in EE as was described in one of the workshops you had attended on “Curriculum Adaptation’.

## **APPENDIX 2: CLASSROOM OBSERVATION GUIDE**

### **Section 1: Pre-observation questions**

1. Briefly, what will be happening in the class I will observe?
2. What is your goal for the class? What do you hope students will gain from this session?
3. What do you expect students to be doing in class to reach stated goals?
4. What can I expect you to be doing in class? What role will you take? What teaching methods will you use?
5. What have students been asked to do to prepare for this class?
6. What was done in earlier classes to lead up to this one?
7. Will this class be generally typical of your teaching? If not, what will be different?
8. Is there anything in particular that you would like me to focus on during this class?
9. Are there learners in your class that need special devices to assist them to learn or to experience success in class?
10. Are you going to make curriculum adaptations in the lessons I will be observing. If yes, what would you do and why?
11. Is there anything that you would like to add?

### **Section 2: Classroom Observation Guide**

1. How many learners in the classroom (overall number, boys and girls, their racial groups, etc.)?
2. How many learners have severe physical challenges and need special attention and devices?
3. How do the sitting arrangements of the learners look like? If in groups, how are they formed and how many learners in each group?
  - What relationship exists between classroom arrangements (number of learners, sitting arrangements (race, gender)) and the teaching and learning of EE?

- How are the relationships between the teacher and learners and between learners themselves during the teaching and learning (e.g., teacher pupil interactions, pupil to pupil interactions: giving explanations, asking learners for points of view, responding to learners' questions or teachers' questions or carrying out classroom tasks)?
  - Where do the interactions begin (e.g., from the teacher to a group of learners or from a group of learners to the teacher)?
4. How many teaching / learning resources / materials are there in the classroom (pictures, posters, learners' written activities on the walls, textbooks (where are they placed? Author(s), titles and publishers of any text used)?
- What kinds of resources did the teacher use and how were they used during the teaching and learning?
5. How does the teacher introduce the EE topic?
- Does the teacher explain the objectives of the lesson?
  - Do the objectives of the lesson correspond with the instructional content and how?
6. What kinds of instructional strategies are used for the teaching and learning of EE (e.g., field work, visual learning, hands-on learning, collaborative learning, peer tutoring, etc.)?
- In what way are learners exposed to the teaching / learning of EE
  - How are learners involved in the EE activities?
  - What are learners involved in and for how long?
  - How are learners' viewpoints treated? Give example
  - What is the role of the teacher in the discussion (e.g., interacting, supervising or uninvolved)?
  - What are learners encouraged to do and not to do?
  - Are learners provided with opportunities to interact with the learning resources and how?
  - Are there times during the lesson when a considerable number of learners seem to be uninvolved or engaged in something else not connected to the classroom task(s)? What are they involved in?

### **Section 3: Post-observation interview**

1. How do you feel about the lesson? Why?
  - Have you achieved what you expected to?
  - Did anything go in a different way than what you expected to?
2. Was this lesson typical of what you have been doing in EE? If yes, how? If not, how and why. Give me another example of a lesson you did recently that looked similar or different to the one I have just observed.
3. How did you select the activities, explanations and examples that you used in the lesson?
  - Where did these activities, explanations and examples come from? (listen: workshops, textbooks, meetings etc.)
  - Why did you decide to do this?
4. Where did you get the teaching / learning materials (e.g., textbooks, charts, posters) that you were using?
  - Why did you choose to employ or use them?
5. How did the materials help you to accomplish what you anticipated to?
6. Is there anything else that you would like to share with me?

## APPENDIX 3: ETHICS CLEARANCE CERTIFICATE



This is to certify that the application for ethical clearance submitted by

### **Research Ethics Clearance Certificate**

**Zwelibanzi, CM [49083627]**

for a D Ed study entitled

**D Ed**

**An investigation into issues and challenges in implementing  
Environmental Education in special schools in South Africa**

has met the ethical requirements as specified by the University of South Africa  
College of Education Research Ethics Committee. This certificate is valid for two  
years from the date of issue.



Prof CS le Roux

19 September 2013

CEDU REC (Chairperson)

[lrouxcs@unisa.ac.za](mailto:lrouxcs@unisa.ac.za)

Reference number: 2013 Aug/49083627/CSLR

1

## APPENDIX 4: LETTER OF PERMISSION FROM THE DEPARTMENT OF EDUCATION



No. 1762 P. 1

STRATEGIC PLANNING POLICY RESEARCH AND SECRETARIAT SERVICES  
Steve Vukile Tshwete Complex • Zone 6 • Zwelitsha • Eastern Cape  
Private Bag X0032 • Bhisho • 5605 • REPUBLIC OF SOUTH AFRICA  
Tel: +27 (0)43 702 7428 • Fax: +27 (0)43 702 7427 • Website: [www.ecdoe.gov.za](http://www.ecdoe.gov.za)

Enquiries: Dr Heckroodt

Email: [bernetia@iafrica.com](mailto:bernetia@iafrica.com)

04 July 2013

Mrs. Carol Mathapelo Zwelibanzi  
15 Elf Road  
Beacon Bay  
**EAST LONDON**  
5241

Dear Mrs. Zwelibanzi

### **PERMISSION TO UNDERTAKE A DOCTORATE THESIS: AN INVESTIGATION INTO THE ISSUES AND CHALLENGES IN IMPLEMENTING ENVIRONMENTAL EDUCATION IN SPECIAL SCHOOLS IN SOUTH AFRICA**

