



**Opportunities to Learn Environmental Education: A case
Study of Mpumalanga province.**

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Submitted in fulfillment of the requirements for the degree of

Master of Education

In

Curriculum and Instructional Design and Development

Department of Curriculum studies

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March 2007



DECLARATION

I declare that this study entitled:

**Opportunities to Learn Environmental Education: A case study of
Mpumalanga province.**

Is my own work, that all the resources I have used or quoted have been indicated and acknowledged by means of complete references and that neither I nor anyone else at this University or any other educational institution previously submitted this study for degree purposes.

Matseliso Lineo Mokhele

Date

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.....



*Dedicated to my parents, Zakia and Mampho, who have always inspired me
to study*

and my son and daughter,

Keoratile and Mantoetsi.



Acknowledgements

I acknowledge with gratitude the following people whose invaluable contribution made my study possible:

- My supervisor, Dr. Loyiso C. Jita for taking on the complex challenge of being my supervisor and for sharing and supporting my fears, dreams, tears and tantrums. His expert advice and constant encouragement have made it possible for me to complete this thesis.
- My son and daughter, Keoratile and Mantoetsi, for their love, understanding and patience.
- My parents, brothers, sisters and friends for their support and being there for me. Without their support, this research would have been an insurmountable quest.
- Above all, God Almighty, who gave me the patience, courage and ability to do what I needed to do.



SUMMARY

South Africa has recently introduced a new curriculum – curriculum 2005 and its revised version, the Revised National Curriculum Statement to replace the pre-apartheid education curriculum. C-2005 had come with some major changes in the teaching and learning of most subjects in the school curriculum. Among its major changes, the new curriculum focused on Environmental Education (EE) as a theme to be offered across the entire basic education or General Education and Training (GET) level curriculum. The one implication of that new focus on Environmental Education was that all the children at the basic education level were to be introduced to EE concepts and content. While the new version of C-2005, in the form of the RNCS places arguably less focus on Environmental Education as a theme, it retains the focus on environmental learning through (for example) the first principle listed for the RNCS: **“Social justice, a healthy environment, human rights and inclusively.”** Furthermore, a number of learning area outcomes with an environmental focus have also been retained. The whole focus on environmental learning, whether as a principle or a theme, is an unprecedented change in the curriculum of South Africa. Not many teachers, policymakers, learners, and other education stakeholders however, have the necessary experience to make such a major focus on Environmental learning workable within the current provincial systems of the country.

It is against this background that a research was initiated to find out how the various provinces have responded to this new curriculum focus on EE. The study sought to explore the distribution of Environmental Education Opportunities to learn in the Mpumalanga province. Data for the study were collected mainly through qualitative interviews and document analysis with Environmental Education coordinator, subject advisers and the subject teachers within the province. An important finding in the study among others is that the Mpumalanga Education Department (MDE) on its own appears to have limited



intellectual and material resources with which to build the schools' instructional capacity for the implementation of the new Environmental Education policies and programs.

I concluded the study by positing possible approach for providing Opportunities to Learn Environmental Education through an interaction between governmental and non-governmental resources and programmes in Mpumalanga.



KEY WORDS

Environmental Education

Environmental Learning

Opportunities to Learn

Outcomes Based Education



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List of acronyms

C-2005	Curriculum 2005
RNCS	Revised National Curriculum Statement
EE	Environmental Education
OTL	Opportunities To Learn
GET	General Education and training
FET	Further Education and training
DOE	Department of Education
UNCED	United Nations Conference on Environment
NEEP-GET	National Environmental education project for General Education and Training
LEESP	Lesotho Environmental Education Support Project
CI	Curriculum Implementer
MDE	Mpumalanga Department of Education
DANCED	Danish Cooperation for Environment and development
DWAF	Department of Water Affairs and Forestry
SANBI	South African Botanical Gardens
NGO	Non-governmental organization
HSRC	Human Science research Council
EEPI	Environmental Education Policy Initiative
EECI	Environmental Education Curriculum Initiative
OBE	Outcomes Based Education
WESA	Wild Life Environmental education in South Africa



CHAPTER ONE

OPPORTUNITIES TO LEARN (OTL) ENVIRONMENTAL EDUCATION (EE): A CASE STUDY OF MPUMALANGA PROVINCE

1. Introduction

South Africa has recently introduced a new curriculum – curriculum 2005 (C-2005), and its revised version, the Revised National Curriculum Statement (RNCS) to replace the pre-apartheid education curriculum. C-2005 had come with some major changes in the teaching and learning of most subjects in the school curriculum. Among its major changes, the new curriculum focused on Environmental Education (EE) as a theme to be offered across the entire basic education or General Education and Training (GET) level curriculum.¹ The one implication of that new focus on Environmental Education was that all the children at the basic education level were to be introduced to EE concepts and content. While the new version of C-2005, in the form of the RNCS places arguably less focus on Environmental Education as a theme, it retains the focus on environmental learning through (for example) the first principle listed for the RNCS: ***“Social justice, a healthy environment, human rights and inclusivity.”*** Furthermore, a number of learning area outcomes with an environmental focus have also been retained.

The whole focus on environmental learning, whether as a principle or a theme, is an unprecedented change in the curriculum of South Africa. Not many teachers, policymakers, learners, and other education stakeholders however, have the necessary experience to make such a focus on Environmental learning workable within the current provincial systems of the

¹ Throughout this dissertation, I use the term Environmental Education and Environmental Learning interchangeably. When referring to the subject within the curriculum, I often use Environmental Education and tend to use Environmental Learning in cases where the teaching about the environment is integrated and/or diffuse within other school subjects. The distinction does not always hold though, primarily because all education about the environment involves learning and learning is so integral to education. Consequently, the terms are used interchangeably.



country. As le Grange and Reddy cautioned, about a decade ago, when the new Environmental Education focus was being piloted through the new outcomes based curriculum: to have it in the critical learning outcomes does not mean that environment will actually be taught in the many schools and classrooms of South Africa (1997: 05).

It is against this background that a research was initiated to find out how the various provinces have responded to this new curriculum focus on Environmental Education. Such questions as - What Environmental Education is being taught? To which students is it being taught, in the different provinces? How is it being taught? Who teaches it? What are the conditions of teaching Environmental Education in the provinces? And many others - remain unanswered, especially in the South African context. The present study sought to explore the distribution of Environmental Education Opportunities to Learn (OTL) in the Mpumalanga province of South Africa, as a way of understanding how the province has responded to the policy provisions and priorities of the new focus area on Environmental Education. How has the province structured the teaching and learning of this new focus area called Environmental Education into its existing curricula?

At a broader level, my study sought to contribute insights on the issue of how provinces or regional entities in (semi) decentralized education systems interpret and make sense of national policies and priorities around the introduction of new subjects or new focus areas into existing curricular structures. The study also explored how such provincial or regional entities identify and marshal the resources for the implementation of such new curriculum subjects or focus areas.

To address the research problem, the study focused on trying to provide answers to the following three critical questions:



- What curriculum guidelines and provisions (policies) have been made for the teaching and learning of Environmental Education in the province of Mpumalanga?
- How are the curriculum guidelines and provisions understood and interpreted by schools in the province?
- What are the consequences for student learning and classroom instruction in the province?

1.2 Rationale for the Inquiry

Soon after the 1994 democratic elections in South Africa, the Ministry of Education launched a new outcomes-based curriculum for the General Education and Training (GET) sector. The whole process marked an end to the education system of the past, and therefore introduced a new organizing framework for teaching and learning in the country. Accordingly, the teachers and learners are at present, faced with many changes in the design and content of teaching and learning processes. Among the changes was the development and implementation of a new curriculum in schools, initially called curriculum 2005. This curriculum has since been revised into a more streamlined version called the Revised National Curriculum Statement (RNCS). Curriculum 2005 and its revised version (the RNCS) emphasises a focus on the teaching and learning of Environmental Education as one of the principles and/or themes across some of the subjects within the new curriculum (DoE, 2002). However, the question still remains as to how many teachers, policymakers, learners as well as other education stakeholders have the necessary experience to make such teaching and learning of Environmental Education workable within the current provincial system in the country?

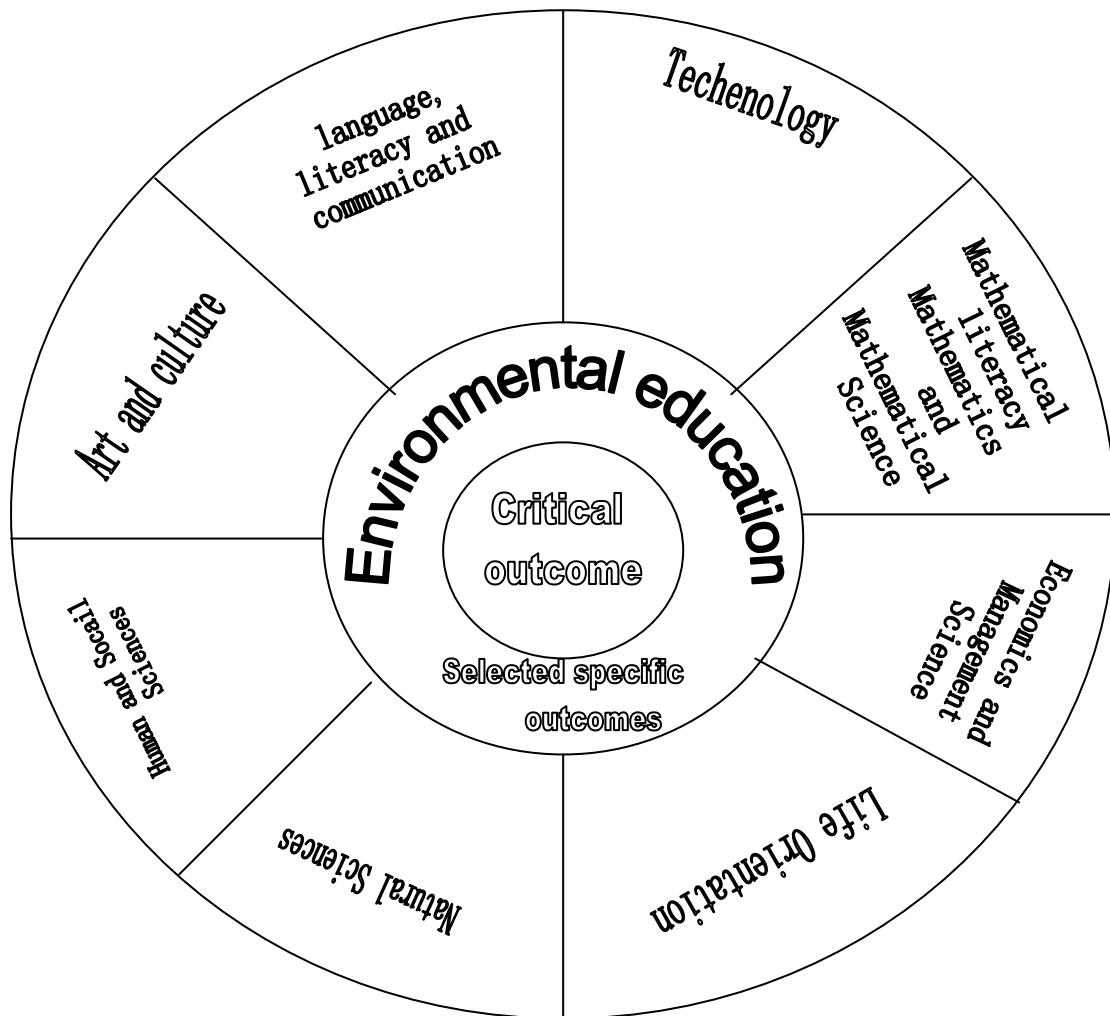
In many parts of the world, in the 1990s, Environmental Education (EE) became a recognized area of the curriculum (Lee *et al.*, 2000). Similarly, South Africa began to promote the teaching and learning of EE in the schools during the mid-1990s, largely as a result of a push from the National



Environmental Education Initiative group that had advocated and motivated for such a focus in the new curriculum. The education system in South Africa has, in the last decade, been in a transitional phase with new policy strategies being developed and implemented for advancing Environmental Education in the formal education. By the year 2002, the national education system had developed a curriculum framework and teaching and learning processes that support Environmental Education objectives to equip learners with knowledge, skills and attitudes to respond constructively to environmental challenges (DoE project Document, 2002). The development of new curricula for education in South Africa, as argued by Bornman (1997), offered the opportunities for the integration of Environmental learning into all learning areas or subjects offered in the primary schools. Bornman (1997) further reasons that elements of Environmental Education are in fact already included in the essential learning area outcomes that are being used in South Africa at present. However, it is important to note that Environmental Education was not introduced through the medium of a single subject but in a cross-curricular format that was to be delivered through the core and foundation subjects. As a result, Environmental Education is (supposed to be) integrated in the learning outcomes of the different learning areas (or subjects). Some of the references to the environment in the learning outcomes are, according to Raath *et al.* (2002), direct while others are not. Raath *et al.* (2002) further argue that environmental learning activities do not have to be an approach of only a certain learning areas' viewpoint but also covers learning outcomes from different learning areas. This means that Environmental learning is an inter-disciplinary focus covering knowledge, skills, as well as the attitudes from different learning areas and is therefore supposed to be the common responsibility of teachers assigned for different learning areas. Figure 1 below illustrates graphically how the Environmental Education is designed to be an across the curriculum focus in the South African Context.



Figure 1: Environmental Education across the curriculum



Adapted from du Toit and Oliver (1997)

1.3 Background to the problem

The infusion of Environmental Education in the new curriculum, in South Africa, marks a historical shift from the past where the subject was relatively marginalized. The subject was almost unheard of in many schools and communities of South Africa save for a few pockets of innovation such as mainly the homelands of Bophuthatswana, KwaZulu-Natal and KaNgwane for



example. In Bophuthatswana for instance, Environmental Education became workable and increased its profile because of the role and initiatives of such structures as the Bophuthatswana National Parks Board and the University of Bophuthatswana, who were committed to the development of Environmental Education in the homeland. Similarly, in Kwazulu-Natal, such examples as the National Parks Board and others became instrumental in local initiatives to improve the provision of Opportunities to Learn (OTL) about Environmental Education in the homeland. The University of Bophuthatswana became one of a few institutions, in South Africa, that began to offer Environmental Education in their teacher education programmes. The subject was offered as Environmental studies and not necessarily as Environmental Education, although the content was firmly about the environment. Similarly, there were a few other colleges and universities that began to incorporate some environmental learning in their teacher preparation programmes. It is such teacher preparation programmes that produced the desired personnel with some expertise in the subject. The training, however, was neither elaborate nor widespread but was significant enough to create a pool of potential among the teachers who would be available for the implementation of Environmental Education as a crosscutting theme or focus in the new South African curriculum.

In recent times, an increased focus on Environmental Education globally came out of the processes of the United Nations Conference on Environment and Development's (UNCED) first Earth summit in Rio de Janeiro (Brazil) in 1992. The Rio summit placed the world's attention on issues of sustainable development and environmental literacy in the discussions, declarations and programme of action of the summit. Chapter 21 of the Rio Declaration document, for instance, adopted by Heads of State participating in the summit focussed solely on how education in and about the environment could be promoted and sustained in the member countries. Many African Countries have signed onto these multi-lateral environmental agreements such as the Rio Declaration. These agreements have begun to influence local policies and



practice, including the practice of Environmental Education in many countries across the globe. It is such policies on environmental issues specifically in South Africa, that have placed a particular emphasis on the need for the teaching and learning of Environmental Education (EE) in all formal and non-formal educational programmes. These policies have suggested that Environmental Education needs to be incorporated as part of education and training at all levels of education in the country. As a result of this and because of other local initiatives and campaigns, the Department of Education (DoE) acknowledged the need to increase the focus on Environmental Education within the formal school curriculum. It is against this background that when the new curriculum (C-2005) emerged, it came out with a focus on Environmental Education as a major theme to be offered across the entire basic education curriculum. All these changes provided unique opportunities for environmental educators to explore the social transformation role ascribed to Environmental Education processes, within the institutional frameworks of the school curricular and formal curriculum development process. However, as highlighted earlier, the question continues to emerge: as to how do (provincial) Environmental Education curriculum specialists, subject advisers and teachers understand and interpret the new policies and priorities on the teaching and learning of Environmental Education across the curriculum in the different provinces of the country?

To be successfully incorporated into the school curriculum on the national level, Environmental Education needs to be supported by strong policies and other initiatives representing major national curriculum intervention in the Environmental Education curriculum development work. There are several such initiatives in the South African context - programmes and projects designed to provide curriculum development support and information to the teachers and schools regarding environmental learning and teaching. For example, the Environmental Education Policy Initiative (EEPI) began as an advocacy and advisory structure that sought to introduce a participatory approach to the policy-making process in Environmental Education curriculum



work in South Africa between 1992 and 1996. The EEPI conducted lengthy and broad national consultations from about 1993 to 1995 to pave the way for a South African curriculum for Environmental Education (le Grange and Reddy, 1997). The EEPI policy options included the following possible approaches to integrating environment into the curriculum (1): Environmental Education as a local, problem-solving curriculum action, (2) integration within subjects, (3) Environmental Education as a distinct subject in the following phases: Foundation phase - Environmental Studies; Intermediate phase - Education for Sustainable Living, Senior phase - No distinct subject was proposed at this level. In the Further education level: Environmental Studies. (4) Environmental Education as an (environmental) perspective integrated within other subjects.

Similarly, the Environmental Education Curriculum Initiative (EECI) was one of the national curriculum initiatives promoting Environmental Education in the country and it has played a key role in ensuring the inclusion of Environmental Education as a cross-curricular concern in the new curriculum framework for the General Education and Training (GET) band in the country. Through a partnership with the Human Sciences Research Council (HSRC), the EECI developed a research programme particularly focussed on environmental education and the new curriculum. The aim of the research project was to build the research capacity of the Environmental Education community and to simultaneously inform the work of the EECI and the national curriculum development process with particular reference to Environmental Education (le Grange and Reddy, 1997).

Thirdly, another important curriculum development and support programme of the DoE has been the National Environmental Education Project for General Education and Training (NEEP-GET). The NEEP-GET was a large-scale donor funded initiative aimed at providing professional development to curriculum advisers as well as the teachers, in order to enable the integration of the environmental learning in schools. This latter project has contributed to the



current prominence of Environmental Education in the General Education and Training band and has piloted approaches to support the implementation of the subject in the context of the new national curriculum. The contribution of the NEEP-GET in South Africa, according to Sguazzin (2002), include among others: (1) helping the teachers to implement Environmental Education learning at school level through integration into the Outcomes Based Education (OBE) framework of the country (2) Contributing during the redesigning of curriculum 2005 (3) Improving Guideline Documents and Learning Resource Materials to support the integration of Environmental learning (4) Contribution towards the development of in-service teacher education in EE.

Environmental Education, however, is not an entirely new concept to scholars and practitioners in the field of environment. To date there have been a number of studies done in the area of teaching and learning of Environmental Education, including **the question concerning the inclusion of EE in the school curriculum** (Bornman, 1997), **issues on the policy and Implementation in EE** (Ballantyne and Oelofse 1988), **questions on the integration of Environmental Education into the Elementary School Curriculum** (Hua, 2004), **Environmental Education and OBE approach in South Africa** and many others. In spite of this fair amount of activity, in terms of research investigations, there are still no studies on Environmental Education Opportunities to Learn (OTL) in general and almost none specifically in the South African context. Most studies on the distribution of Opportunities to Learn (OTL) are focused mainly on mathematics and science both nationally and internationally. My study therefore sought to break the trend by exploring the Opportunities to Learn (OTL) Environmental Education in one of the provinces within the South African context as described in the foregoing background.

Several interests, both personal and scholarly have led to my involvement in this specific investigation of OTL Environmental Education in the different



provinces of South Africa. I have been a secondary school teacher for a couple of years in Lesotho. As with South Africa, Lesotho is also one of the countries that are seriously concerned with the issues around the global environment and its sustainability. This is evidenced by the mandate on environment, which is derived from the constitution of Lesotho, section 36, which states that:

Lesotho shall adopt policies designed to protect and enhance the natural and cultural environment of Lesotho for the benefit of both present and future generations and shall endeavour to assure all citizens a sound and safe environment adequate for their health and well-being (Lesotho Constitution, 2002)

These goals enshrined in the constitution of Lesotho underlie efforts to incorporate Environmental Education (EE) in the school curriculum. The Lesotho government, according to Bitso (2006), initiated the Lesotho Environmental Education Support Project (LEESP) to support and influence the formal education system and enhance the interrelationship between different institutions and departments in the Ministry of Education, which play a role in Education and Environmental Education in general. In its endeavour to incorporate Environmental Education in the school programmes, many changes were conceived in the curriculum. The changes in the curriculum have had a ripple effect on my teaching. The changes influenced most of us in the teaching profession, mainly by compelling us to include Environmental Education in our teaching. As I experienced it, the whole process of inclusion however, was very demanding and complicated for me and many other teachers who were not educated to include the subject during their teacher education programmes. Given that South Africa has introduced similar initiatives on Environmental Education, arising from its own similar constitutional principle that:

The right to an environment that is not detrimental to the health and well being of the citizens...



and the National Environmental Management Act (NEMA), 1998, which

Commits the South African government to sustainable development, and emphasises the need for environmental education and capacity building in all the sectors of South African Society.

And the White paper on Education and Training (1995) which

Notes the need to integrate Environmental Education at all levels and phases of the education and training system.

It is also noteworthy that the South African initiative is also underscored by the Norms and Standards for Educators' policy (2000) previously known as the COTEP document. The COTEP document requires teachers to, among others, identify and respond to social and environmental issues through their educational practice.

Given my own experiences and struggles, I became interested to explore how South African teachers were making sense of the mandate to include Environmental Education in their teaching of the various subjects and/or learning areas. I am particularly interested to explore what Opportunities to Learn (OTL) are created as a result of these initiatives on Environmental Education in South Africa, as a way of understanding how the Mpumalanga province has responded to the policy provisions and priorities of the new integrated focus called Environmental Education.

Specifically, I wish to find out how the provinces in a decentralized education systems interpret and make sense of national policies and priorities around the introduction of such new focus areas as Environmental Education in their curriculum reforms. I believe that through this study of the OTL Environmental Education in the South African context, I will also be able to understand my own practice and that of the other teachers I worked with on



the inclusion of the subject focus within the curriculum in Lesotho where I have the experience of teaching.

1.4 Outline of the dissertation

The present dissertation is my documentation of the journey towards providing some answers to these intellectual puzzles and questions. The presentation of the dissertation is divided into five interrelated chapters.

Chapter one

This chapter gives the background to and rationale of the study, and a detailed outline of the research problem.

Chapter two

The chapter discusses and provides the theoretical framework for the concept of Opportunities to Learn (OTL) by different scholars. It also includes a sectional review of the literature on Environmental Education, with a focus on recommendations regarding content, methods, and resources.