1. Thank you for your application to conduct research.
2. Your application to conduct the above mentioned research at Cape Recife and Northern Lights Special Schools under the jurisdiction of Port Elizabeth District of the Eastern Cape Department of Education (ECDoE) is hereby approved on condition that:
  - a. there will be no financial implications for the Department;
  - b. institutions and respondents must not be identifiable in any way from the results of the investigation;
  - c. you present a copy of the written approval letter of the Eastern Cape Department of Basic Education (ECDBE) to the Chief Directors and Directors before any research is undertaken at any institutions within that particular district;
  - d. you will make all the arrangements concerning your research;



1. The District/Head Office Senior Manager/s concerned must be presented with a copy of this letter that would indicate that the said researcher/s has/have been granted permission from the Gauteng Department of Education to conduct the research study.
2. The District/Head Office Senior Manager/s must be approached separately, and in writing, for permission to involve District/Head Office Officials in the project.
3. A copy of this letter must be forwarded to the school principal and the chairperson of the School Governing Body (SGB) that would indicate that the researcher/s have been granted permission from the Gauteng Department of Education to conduct the research study.
4. A letter / document that outlines the purpose of the research and the anticipated outcomes of such research must be made available to the principals, SGBs and District/Head Office Senior Managers of the schools and districts/offices concerned, respectively.
5. The Researcher will make every effort obtain the goodwill and co-operation of all the GDE officials, principals, and chairpersons of the SGBs, teachers and learners involved. Persons who offer their co-operation will not receive additional remuneration from the Department while those that opt not to participate will not be penalised in any way.
6. Research may only be conducted after school hours so that the normal school programme is not interrupted. The Principal (if at a school) and/or Director (if at a district/head office) must be consulted about an appropriate time when the researcher/s may carry out their research at the sites that they manage.
7. Research may only commence from the second week of February and must be concluded before the beginning of the last quarter of the academic year. If incomplete, an amended Research Approval letter may be requested to conduct research in the following year.
8. Items 6 and 7 will not apply to any research effort being undertaken on behalf of the GDE. Such research will have been commissioned and be paid for by the Gauteng Department of Education.
9. It is the researcher's responsibility to obtain written parental consent of all learners that are expected to participate in the study.
10. The researcher is responsible for supplying and utilising his/her own research resources, such as stationery, photocopies, transport, faxes and telephones and should not depend on the goodwill of the institutions and/or the offices visited for supplying such resources.
11. The names of the GDE officials, schools, principals, parents, teachers and learners that participate in the study may not appear in the research report without the written consent of each of these individuals and/or organisations.
12. On completion of the study the researcher/s must supply the Director: Knowledge Management & Research with one Hard Cover bound and an electronic copy of the research.
13. The researcher may be expected to provide short presentations on the purpose, findings and recommendations of his/her research to both GDE officials and the schools concerned.
14. Should the researcher have been involved with research at a school and/or a district/head office level, the Director concerned must also be supplied with a brief summary of the purpose, findings and recommendations of the research study.

The Gauteng Department of Education wishes you well in this important undertaking and looks forward to examining the findings of your research study.

Kind regards

*David Makhado*

Dr David Makhado  
Director: Education Research and Knowledge Management

DATE: 2013/07/12

2

Making education a social priority

Office of the Director: Knowledge Management and Research  
9<sup>th</sup> Floor, 111 Commissioner Street, Johannesburg, 2001  
P.O. Box 7710, Johannesburg, 2000 Tel: (011) 355 0609  
Email: David.Makhado@gauteng.gov.za  
Website: www.education.gog.gov.za



**APPENDIX 5: LETTER REQUESTING PERMISSION FROM SCHOOL PRINCIPALS**

15 Elf Road

Beacon Bay

East London

5241

05/12/12

The Principal

School Address

Dear Sir/Madam

**REQUEST FOR PERMISSION TO CONDUCT A RESEARCH PROJECT AT XXX SPECIAL SCHOOL.**

I am a DED student in curriculum studies at the University of South Africa. I am doing research on special schools in the Eastern Cape and in Gauteng Provinces. I hereby request permission to conduct my research on the topic "An investigation into challenges in implementing Environmental Education in special schools in South Africa. The aim of the research is to identify the challenges encountered by the teachers in special schools when teaching Environmental Education.

The research project will be carried out for a period of 4 weeks in your school. Two grade 10 teachers who teach Life Sciences will be expected to participate in an hour's interview which will be tape-recorded. Interviews will be conducted after school as I do not want to interfere with teacher's contact time with learners. Each teacher will be interviewed once as a follow up to the lessons presented.

Classroom observations will also be done two times with each teacher. The teachers will be expected to teach and learners will be expected to learn while I will be observing data about how teachers teach Environmental Education to the special needs learners and I will also be documenting down the problems they may be encountering. The information collected from the interviews, classroom observations and documents will be confidential and will only be used for the purpose of my study.

Your school participation in this project is voluntary and confidential. Should your school be willing to participate in this study, none of the information obtained will be disseminated to the public in a manner that identifies your school, teachers and

learners. Should any academic publication be made, pseudonyms will be used for the school and teachers in place of the actual names.

If your school is willing to participate in this study, please sign this letter as a declaration of your consent. This would mean your school participates in this project willingly and that the school may withdraw from the research project at any time.

Principal's signature .....

Researcher's signature .....

Yours Faithfully

Mrs Mathapelo Zwelibanzi

[Lolo3@telkomsa.net](mailto:Lolo3@telkomsa.net)

Cell No. 0836920788

**NOTE: THE ACTUAL LETTERS OF CONSENT ARE NOT INCLUDED HERE TO PRESERVE CONFIDENTIALITY**