Chapter three

In this chapter, I present the methodology that was used to carry out the research, discussing specifically the instruments used, the sampling procedures, and how the data was collected and analysed.

Chapter four

Chapter four documents the analysis of the data collected in the Mpumalanga province with a presentation of a detailed case study. The case study presents a thick descriptive summary of the data and outlines the major themes emerging from the analysis.



Chapter Five

In the final chapter of the study, I (re) present the findings, and discuss their implications for the implementation of the new Environmental Education policy in South Africa. I also explore the meaning of the findings and the conclusions arising from the data analysis, with some ideas on possible research areas to further illuminate the themes and issues of the study.



CHAPTER TWO

LITERATURE REVIEW

The main concept of this study is the notion of Opportunity to Learn (OTL). The study sought, specifically, to understand how the new Environmental Education (EE) policy for the basic education (or General Education and Training, GET) levels has created the conditions for the teaching and learning of Environmental Education in the various provinces of South Africa. What kinds of conditions prevail for the teaching and learning of Environmental Education in the schools as a result of the added environmental principle in the Revised National Curriculum Statement (RNCS)? To understand this influence of policy on OTL Environmental Education, I begin my review of the literature by examining the various approaches to understanding and investigating Opportunities to Learn (OTL). That is, I begin by engaging the question: what do we mean by Opportunities to Learn (OTL)? What different conceptions exist in the literature? And which conceptions seem to be better suited for studying OTL in the South African context, as described earlier in Chapter 1?

In section B of the present chapter, I review some of the literature on Environmental Education (EE) with a view to understanding what Environmental Education scholars recommend as the relevant content and conditions for the learning of the subject in schools. That is, the review seeks to generate a framework for what should be considered as better Opportunities to Learn (OTL) Environmental Education in the South African schools especially. How should the teaching of EE be structured and organized in schools? And what kinds of conditions, resources and personnel are required for such teaching and learning?



2.1 Opportunities to Learn (OTL): The Concept

Different scholars define the concept of “Opportunity to Learn” (OTL) in rather different ways. In the first part of this literature review, I discuss the definitions of the concept of OTL from these various perspectives and then explore some of the key variables that the different authors have used to identify and measure Opportunity to Learn (OTL).

For a school to do well it needs to provide students with the required Opportunities to Learn; and the students also need to take advantage of such opportunities and learn (Porter, 1995). With the idea that **all** the children should have an **equal chance** to quality education, ‘Opportunities to Learn’ became a useful mechanism for establishing access to high quality education for all students. Recent standards policies, in most developed countries, have been designed to assure that the schools and districts use resources and provide services effectively for all students based on the idea of Opportunity to Learn (OTL). Schools are expected to provide, and states and/or provincial governments are expected to guarantee, not only just course offerings but high quality curricula that would support the content and performance standards. Furthermore, the Local Education Authorities (LEAs) are expected to, not only provide certified teachers in the various subject areas only but teachers who are well prepared to teach the material contained in the standards (Elmore and Fuhrman 1995). Clearly, therefore, Opportunities to Learn is understood to be much broader than just the presence or absence of particular subject offerings and/or particular subject teachers, or generally the presence or absence of particular resources for teaching and learning.

Opportunities to Learn (OTL) is defined by Elmore and Fuhrman (1995), as a **set of conditions** that schools, districts, and states must meet in order to assure that students are being offered an equal opportunity to meet expectations embodied in the performance standards. This definition is premised, first and foremost, on the understanding that states, districts and



schools play an important role in providing learners with equal Opportunities to Learn. The responsibility for providing these required set of conditions, according to Elmore and Fuhrman, therefore falls squarely on these institutions. McDonnell (1995) agrees with this definition by Elmore and Fuhrman, when she also defines the concept of OTL as a measurement in exploring if children have the same or different exposure to learning opportunities. However, while McDonnell seems to agree with Elmore and Fuhrman on the idea of providing similar conditions for learning, she does not show exactly who should be responsible for the provision of such equal opportunities for learning in schools. In their conceptualization of the notion of OTL, many authors seem to be more concerned with the broader questions of whether children from poor families have the same Opportunities to Learn higher order thinking and problem solving in schools, as do children from affluent families. Porter (1991), for example, also highlights the issue of similar or same Opportunities to Learn when he talks about “opportunities to learn” as a change in the distribution of opportunities across types of students. Porter’s (1991) discussion of OTL, however, goes much deeper and is broader, in that it begins to raise other sets of issues and questions. For example, his discussion of OTL begins to include such questions as whether one set of curriculum policies provide better guidance and support for effective schooling than another? Whether there are differences in the instructional materials available? Whether the teachers in one location are better trained than others? Porter’s framework is thus clearly a comparative one, where his goal is to compare how Opportunities to Learn are distributed between children from poor families versus the children from rich families. It also includes comparisons between teachers from different locations, and the availability of materials in the different settings, as well as how the set of curriculum policies are interpreted in the different settings.

This broader perspective by Porter (1991) is also supported by Herman *et al.* (1996), in their definition of the concept of OTL as inclusive of a range of variables that are likely to influence student performance - including access to



resources, high quality instructional content and processes, extra-school opportunities, and direct preparation. Each of these variables seems important for defining Opportunities to Learn, and it is thus important to note that the variables often produce a more powerful and cumulative effect when they act together. A more careful examination of OTL in schools, therefore, should also attempt to examine these factors together.

McDonnell (1995), on the other hand, has a different way of conceptualising OTL altogether. She argues that OTL is a measure of whether or not students have had an opportunity to study a particular topic or learn how to solve a particular type of problem presented by the test. She looks at the concept more closely from the point of view of the classroom, by looking at the provision of learning and problem solving skills in the classroom. McDonnell's conception is thus more aligned with the standards movement that seeks to design assessment that is linked to Opportunities to Learn. Hers is more of a fine comb for examining Opportunities to Learn within particular classrooms and within particular school subjects.

Another broader conception of OTL is provided by the United States of America (USA) House of Representatives wherein, according to one of its (House) Report Number 1804 (1994), OTL defines the criteria for and the basis of assessing the sufficiency or quality of the resources, practices, and conditions necessary at each level of the education system (schools, local educational agencies, and states) to provide all students with an opportunity to learn the material contained in the voluntary national content standards or state content standards. For these policy makers in the USA, OTL is therefore firmly linked to the standards documents and/or the national or state assessment systems. OTL is about providing institutional resources and identifying institutional conditions and practices that are likely to enable all learners to succeed in achieving the standards and goals set by each of these institutions.



The concept of OTL has not really been used widely or conceptualized differently for developing country contexts. There are, in fact, very few studies that use the concept of OTL in developing country contexts. In all cases (for developing countries), the concept of OTL that is used is linked to the idea of learners having a chance to be exposed to the content or material reflected in the tests and assessments. In summary, the various conceptualizations of OTL reviewed in this section, all point to the multiple contexts underlying the OTL concept. This means that, at a more specific level, OTL is defined to include a range of variables likely to influence student performance. My review of OTL Environmental Education in one of the provinces of South Africa will therefore have to examine some of these identified variables such as: curriculum, time, materials, quality of instructional delivery and teacher qualifications.

2.1.1 Curriculum

From the late 1960s and early 1970s, the meaning attached to Opportunity to Learn was expanded to address directly issues relating to the curriculum offering (Baratz-Snowden, 1993). This expanded definition was developed for two major reasons: First, to measure whether or not the students cover the curriculum for a certain grade; and second, to determine whether or not the students are provided sufficient access and information to learn the curriculum provided for their age and grade level. Part of the reasoning, at the time, came from studies that showed that students who come from groups which as adults consistently achieve and participate less in science and mathematics have less access to science and mathematics curriculum in schools (Oakes *et al.*, 1990). That research further showed that, there were also huge differences in the schools' subject programs resulting in the inequalities of opportunities available to the various groups of students within the schools. It is against this background that, as Porter (1995) observes, the curriculum reform of the late 1980s demanded that schools provide the type of instruction that has been rare in the past and that the same instruction



should be available to students from low-income families as it is to students from affluent families.

Such differences of Opportunities to Learn as measured by the curriculum being offered have been used to compare OTL not only across schools but also even across different countries. For example, McDonnell (1995) captured the differences in the organization of the curricula in different countries, such as the case of Japan - where the mathematics curriculum emphasizes algebra, compared to the curriculum in France and Belgium that are dominated by geometry and fractions. Rousseau and Powell (2005), in their recent paper on OTL, also assert that high quality curriculum is one of the critical components supporting reform in urban schools and therefore an important factor in raising student achievement. For this reason, a close examination of the Environmental Education curriculum being offered in the one province became a critical component of my study of OTL in South Africa. However, as highlighted earlier, the mere presence or absence of a curriculum does not necessarily guarantee Opportunities to Learn. At a more specific level, OTL might also be measured by examining the amount of time spent in the classroom on this curriculum.

2.1.2 Time (Content Exposure Variables)

The Content Exposure variables describe, according to Stevens (1993), those variables that take into consideration the time allowed for and devoted to instruction ("time-on-task") and the depth of the teaching provided. Several studies have provided evidence on the important role of "time on task" in shaping students' Opportunities to Learn (Rousseau and Powell, 2005). Furthermore, research from a number of countries has also shown that the amount of time available for academic studies is consistently related to how much children learn in school (Reimers, 1993). Reimers therefore reasoned that, the more time teachers spend actually teaching, the more students learn. The measures of time as discussed by Reimers (1993), include the



length of the school day, and hours of schooling offered per year, the number of class periods allocated for an academic courses and the number of hours of teaching per subject per year. Class time does not only have an influence on students, but is also another part of the school schedule that appears to influence teachers' efforts at reform. In their discussion, Knapp and Peterson (1995), drew our attention to the fact that teachers mostly listed lack of actual class time as one of the barriers to implementing mathematics reform in the elementary grades. Similarly, Rousseau and Powell (2005) made a critical observation regarding the teachers who believed that they lacked the necessary class time to carry out and assess the kinds of activities advocated by the new curriculum. Their central argument is about the diminishing Opportunities to Learn in such circumstances relative to other contexts where the teachers create the necessary class time to engage with the new curriculum provisions. Wang (1998) also reasoned that the unavailability of time would be a problem to individual students in terms of the pacing of class instruction. Some of the teachers, especially those said to be involved in successful reform efforts, have also pointed to the need for additional planning time (Johnson, 1995). Time on homework presumably represents learning time and thus an additional Opportunity to Learn (Herman and Klein, 1996). In their recent study, for example, Herman and Klein (1996) observed that:

Suburban students reported being assigned mathematics homework more often than did urban students, who in turn reported more homework than rural students did. Whereas suburban students reported having homework 4 to 5 nights a week on average and urban students reported having homework about three nights a week on average, rural students reported homework assignments only once or twice per week on average (p. 251)

Based on this observation, these scholars concluded that within the context of the frequency of homework, it means that suburban students spend



significantly more time per week engaged in mathematics than their urban and/or rural peers.

Time, as defined by further by Reimers (1993), also refers to the years of study, the number of hours of instruction, and the time spent in homework per week. Time does not only affect the curriculum offered in schools, but also the way it is presented and received by the individual students in the classroom. Implicit in these views is the assumption that time allocated for teaching defines the opportunity for children to learn. The amount of time available for the Environmental Education curriculum in each of the provinces and schools will therefore be a critical component to examine in a study of OTL in this case.

2.1.3 Materials

Many studies on Opportunities to Learn include some consideration of the materials available to students for learning the curriculum (Wang 1998). Porter (1995) argues that as the main resource, the schools must provide a safe and orderly environment for both students and educators. He further points out that in some countries like the United States of America (USA) - where schooling is compulsory - students have no choice but to go to school thereby beginning with relatively better Opportunities to Learn than their counterparts in countries where schooling is not compulsory. Oakes *et al.* (1990), for example, discusses how students in low-income, high-minority schools have less access than students in other schools to computers and to staff who coordinate their use in instruction. Similarly, for science learning, such material resources as science laboratories and equipment may be critical components of OTL. Porter (1995) contends that even if the schools were motivated to provide an adequate education to all students, the problem of lack of basic resources such as books and other student learning resources including computers and communication technology, would work against providing equitable OTL to all students. It is therefore important to consider



what resources are used in the teaching and learning of Environmental Education in the provinces of South Africa.

2.1.4 Quality of Instructional Delivery

Quality instructional delivery is another critical component of students' Opportunities to Learn (Stevens, 1993). It is the variable that reveals how classroom teaching practice (i.e. the presentation of the lessons) relates to equality or inequality of the students. In the classroom, the quality of instructional delivery can be gleaned from the objectives of the lesson, organization of the activities and the teachers' effectiveness in the presentation of the lesson (Wang 1998). There are several commonly cited reasons for obtaining OTL information from the Quality of Instructional Delivery in schools. The most critical, from Winfield's (1993) perspective is the fact that teacher and school factors are an important consideration in the explanation of the students' Opportunities to Learn. Winfield (1993) observed that teachers tended to provide students with different learning environments, partly because of their different teaching experiences and levels of familiarity with the subject materials. The differences in the teachers' beliefs on what fosters learning and also how learning progresses also differentiate the learning environment provided by one teacher from another. In addition, Stevens (1993) has argued that many teachers are likely to teach in the way they themselves were taught and based on their views about their instructional roles and how these roles are played out in the classroom. The teachers' competence and familiarity with teaching practices in Environmental Education, their beliefs about what should be taught and how it should be taught, and which learners deserve what kind of attention in the classroom, are all issues that relate directly to the teachers' organization of their classroom instruction that will be explored in this study. They constitute important descriptors of OTL in this study.



2.1.5 Teacher Qualifications

Several recent studies in California have pointed to strong relationships between measures of teacher qualifications and student achievement (Darling – Hammond, 2004). Recent studies, according to Rivkin, Hanushek and Kain, (2000) have also found that student achievement gains are much more influenced by a student's assigned teachers than factors like class size and composition. A variety of teacher experiences and attributes appear to contribute to this effect; including teachers' general academic and verbal ability, subject matter knowledge, knowledge about teaching and learning as reflected in teacher education background, teaching experience, and the combined set of qualifications measured by teacher certification, which includes most of the preceding factors (Darling – Hammond, 2000 b). Teacher qualification is therefore another factor that has emerged as a potential influence on student OTL. Several measures of teacher qualifications, according to Oakes *et al.* (1990), make clear that low-income and minority students have less contact with the best-qualified science and mathematics teachers for example. Again Oakes (1992) argues that teachers of low-ability science and mathematics classes typically have less experience. They are less likely to be certified in mathematics or science as they hold fewer degrees in these subjects. Furthermore, Oakes argues that such teachers also tend to have less training in the use of computers as compared to their upper track colleagues. In some schools, specifically those with large minority and low-income populations, there are fewer well-qualified teachers overall (Oakes, 1992). Similarly, in their recent study, Herman and Klein (1996) found that rural teachers were significantly less likely to have such certification: 82% of the urban teachers and 80% of the suburban teachers were so certified compared to only 25% of the rural teachers that were certified. These researchers further showed that suburban and urban teachers were more likely than the rural teachers to have majored or minored in mathematics as undergraduates, with no rural teachers claiming an undergraduate degree in mathematics. In such schools, according to Oakes



et al. (1990), low-track students are frequently taught mathematics and science by teachers who are not certified to teach those subjects, if they are even certified at all. In their landmark study, Oakes *et al.* (1990) found that those schools whose students were predominantly economically advantaged and white and suburban, employed teachers who were on average more qualified. That research further pointed out that students attending such advantaged schools had greater access to science and mathematics teachers who are certified to teach these subjects, and that their teachers held bachelor's or master's degrees in those subjects. As part of the recommendations of her study, Darling-Hammond (2000) concluded that an adequate remedy should aim at ensuring that all teachers will be prepared to teach to the new student learning standards and that all students will have access to fully qualified teachers who can provide them with the Opportunities to Learn. It is therefore important to consider teacher qualifications and training, especially as it relates to Environmental Education, in the present research on Opportunities to Learn Environmental Education in South Africa.

2.1.6 Student Race and Social Class

All schools, regardless of the culture, ethnic, or socio-economic or community background of the students they serve, should provide students with equal Opportunities to Learn (Herman and Klein 1996). Opportunities to Learn must therefore be viewed as a major concern for students from low-socio economic or racial minority groups. In their research, Oakes *et al.* (1990) found that schools for children from low-income families, African - American and Hispanic children in the USA, children who attend school in central cities, and children who have been clustered in low ability classes, differ in small but important ways from those of their more advantaged and white peers. They further point out that these schools with large minority and low-income populations have fewer qualified teachers and that in such schools low-track students are frequently taught mathematics and science by teachers who are not certified to teach those subjects, if they are even certified at all. In



addition to this, Gross (1993) also observed that minorities, especially African Americans and Hispanics, are more likely to be put into classrooms with less learning opportunities even when ability is taken into account. To argue the point further, Oakes (1992) points out that low-income students and non-Asian minorities disproportionately enrolled in low-track academic classes and that the advantaged students, specifically the whites, are more often enrolled in the high track classes. For this reason, Oakes concludes that schools with predominantly low-income and minority student populations tend to be bottom heavy - which means that such schools offer smaller academic tracks and the larger remedial and vocational programs - than those serving whiter, as well as the more affluent students. All in all, these race and class differences in the learning opportunities tend to limit the educational and occupational futures of low-income, African American and Latino students. Race and class differences are therefore an important consideration in a study of Opportunities to Learn. Given that the present study will be conducted only in schools serving mostly the disadvantaged groups of learners (with only black students), the effects of race and class on the Opportunities to Learn are unlikely to be pronounced than if different racial and class groups were sampled.

2.1.7 Language proficiency and Immigrant status

Equality could be achieved through the schools and all children are entitled to equality in the educational experience (Ansalone and Biafora, 2004). However, language proficiency and immigrant status are the other two sources of unequal educational opportunities (Wang and Goldschmidt, 1999). Ignoring English language proficiency and immigrant status as pointed out by Wang and Goldschmidt (1999) assume that all students benefit equally from the same course content. However, in his recent study, Wang (1998) observed that Immigrant students especially those with limited English proficiency, perform less well than native-born students do. For example, these researchers found that teachers may provide adequate content



coverage for USA - born English speakers, but students with different language and cultural backgrounds may not benefit fully from the same instruction. Furthermore, immigrant students are channelled by schools (or self- selected) into less demanding courses, thereby reducing their opportunity to master core subjects in the curriculum. A high dropout level is also one of the problems that result from language proficiency and immigrant status. As discussed by Wang and Goldschmidt (1999) limited English proficiency students, particularly immigrant LEP students, generally face academic difficulties such as lower achievement and high probability of dropping out. For example, when dropout rates are examined in the USA, as analysed by Williams (2001), statistics reveal that Hispanic students are more likely than white or black students to leave school before completing a high school programme. Wang and Goldschmidt (1999) further point out that the relationship between limited English – language proficiency and poor academic achievement has been well documented. Although language is not likely to play a major role in the primary schools of South Africa, its potential impact and influence on the OTL EE will be closely monitored in the study.

To conclude, OTL is a very broad concept which different scholars view in different ways. To some, OTL define the contents of the curriculum, instructional strategies as well as the instructional materials availability for usage (McDonnell, 1995). Furthermore, McDonnell (1995) uses the concept of OTL to include also the way in which the content is presented and who presents it. Similarly, Rousseau and Powell (2005) address the concept of OTL in terms of time factors and quality factors in the classroom situation. These definitions of OTL, used in the different studies, varied from specific narrowly defined student and teacher activities to more general school resources and practices. The various definitions are, however, mostly silent about the Opportunities to Learn as a policy instrument. In this study, I will therefore explore OTL using the notions gathered in the foregoing literature review, to determine how policymakers have helped or not, to bring the



Opportunities to Learn through the new curriculum policy framework in South Africa.

In order to make education equitable for all children, the whole system should broaden the definition of Opportunities to Learn. The focus must include an emphasis on not only the **quality of teaching, the curriculum design, the time planning, teacher qualifications, race** and many others but also attention should be paid to how the policy makers have structured policies as well as how the teachers interpret and understand such policies in their schools and classrooms in pursuit of better learning outcomes for all children. In this study, I will therefore explore how policy makers (Environmental Education officials) structure the curriculum guidelines and provisions (or policies) for Environmental Education, as well as how the teachers and the subject advisers interpret and understand the policies in the schools and classroom situation to promote the teaching and learning of the area in South African schools.

SECTION B

2.2 Environmental Education

Having discussed the concept of Opportunities to Learn (OTL) in general, I now turn my attention to the examination of the literature on Environmental Education, specifically to establish what the research literature says about the conditions for the teaching and learning of Environmental Education. I do this to seek a better understanding of how this idea of Opportunities To Learn, as a conceptual framework, can be applied to the investigation of the effects of the new Environmental learning policy framework to the classrooms and learners of the Mpumalanga province in South Africa.

Much of the literature on Environment Education that I reviewed has tended to focus on the following three aspects of teaching and learning of the Environmental Education: what should be the content of Environmental



Education taught in schools? How should the teaching of Environmental Education be structured and organized in schools? And what kind of conditions, resources and personnel are required for such teaching?

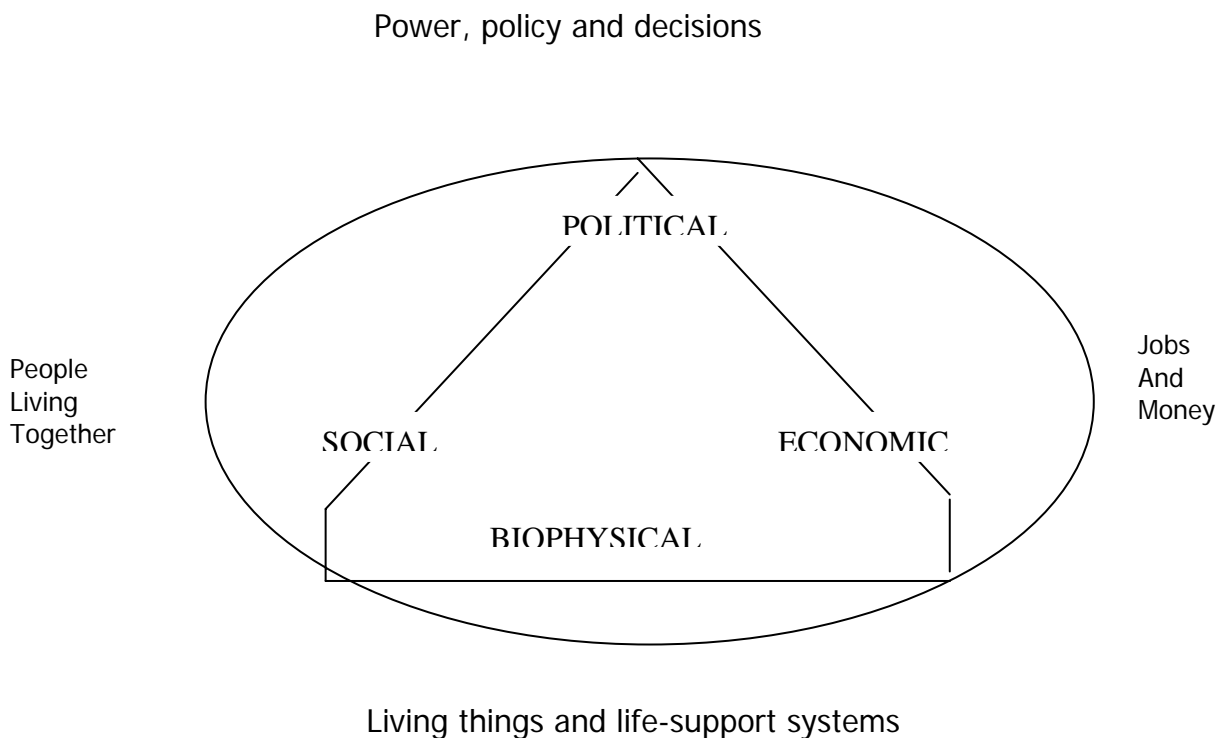
2.2.1 What should be the content of EE?

Despite the motivation to include environmental education in formal education for most countries, there is no clarity on how environmental education “should” be implemented in the formal education system (Loubser, 2005). Several studies have however been conducted to try and define what the content of Environmental Education should be in schools. O’ Donoghue (1993:33) for example, discusses the content of Environmental Education as including the four interacting factors such as:

- Political: Every action and decision has political implications, where politics is seen in its widest sense as power and decision making processes within international, national and civic structures.
- Economic: Economic realities are decisive in any environment. Unemployment and poverty promote as much environment destruction as monopolies and uncontrolled growth
- Social: the organization of social space and relationships between people are key environmental considerations that influence economic, political and biophysical quality
- Biophysical: Earth resources, ecosystems and life-support processes underpin and influenced by all of the other key environmental factors.

Similarly, Bornman (1997) also argues that environmental education has, in recent years, had to redirect its goals towards education for sustainability, which meant the consideration of social, political and economic causes of environment situation. In summary, it is clear that the these two scholars accept the holistic view of the content of Environmental Education as depicted in the following figure:

Figure 2: A model of the Environment



Source: O' Donoghue and Janse Van Rensburg (1995:8)

However, other scholars such as Van Rooyen (1998) note that the content of Environmental Education rely on the environmental problems that a country faces. Barraza *et al.* (2003) makes the same argument with reference to the difficulty underlying the task of trying to construct a common "international" definition of Environmental Education. For example, South Africa faces a formidable array of environmental problems, including the effects of a high population growth rate on scarce natural resources, massive soil erosion, and deforestation including worsening pollution. Future success in addressing these issues depends largely on the successful incorporation of Environmental learning, as an education for sustainable living, in both formal and non-formal education structures in the country. In support of this argument, Chambers *et al.* (1995) note that at a time of accelerating environmental decline, as a



result of economic growth, industrial expansion, human population increase and higher levels of consumption, it is vital that the key issues affecting the planet are addressed through the school curriculum. In their concern regarding the content of Environmental Education, Loubser (2005) also point out that the state of the environment affects every individual both directly and indirectly and therefore it is important that learners should be made aware of environmental issues, if only to sensitise them to aspects that may affect them directly.

In some instances the topics on Environmental Education are clearly identified, singled out and taught separately. For example, according to Chambers (1995) curriculum guidance 7 in the United Kingdom: Environmental Education (NCC 1990) lists about seven topic areas through which knowledge and understanding of the environment can be developed (viz. climate; soils, rocks and minerals; water, energy, plants and animals; people and their communities; buildings; industrialization and waste. Chambers continue to provide more examples by illustrating how the curriculum council for Wales approached the content of Environmental Education in that region. As they indicate, Wales approached the curriculum through the identification of three key areas for environmental learning and gave a comprehensive list of ideas and concepts associated with each as follows:

1. Systems and interdependencies – the world is a complex network of interconnected and interdependent systems (ecological, physical-chemical, geological). Human societies, institutions, systems and cultures are integral components of these global systems; e.g. ecosystems, plants, animals and non-living environment depend upon and affect each other, energy sources and systems, etc.
2. Change and development – environmental change through time occurs partly by natural processes and increasingly as a result of processes



induced by human development – social, economic and technological; e.g. natural processes causing environmental change, past and present, effects of human activities (agriculture, economic growth, and industrialization. Technology in general, leisure activities, etc.

3. Sustainability and stewardship – humans are consumers of the earth's resources, but they carry a major responsibility for maintaining the well-being of the planet and all its inhabitants, human and non-human; e.g. types of resources (material, energy, renewable and non-renewable), recycling resources and reducing consumption, preventing pollution, sources and supplies of water, soil, etc. (1990:6-8)

In their drawing of a programme organizer for a South African curriculum, which is also similar to a "topic", Lortz, Tselane and Wagiet (1998: 18), also selected topics that could easily be identified in a year's programme. They provided the following table as an example of a year's programme for a foundation phase grade in the South African context:

PROGRAMME ORGANISER	PHASE ORGANISER
Water Wastage	Environment
Changes in my body	Personal Development
Keeping my body clean	Health and Safety
My family	Society
Talking to others	Communication
Growing and selling	Entrepreneurship
Littering and Recycling	Environment
Collect a can	Environment
Making choices	Health and Safety
Our street	Society
Arbor week	Environment
Stories and news	Communication
Games and movement	Personal Development



In general, our discussion above, illustrates the different perspectives through which Environmental Education is understood in different contexts and countries, thereby resulting in a diversity of suggestions regarding what should be taught as the major content of the subject. Suffice to say that, there seems to be some agreement on the fact that Environmental Education should be located within the broader context of the society in each country.

2.2.2 How should EE be taught and/or structured?

Good teaching is carefully constructed to build on what students already know and takes into account the confusion that students bring with them to the classroom. Furthermore, effective teachers also tend to have procedures for assessing the presence of student misconceptions and develop ways to confront these misconceptions during instruction (Porter, 1991). In the last few years, the teaching methods and processes used for Environmental Education have also changed from the traditional “talk and chalk” or the content transmission model, to more interactive models in which learners participate, more in line with the constructivist frameworks and influences. Many researchers have accordingly, suggested the need for learners to be encouraged to participate actively through discussions, investigations, independent or group based research projects, action projects, fieldwork, group work, drama, games, self discovery and other similar methods (Lotz, Tselane and Wagiet, 1998). Environmental Education or Outdoor Education (as others have characterized it) has always been more amenable to the use of holistic and more participatory approaches in natural settings than other subjects in the curriculum (Palmer, 1998). Such methods as the use of cartoons, hands on activities, research projects etc. have often been advocated as best suited for environmental learning.



An illustrative example of the use of such experiential teaching approaches in some schools that teach environmental education through projects is described by Pike and Selby (1990).

The environmental education teacher decides to try to change learner's behavior with regard to littering and the generation of rubbish. She sets up recycling banks at school for glass, paper and cans. All the classes compete with one another to see which class is able to gather most of the material to be recycled: paper is weighed, and cans and bottles are counted. At the end of each month, the class, which collected the most material, is rewarded by being allowed to leave school one hour earlier than normal. In contrast, the name of the class, which collected the least material, is mentioned in front of the whole school at the end of the month. Thus the teacher hopes to reinforce positive behavior and change negative behavior.

The example described above depicts the holistic nature and context - specific approach to the teaching and learning of Environmental Education in some schools. The most common and recommended approach to the teaching of Environmental Education in the literature is as an integrated theme within other subject areas. As this is the most commonly recommended approach but also the one that seems most difficult to implement in schools, we capture one example below from Pike and Selby (1990) of how this can be done within the various subjects of the primary school curriculum:

English

- Stories, novels, plays and poems from around the world on environmental themes.
- Drama and role-play to elucidate attitudes and perspectives on environmental issues.
- Comprehension, creative writing and discussion around environmental topics to develop reflective and language skills.
- Media studies programmes based around environmental films



Mathematics

- Interpreting statistics on environmental trends and developments
- Developing basic mathematical skills through case study work on the local environment.
- Understanding, estimating and calculating probabilities using contemporary environmental data.
- Calculating distances, length and angles using the natural and build environments.

Science

- Chemical changes to the earth's atmosphere caused by human and industrial activity
- The physics of energy production from renewable and non-renewable resources and their environmental impact
- Food webs and ecosystems and the impact of inorganic fertilizers, pesticides and waste products.
- The science of global warming

Technology

- Planning and developing environmentally-friendly technologies
- Identifying student's recreational needs and designing appropriate play equipment and environments
- Selecting, retrieving and using data from an environmental data base
- Using information technology to present environmental data different forms.

This is an illustrative list of environmental learning that is integrated in some of the subject areas within the primary school curriculum. However, as indicated previously, identifying such teaching strategies and learning outcomes is not enough to enable such integration in the classroom. In most



cases, this requires a great deal of resources – both intellectual and material resources to implement.

2.2.3 What resources and teachers are needed for Environmental Education?

Teachers remain the key single resource to the success of any Environmental Education curriculum. It is critical that they themselves possess the appropriate knowledge, cognitive skills, and affective attributes that they are expected to help students develop (Wilke, 1997). Accordingly, many researchers have argued for the need for strong teacher education programmes that incorporate Environmental Education (Bornman, 1997; Lotz and Robottom, 1998; Tilbury, 1993).

In addition to the intellectual resources required (e.g. well qualified teachers in Environmental Education), there is also the need for material and physical resources for teaching the subject. Unlike many other subjects in the school curriculum though, Environmental Education is not a resource heavy subject. It draws most of its resources from the natural and human made environments surrounding the learners and the classroom. The context, so to speak, is enough to provide both the content and resources for Environmental Education. In his discussion of the availability of the resource materials for Environmental Education, Wilke (1997) notes that education material for the subject appear everywhere, and the quality of the materials is as valuable as their locations and the topics to be studied. However, there is great variability in both the intended use of materials and the degree to which materials are actually used as intended. There are, generally, a great variety of materials and resources that exist in print and electronically to guide the teaching and learning of Environmental Education. Some of the materials, such as general guides are designed primarily to help teachers infuse environmentally related concepts or topics into and across the traditional disciplines while other materials frame all learning in a program such as for a



special whole school programme or at an outdoor education center within a particular theme. With such a variety of materials and possibilities for gathering and using resources for the teaching and learning of Environmental Education, it should be interesting to study how such materials are used to shape Opportunities to Learn in the various provinces of South Africa. As indicated earlier, it is clear from this review of the literature on Environmental Education that very little has been done to understand the issues of provision of Environmental Education using the concept of Opportunities to Learn (OTL). It is the purpose of this study therefore to examine, the implementation of the new Environmental learning policy in South Africa from the perspective of trying to understand what OTL it provides.

In summary, therefore, our review of the literature on Environmental Education seems to suggest that Opportunities to Learn the subject will be shaped somewhat differently depending on what the teachers and policymakers' understanding of the content of Environmental Educations is, what they consider to be some of the best approaches to its teaching and what resources are offered through the new policy framework for Environmental Education in South Africa.

In the next chapter, we describe our methodology for investigating some of these issues we have discussed in our literature review regarding the provision of Opportunities to Learn (OTL) Environmental Education in the Mpumalanga province of South Africa.



CHAPTER THREE

THE RESEARCH METHODOLOGY

In this chapter, I present the methodology of the study, which covers:

- The approach and design of the study
- Plans carried out in preparing for fieldwork
- The different instruments used and the reasons for using them.
- Data collection and Analysis

This study was focused on trying to understand the distribution of Opportunities to Learn (OTL) Environmental Education in one of the provinces of South Africa. That is, it was aimed at finding out how the provinces, in a (semi) decentralized education system, interpret and make sense of national policies around the introduction of EE within the new curriculum and how this impacts on the learners. In order to respond to this research puzzle, I had to address the following critical research questions:

- What curriculum guidelines and provisions (policies) have been made for the teaching and learning of EE in the Mpumalanga province?
- How are the curriculum guidelines and provisions understood and interpreted in this province?
- What are the consequences for student learning and classroom instruction in the province?

3.1 Research Approach

To explore the research questions as stated in the previous section, I opted for a qualitative research approach. Qualitative research methods are more



suited to help in the understanding of human behavior and experience especially in more complex systems and integrated life processes (Macmillan and Schumacher, 2001:16). In examining most of the previous studies and research on Opportunities to Learn (OTL), it is glaring and obvious that most of them have been carried out from a quantitative research perspective. The dominant approach has therefore been that of attempting to understand Opportunities to Learn (OTL) in mathematical terms and providing counts and numbers. Even though, quantitative approaches have tended to dominate, increasingly other researchers have begun to seek different understandings of the concept and issues involved in OTL. The present study sought to align itself with this new trend of studies of OTL from a qualitative perspective.

I found it interesting to conduct the present study the other way round, within the qualitative approaches, in order to help me understand meanings, look at and describe experiences, ideas, beliefs and values of people (Palgrave at <http://www.palgrave.com>). A qualitative approach was also more suited to help me in understanding the participants in terms of their own definitions of their world. Through this approach, I made an attempt to understand specifically how the provincial curriculum education specialists responsible for environmental education in Mpumalanga establish the expectations for the teachers and how they went about it and why. Furthermore, the qualitative approaches also helped me to understand how the teachers received the environmental education guidelines and policies from the provinces regarding their teaching and learning of the focus area in the classrooms. I gained a more thorough and contextual understanding of how the teachers interpreted and understood the environmental education policies within the Mpumalanga province.

To collect the required data for this study, I spent at least one week in the province (Mpumalanga), several times during the year, visiting and interviewing the various stakeholders for an in-depth understanding of how



the province in general has interpreted and made sense of the national policies around the introduction of environmental education into the existing primary school curricula. In other words, I explored this province to understand what policies existed for teaching and learning of environmental education and how the curriculum implementers and educators in the province understood and interpreted the policies in their teaching and with what consequences for the learners.

3.2 Research design

The present study was designed as a case study of the provincial interpretation and implementation of the new national policy on the teaching and learning of environmental education in South Africa. Gay *et al.* (1996:61) describes a case study as an in-depth investigation of one unit - for example, a school, a classroom, a programme, an individual or group. A case is a unit of human activity embedded in the real world, which can only be studied or understood in context; which exists in the here and the now, and that emerges with its context so that precise boundaries are not easy to draw between the case and its context. I used a case study research design, partly because it involves a wide array of data collection instruments as the researcher attempts to build an in-depth picture of the case (Creswell 1998). For this study, I therefore employed a case study approach in order to spell out the differences of opinion on the issues of interpretation and implementation within the province and to begin to suggest how these differences have influenced the results (Smith, 2003). Macmillan and Schumacher (1991) assert that a case study examines a bounded system or a case over time, in detail, employing multiple sources of data found in the setting. The case may be a program, an event, an activity or a set of individuals bounded in a time or place. My study was therefore aimed at understanding the interpretation of the new environmental education policy within one of the provinces of South Africa. I wanted to gather the different opinions of the environmental education officials, subject advisers and



educators from this province in order to gain a good sense of the overall provincial picture on interpretation and implementation. The case study design gave me access to an in-depth understanding of the situation and processes in Mpumalanga with respect to the design and development of the new EE curriculum frameworks and policies and the meanings generated by all those involved. My particular interest was in the processes of interpretation and implementation rather than the classroom outcomes *per se*. I wanted to understand in “context rather than a specific variable, and in discovery rather than confirmation” (Henning *et al.* 2004). Because I needed to collect data through detailed, in-depth data collection methods, the case study research design fitted my study very well. The case study design tends to use multiple sources of information that are rich in context descriptions. Such tools as unstructured interviews, personal accounts and documents, rather than surveys and experiments, were used for the data collection in this case. Overall, approaching my study from a case study design helped me in exploring the insights, discovery and descriptions regarding the environmental education policies and provisions, as well as the ways in which the subject advisers and educators interpret and understand these policies in the schools and/or classrooms. As Smith (2003) points out, a case study design allows for the collection and presentation of detailed information about a particular participant or small group of participants.

3.3 Sample

To identify the respondents for this study, I used a purposive sampling approach. As Ryman (2004) asserts, purposive sampling is the term often used in qualitative research to refer to sampling that is done in a deliberate way, with some purpose or focus in mind. Purposive sampling also defines a type of sampling that allows us to choose a case because it illustrates some features in which we are interested. In the present study, I was interested to understand the distribution of Opportunities to Learn Environmental Education that result from the new curriculum policy. I wanted to make sense of how



the provinces used this new Environmental Education policy as a platform for creating such opportunities at the local levels. In their explanation, Denzin and Lincoln point out that, "Many qualitative researchers employ purposive and not random sampling methods as they seek out groups, settings and individuals where processes being studied are most likely to occur" (2000:370). When sampling for this study, I also considered certain specific characteristics of my target group and chose the participants in this study that have the following characteristics: I included the provincial curriculum education specialist who is responsible for the implementation of Environmental Education policies within the entire province of Mpumalanga, the school subject advisers responsible for the interpretation and implementation at each of the regional and district levels and the educators who have to make sense of and translate the policies within the context of the classroom. Accordingly, I sampled the one (1) environmental education provincial coordinator or curriculum education specialist - from the Mpumalanga province. Furthermore, I also selected two (2) subject advisers and two (2) lead educators from two schools. Additional interviews were conducted with other educators and principals at the schools as required during the study.

3.3.1 Mpumalanga Province

South Africa is divided into 9 provinces, each with a premier, legislature, cabinet and limited financial powers. Education in South Africa is by law, a concurrent responsibility of the provinces and the national government. The National government determines the national norms and standards, which are then interpreted and implemented by the provinces based on their local contexts and resources (DoE, 1996; see also the NEPA of 1996). My aim in the present study was therefore to understand how such an interaction between national and provincial systems operates in the context of the environmental education policy by using one province of Mpumalanga as the case in point.



Mpumalanga, which literally means a place “where the sun rises” is a largely rural province which has manufacturing, mining, electricity, and forestry - all of which contribute nearly 75 % of Mpumalanga’s production, with most of the remainder coming from tourism and related industries. Much of the tourism is linked to the Kruger National Park with the development of the Maputo Corridor to neighbouring Mozambique providing further investment opportunities. Educationally, the Mpumalanga province has continued to grapple with a number of challenges resulting from its large rural sector and communities. Most of its schools have not performed well over the last couple of years, with the province coming last out of the nine provinces in the matriculation results for several years in succession. Mpumalanga serves mostly the economically disadvantaged communities and those residing in more geographically remote rural areas. The province at a glance according to Sguazzin (2002) looks as follows:

Capital:	Nelspruit
Population: (2001)	3.122994 million
Area:	79 490 km ²
Pupil enrolment (1995):	914 000
Number of schools (1995):	1 924
Pupil- teacher ratio (1997):	36, 1:1

See also the Map of Mpumalanga on the next page:



The Map of the Mpumalanga province



3.4 Data Collection Process

Data collection for the study, involved both unstructured and semi-structured interviews and analysis of official documents. The reason for the use of both unstructured and semi-structured interviews plus document analysis is that in case studies, documentary data may be collected in conjunction with interview data (Punch 1995:184). Both interviews and the documents were targeted for all the participants, i.e. beginning with the Environmental Education coordinator – where I sought to understand how the province interprets and makes sense of the national policies around the introduction of environmental education. The curriculum implementers / subject advisers - were selected in order to explore how they understand, interpret and implement the EE policy around the province. Lastly, the teachers were selected to find out how they understand and interpret the EE policies in their teaching and with what consequences for the learners. Many documents were collected during the course of the study to help me make sense of and triangulate the utterances of the interviewees. The participants had been informed earlier, prior to the interviews, what documents would be required to help me make sense of the discussions with them in each case. The following table illustrates how I collected the data in order to address the three critical research questions for my study.



DATA COLLECTION STRATEGIES	INTERVIEWS	DOCUMENT ANALYSIS
QUESTIONS		
1. What curriculum guidelines and provisions (policies) have been made for the teaching and learning of EE in the province?	X	X
2. How are the curriculum guidelines and provisions understood and interpreted in the province?	X	X
3. What are the consequences for student learning and classroom instruction in the province?	X	X

3.5 Instruments used

3.5.1 Unstructured Interviews

An unstructured interview is an open-ended in-depth interview designed to obtain rich and detailed data from a participant using follow up questions in the form of a conversation (Bryman, 2004). A semi-structured interview on the other hand, only provides the major themes or talking points to guide the conversations and/or interviews. The reason for the use of unstructured and semi-structured interviews is that they are more suited for an open situation, providing greater flexibility and freedom for the researcher. In my study, I wanted to gain a detailed picture of a respondent's opinions, or accounts on a topic. The interviews also helped in understanding the complex behavior of the people without imposing any *a priori* categorization that might limit the



field of inquiry (Punch 2005:172). Because I wanted to understand how Mpumalanga generally made sense of the new EE policy within the province, unstructured and semi-structured interviews were more suitable as they are appropriate for research into feelings, attitudes, intentions and motivations of behavior (Bryman, 2004: 319-321; Smith, 2001).

First, I interviewed the provincial curriculum education specialist responsible for EE in the province. I did this interview in order to establish what is expected from teachers and how the Provincial Curriculum Education Specialist went about developing and disseminating the curriculum guidelines and why. Second, I interviewed the educators and the subject advisers, in order to gain a better sense on how they understand and interpret the curriculum guidelines and provisions (policies) provided by the EE provincial curriculum education specialist in the province. As Herman *et al.* (1996:4) assert the interviews help to provide information about the teachers' educational background and teaching experience, their classroom pedagogical practice, and their familiarity with and the extent to which they prepared their students in the subject. The other reason for interviewing the teachers was to get a clear sense of the impact of their understanding and interpretation of curriculum guidelines and frameworks (policies) on student learning and classroom instruction in Environmental Education.

3.5.2 Document Analysis

Documents, as noted by Macmillan and Schumacher (2001), are records of past events or plans that are written or printed. They provide background information on the topic. Documents are rich and important sources of data for social research (Punch, 2005). In order to explore further how the curriculum guidelines and provisions (or policies) have been designed and developed to guide the teaching and learning of EE in the province of Mpumalanga, I used this strategy of document analysis. I collected all the official (and unofficial) documents such as policies, curriculum guides,



syllabus, memos, textbooks and programme exemplars, workshop agendas, etc. I also collected other documents such as learning programmes, lesson plans, and scheme and records of work from subject advisers and the teachers. I collected all these documents in order to establish the teachers' and subject advisers' understandings and interpretations of EE policies and guidelines. I examined all these official documents and integrated them with the data obtained from the interviews, in an attempt to add nuances that may reside in these sources during my analysis and interpretations.

3.6 Data Analysis Process

I followed a qualitative research approach for this study and therefore data analysis commenced during the data collection stage. In practical terms, this means that the analysis was done continuously during the data collection processes. This reduced the problem of data overload by selecting out significant features for future focus during the study (Cohen, Manion and Morrison 2002). I tape recorded all the conversations with the curriculum specialists, subject advisers and the teachers and transcribed each of the taped conversations to provide written texts of the interviews. During the analysis of the data, I listened to the entire tapes several times and read the transcriptions a number of times also, in order to provide a context for the emergence of specific units of meaning and themes. I also began coding, clustering and categorizing the identified themes from the whole data as suggested by several scholars in the qualitative vein of research. Le Compte (2000) among others, assert that qualitative analysis is an inductive process of organizing data into categories and identifying patterns among these categories. This I did by looking at the themes that were common to most or all the interviews. I first noted if there were themes common to all or most of the interviews and/or if there were themes that were unique to a single interview. In the case of the present research, some of the chosen categories included among others, **Professional Development Support, Local (School) Initiatives and OTL Environmental Education** and



Interactions between Governmental and Non-Governmental Organizations.

Lastly, in my analysis I wrote a summary of each individual interview incorporating the themes that had been elicited from the data. Then I followed up with documentary data analysis. Documentary data analysis is a type of method that seeks to demonstrate the meaning of written or visual sources by systematically allocating their content to pre-determined, detailed categories, and quantifying and interpreting the outcomes (Payne and Payne 2004). In this study I reviewed the collected documents, which included the Environmental Education policies, EE instructional materials, school policies, and workshop invitation letters. Such documents I reviewed in order to make sense of the availability of Opportunities to Learn (OTL) EE in the Mpumalanga province as well as to understand the interpretations and the implementation of such policies by teachers and the subject advisers. From all these collected documents, I identified and retrieved sections of text concerning themes of interest as listed earlier. Documents used in my analysis and referred to specifically in the text of this dissertation are listed and included as appendices to the dissertation.

3.7 Validity and Reliability

One of the methods used to validate the data in the study was triangulation. Triangulation defines the use of more than one method of data collection in the study of human behaviour (Cohen and Manion, 2000). As a result, in the present study, unstructured and semi structured interviews and document analysis were used together to generate strong data sets. I also made sure that I selected the appropriate instrumentation for gathering the type of data I required. This was done mainly through testing of the instruments before the process of data collection. The instruments were piloted and revised appropriately.



Lastly, I went back to the participants, in the form of follow-up telephone conversations to seek more clarity on parts of the interview transcripts. This approach further enhanced the reliability of my data. In conducting this study, I was mindful of the ethical issues involved. As Kvale (1996) contends, the interviews have an ethical dimension and they concern interpersonal interaction and produce information about the human condition. He further notes that three main areas of ethical issues can be identified as: informed consent, confidentiality, and the consequences. Before I began the interviews with the participants, I briefed them about the nature and purpose of the interviews and explained the manner in which I would tape record and transcribe their responses. I also ensured informed, written consent and guaranteed them confidentiality in the reporting of the data and interviews.

3.8 Entry into the Field

3.8.1 Access to Mpumalanga schools

One of the major ethical responsibilities of a researcher conducting a research in schools is to obtain permission from the education authorities. As a result, I also began by seeking permission from the Mpumalanga Department of Education (MDE) at Nkangala and Ehlanzeni Regions, which were to be part of my study. I wrote a formal letter of request (Appendix 10) to the regional directors of both Regions and immediately made follow-up telephone calls to request permission for the study. I was informed, verbally, that permission had been granted and I could conduct my research in the schools, as the formal written letter would be forthcoming. I proceeded and went ahead with the research in the schools accordingly. After conducting my research in both regions, I still felt I needed the written permission letters as a way of following the procedure and for future reference. I therefore made follow-up telephone calls again to request the required letters. In the first region, I was told that the regional director was not available and that no one knew about my letter of request. I was then asked to re-send the original request letter



of request. Two weeks after re-sending the request letter, I received a response (Appendix 11) indicating that I could go ahead with the research. It is important to note that I actually received this permission letter after a month and half of collecting data in that region using the regional directors' verbal confirmations. Similarly, in the second region, I was also told that the director was not available and that no one knew about my request. I was told that the secretary who dealt with my request had been employed on a temporary basis then and was no longer in the region. Again, I was asked to re-send another request letter. Once more, I made several follow up calls and no one seemed to have an idea about my request. However, I continued to pester the regional office, until I finally got hold of the Regional director himself. The regional director then undertook to have the permission letter faxed to me soon thereafter. To date, the official letter has still not been sent through to me, although all the subject advisors and schools were informed by the regional office of my pending visits for the study. Another saving face, in this case is the fact that I also had to request permission and inform the Provincial Coordinator of Environmental Education about my study, in order to have access to him and all the officials and teachers working under him.

3.8.2 Access to the schools

I first telephoned the teachers that I had identified before approaching their principals. I found their contact numbers through one of the subject advisers whose name had been given to me by the Provincial Coordinator. I explained to them on the phone, what it is I wanted to do and asked for permission to have interviews with them. They granted me permission as I had hoped. I then followed-up my telephone conversation with letters requesting official permission from the schools (Appendix 12), clearly indicating in the letters the names of the teachers I wanted to have interviews with. The principals immediately gave me positive responses; however as before the positive response was verbal. I was surprised at the way it had been easy to get access to the schools as my past experiences in research had predisposed me



to a potential struggle to gaining such access. The reasons for such problems to gaining access are many, one of them being the fear of research being seen as a kind of inspection - where the school practices would be observed and analyzed by an outsider in ways that may be intimidating. However, this seemed not to be the case in these schools I had approached. They were more than willing to be part of the study.

3.8.3 Entering school A

After agreeing on the times, I finally set off to Hillside Primary School located in one of the townships of Nelspruit in the Mpumalanga province. After going up and down searching for the school, I finally arrived as agreed a few minutes before 10.00 am. The school seemed to be quite big, with a very large open area surrounding the 4 blocks of about 21 classrooms. The surroundings were filled with trees and beautiful flowers as well as a neatly planted garden. I could not see a single piece of paper in the yard as I walked around the campus.

I went straight to the principal's office and found her in a meeting with another person. I then stood outside, in the corridor for a few minutes before the secretary saw me and directed me to her own office. After explaining to her that even though I was waiting for the principal, I had actually come to see Mrs. Mafolofolo, the secretary immediately went out and called Mrs. Mafolofolo to the reception area. After exchanging introductions and greetings, Mafolofolo took me to the school library, where I drew her attention to the fact that I still had not met with the principal. We both waited until the principal had finished with her meeting before going for introductions with her. Mafolofolo introduced me as "the lady who has been calling to ask for permission to conduct the research." Once more, I took the opportunity to explain the details of my study and purpose of the visits to the principal. After a brief conversation, sharing with me their concerns in the



teaching and learning of EE generally, the principal assured me that I would get very valuable information from Mafolofolo.

In the next five minutes we were back in the library where Mafolofolo kindly asked the learners who were reading to go back to the class as we were going to have a meeting. I began once again by repeating the nature of my research and that I would like to conduct an interview with her. I also asked for permission to tape-record our conversation and handed her the consent form to sign (Appendix 13). I emphasized the fact that all the data collected would be used for research purposes only. Her response was very positive, as she signed the consent form. She expressed her willingness to participate and we began our first of many conversations. After close to an hour, the conversation was complete and I thanked Mafolofolo for her willingness and openness towards my study and thus my research had started at this school.

3.8.4 Entering school B

After setting up all the appointments with both the principal and the concerned teachers, I finally set off for Hillton primary school. Hillton is also situated in the township of Nelspuit, in the Mpumalanga province. I arrived at the school in the afternoon, a few minutes after two o'clock in the afternoon. Again the school was very neat with not a single piece of paper to see around the yard. There were trees all over, neatly surrounding the school fence. There was also a little patch of nursery with different kinds of beautiful flowers. It was easy to notice that the gardens were neatly done (see Appendix 14). The school itself looked a little old, though very neat.

I felt hopeless as I was heading towards the staff room meeting a group of learners going home. I knew I was late and the school was out. As I went through a large dark passage to the principal's office, the two doors I came across were both closed. I waited a little bit as one of the teachers came along to assist me. I told him that I was there to see Ms.Tieho, who



immediately came along and assured me that she had been expecting me since morning. About five minutes later, we were in the school library where I started to explain the nature of my study right away, just before asking for the permission to use a tape recorder in our conversation. I also handed her a consent form and began to explain what it was about. She also expressed her willingness to participate. After this introduction, I relaxed and started the interview before the two boys who were asked to serve us juice interrupted us with their service. We continued as if nothing had happened and finally about an hour later we had completed our initial interview. Again, I thanked her for the time and willingness to participate and thus my study had begun in earnest at the second school also.



CHAPTER FOUR

4. Introduction

To understand the nature and quality of opportunities to learn created by the new national environmental educational policy in the provinces, I examine the story of the Mpumalanga province. That is, how the national policy on Environmental Education is understood and translated within the province of Mpumalanga and what Opportunities to Learn are created as a result. This provincial story will be told in two parts:

First there is the story of the drafting and development of the provincial policy with a particular focus on the tools and instruments of the provincial policy, the prescriptions and expectations of the policy, and the key role players and their respective functions and roles within the provincial structures.

Second the provincial story of the Opportunities to Learn that are created by the new national Environmental Education policy will be told through the eyes of the school practitioners who are, for the most part, the key players and determiners of these Opportunities to Learn Environmental Education at the school level. Case studies of two primary school teachers who teach Environmental Education at different schools within the province of Mpumalanga will be used to tell the story of how the teaching and learning of environmental education is structured within the schools of the province and what Opportunities to Learn result from such a configuration of teaching and learning.



SECTION A

4.1 THE PROVINCIAL STORY: CREATING A STRUCTURE FOR ENVIRONMENTAL EDUCATION IN MPUMALANGA

Mpumalanga, like all the other eight provinces, is working first and foremost from a framework that seeks to integrate Environmental Education in the teaching of all the other subjects as suggested in the national EE policy framework. In the discussion that follows, I trace the development and implementation of this provincial framework for Environmental Education and discuss perspectives and practices of some of the key players and organisations driving Environmental Education in Mpumalanga.

In the province of Mpumalanga, Mr. Jones is the overall coordinator, who is in charge of driving activities and the developments in Environmental Education. He is officially the provincial policy coordinator for EE and is based at the Head Office of the Mpumalanga Department of Education (MDE). Mr. Jones, who has a PhD in Environmental Education, has been the Environmental Education coordinator in this province for the past 7 years. Although Jones is the highest qualified official in EE within the MDE, a major part of his job however, involves coordinating and providing assistance to the Curriculum Implementers (or what is commonly known as subject advisers) of agricultural sciences. Asked about his duties as an Environmental Education coordinator in the Mpumalanga province, he made a point to draw my attention to the fact that his role was defined more broadly in terms of structuring and coordinating assistance and support to the curriculum implementers (or subject Advisers) and teachers in the fields of agricultural sciences, nature conservation and environmental education. Here is how he captured these roles during our discussion:



I basically assist with co-ordinating all activities related to agriculture and environment in the Mpumalanga province with regard to curriculum at times, then I engage myself with things or projects which are agricultural related like MSSI (Mpumalanga Secondary School Initiative) and many others. I also participated in projects, which are there to assist in the integration of environment in the curriculum because there is also a lot of support, which is coming out even from outside countries, to support the implementation of the curriculum in South Africa. Besides that I do lot of training through workshops, I do capacity building of both curriculum implementers and teachers. At times I help nationally in some processes of the curriculum development, because I have been part of writing the new curriculum in South African system.

Mr. Jones' role, as he describes it in the foregoing passage seems to be very broad and generally focussed on support and capacity building of both the curriculum implementers and the teachers. Mr. Jones is probably the only MDE curriculum official below the senior managers in the province whose role and job description covers activities in grades R-12, that is both General Education and Training (GET or Grades R - 9) levels and the Further Education and Training (FET or Grades 10 - 12) levels of schooling. At the GET levels, he is responsible for the Integration of Environmental Education into all the subject areas, while on the other hand he also drives Agricultural Sciences at both GET and FET levels.² Mr. Jones also explains his role in the curriculum development processes nationally. He is one key provincial representative on the national drafting committee for Agricultural Sciences.

Mr. Jones, is however not alone in driving the provincial EE policy and initiatives in Mpumalanga. He is assisted by a group of curriculum implementers employed

² It is important to note that EE, according to the present curriculum framework, is only offered as a focus at the GET levels only. There is, at present, no curriculum policy provision for how to teach EE at the FET levels of schooling.



in each of the three regional offices of Mpumalanga. About two curriculum implementers are responsible for driving EE in each region. Although, officially this is the number of people who have something to do with EE in each of the regions of Mpumalanga, for all practical purposes, my research uncovered that on average only one Curriculum Implementer per region becomes fully involved with EE in their day-to-day roles. Adding to what Mr. Jones outlined as his major role in driving EE in the province, Mr. Maja – a Curriculum Implementer in one of the three regions also highlighted capacity building as one of the critical strategies for the driving EE in the Mpumalanga province generally:

My duty here as the curriculum implementer is to implement the departmental policies and each and every new change that is supposed to be communicated to the schools must go via us. Actually we capacitate and empower educators on curriculum matters and also to explain to them that the curriculum is not implemented in a vacuum, there are some policies that related to it. So, we show them the context in which the curriculum is supposed to be conducted.

Mr. Maja, in reality saw his role (and that of his other colleagues) as being a conduit through which provincial policy travels from the provincial office to the teachers in the schools. From the above quote, it is clear that the whole information goes down in the form of a chain from the provincial coordinator who participates in developing the curriculum, then to Curriculum Implementers who implement the curriculum policy by communicating it directly to the teachers. It is not clear from this role, as described by Mr. Maja that the curriculum implementers are fully involved in any conceptual or development work with respect to the curriculum in EE. Their role in “capacitating and empowering the teachers” may thus be constrained by their own lack of



substantive involvement in the EE policy and curriculum development processes both nationally and provincially. Furthermore, the structure of consultation and communication on the EE curriculum seems to relegate teachers to the last point of delivery in this policy chain of events. Teachers are, therefore, not expected to be active participants in the development of the EE policy framework in the province.

4.1.1 Environmental Education Curriculum

To date, it would seem that there has been no shortage of awareness with respect to environmental education programmes and processes in the Mpumalanga province. While my discussion in the previous section may suggest rather constrained opportunities for participation and engagement with the EE policy development processes in Mpumalanga, the province has been fortunate to be targeted for support and experimentation by various stakeholders in EE. Such provincial involvement began somewhere around 1997, when the environmental education coordinator in this province was invited to participate in an Environmental Education project funded by the Danish Cooperation for Environment and Development (DANCED), *viz.* the “Learning for sustainability” project. This Danish funded project was a pilot project aimed at supporting the implementation of Environmental learning in the formal education system in South Africa. This was done through support of the provincial curriculum development process in Mpumalanga. Teachers from a number of regions in Mpumalanga were selected by the provincial education department to participate in the project. The main aim of “learning for sustainability” project was to integrate environmental learning within the new outcomes based education curriculum framework. The learning for sustainability project was piloted in the Mpumalanga province between 1997 and 2000. It was on the basis of this pilot project in Mpumalanga, among others, that the new National Environmental



Education project was adopted in South Africa. Throughout the workshops, the teachers worked in clusters, conceptualising the notion of environment (for some examples of the work of teachers during the workshops, see Appendix 1). In the year 2000 – 2005, the national minister then introduced the new national EE curriculum project. The project that was named the National Environmental Education project for General Education and Training (NEEP-GET), was developed to promote improved environmental learning in schools through the incorporation of school based environmental activities into the curriculum. Schools participating in the project's professional development clusters were the major focus for this initiative. Participating teachers were encouraged to initiate activities and projects that support environmental learning, including the development of school environmental policies and management plans, and incorporation of enviro-days into the curriculum. It is through this NEEP-GET project that the coordinator of EE in Mpumalanga was able to structure and coordinate the assistance and empowerment of Curriculum Implementers/subject advisers and teachers in EE, for them to be able to integrate Environmental learning into the teaching of other subject areas. In this province, Environmental education is considered as a principle, meaning that every teacher should teach with an environmental focus. That is, whether one is teaching mathematics or teaching English or teaching technology in the classroom, he or she is expected to be teaching environmental education within that subject. The new curriculum also seeks to educate teachers and learners not only about the plants and animals but also the environment in totality.

The curriculum is drawn from constitution and the constitution is very strong on the fact that everyone needs to have the healthy environment, we are looking not only at plants and animals, we are also looking at the classroom situation itself. We are looking at safety in the schools, so we define our environment very broadly. We are looking at



political, we are looking at social, we are looking at economical, we are looking as well as at biophysical aspects which the curriculum seeks to teach.

EE coordinator

It also becomes clear from the quote above that the teaching and learning of Environmental Education in this province focuses on all the aspects of the environment thus the social, economical, political and biophysical etc. are included in the curriculum. However, it should be noted that Environmental Education in the province is not supposed to be taught as a subject on its own. It is to be integrated in all the other learning areas as indicated earlier. To add on such information, one of the curriculum implementers (Mr. Maja) noted that

Actually, the way we teach it as I said it is not the issue that we say we are now teaching environmental education because it is the core of each and every learning area, we integrate it and learn it in each and every learning area because if there is no content on environment then you don't have a normal teaching.

He further added that

It's (EE) not taught in isolation. In the past it was like the subject on its own and it was discovered that it couldn't be a subject because it is part of everything. Let each and every learning area make sure that they integrate it.

From both the coordinator and the curriculum Implementer/subject adviser's responses, it is clear that the expectation in the teaching and learning of EE in the Province is that it should not be taught on its own but needs to be integrated



in the other learning areas as a cross curricular theme. However, this makes it difficult to understand how mathematics can be taught together with EE. I therefore asked both the curriculum implementer and the coordinator what topics are to be done in the process of EE integration within all the other learning areas and the response was provided as follows,

We are looking at the forestry, soil degradation, littering, save water and others. Those are the topics we look at as Mpumalanga has a lot of mines, we try to be contextual and address the issues which are relevant to our community e.g. deforestation because many people are cutting down the trees and so on.

EE coordinator

Even though it is expected that EE be integrated into the other learning areas in this province, there are topics that are singled out so that the teachers can specifically focus on them in their teaching. It is expected that such topics be treated during the teaching and learning of EE in schools, such topics include issues around water, pollution and waste plus littering as stated in the above quote. However, the curriculum implementer (Mr. Maja), in his attempt to answer the same question felt that there are no specific topics that they should focus on, as the Environmental Education is not a subject on its own.

There are no specific topics because if you talk about specific topics you are too much talking like a prescriptive type of content. So our curriculum does not prescribe content because the thing is we have got assessment standards in a specific learning area, such assessment standards talk about the content but not the channelled type content, but a broad content.



Noting the above quote from the Curriculum Implementer, it is rather surprising how the curriculum implementer responded to the same question within his own understanding and interpretation of the new EE policy. On this issue, there seems to be a contradiction between the Curriculum Implementer and his senior (the coordinator) about what should constitute the content of EE in schools. This brings about the issue of the difference in understanding and interpretation of policies with individuals within the same province. Understandably it will be a bit difficult for the teachers and the learners who are at this point influenced by these individual's contradictory understandings and interpretations of the policy.

In the teaching and learning of Environmental learning in the Mpumalanga province, there is also no specific time that is allocated, as it is considered not to be a subject on its own but a theme that must be integrated within all the other learning areas.

We don't have time to say now this is period number four for environment; we are saying whether is period one we must teach something about the environment, whether its period numbers ten we must teach something about the environment or the last period there must always be something about the environment. We say environmental issues should be dealt with in the classroom, in schoolyard, outside and everywhere, learners must be filled with environmental education in every period.

Curriculum Implementer

The quote above from the curriculum implementer (Mr Maja) still puts a clear emphasis on the fact that EE in this province is treated as a cross cutting theme in all the learning areas and there is no specific time that is allocated for EE on the timetable. It is expected that EE will be taught in every learning area throughout the school day.



In an attempt to find out how such policies provide Opportunities to Learn for the teachers, I asked the coordinator and the curriculum implementers how they ensure that the above expectations in the EE policies are reached. In response, Mr. Jones noted that it is through the support provided to both the subject advisers/curriculum implementers and the teachers that he is able to drive the implementation of the new EE policy,

As I have said earlier on, we engage them in activities, which are curriculum related and also engage the learners so that they can also participate in certain activities, which are pitched to their level of understanding. This happens through classroom activities, which are at times happening in the environmental education centres.

Jones makes it clear in this quote how much the province gives support to both teachers and the subjects advisers in the teaching and learning of Environmental Education. However, in Mpumalanga, it is not only the curriculum implementers that get this type of the support as they are always expected to filter down the information to the educators.

The support that he gave us as the coordinator is that he organises and calls us together when there is something new that he thinks we must know, he took us to the environmental education centres in the country where we learn about plants and animals, he also makes us get information that we pass to the educators, he also helps us with the issue of material development, how do you develop those materials to help the learners or in my position how do I develop materials to help teachers.



4.1.2 Adding to the Provincial Capacity: Contributions by the NGOs and Business Enterprises

The Provincial Environmental Education officials in Mpumalanga do not work alone in implementing EE as a crosscutting theme in the school curriculum. Instead, they work with a number of other organisations, governmental and non - governmental.

We have always been dealing with partners, we had for instance, the local department of agriculture and environmental affairs, which has been running competitions, and so that is why I said they are doing awareness. For instance, we have many other non-governmental organisations, which help the teachers like SAAPI. Although they have other special focus likes forestry and fires.

EE coordinator

In addition, the curriculum implementer (Mr. Maja) corroborated the coordinators' claims on partnerships as follows:

There are lot of programmes that we are working with, the department of forestry and water affairs they are the ones who are producing this placards charts, pamphlets, (see appendix 2) we communicate with them.

Form our discussions with the provincial officials, the following list of organisations that have worked with the provincial environmental education could be drawn up:

1. Acre of Africa projects: This takes learners into the Kruger National Park and teaches them about wild life, animals and plants.



2. There is also the Department of Agriculture and Environmental Education: they run a lot of environmental education awareness programmes such as a "clean school yard"- and they also assist in running a number of other school competitions.
3. BMW Motor Car manufacturer: has a school environmental education project which assists schools to have small gardens and they also help with issues of conserving water and forestry
4. Department of Water Affairs and Forestry (DWAF), which is also one of the organisations, that helps in organising workshops for the teachers. They mostly deal with issues of water and sanitation. And lastly
5. The South African Botanical Garden (SAMBI) which deals with schools based gardens and also offers professional development to teachers from a few of the schools. Furthermore, they also deal with what is called greening issues. They select certain group of schools and plant indigenous species, which do not consume a lot of water.

Asked about how the province works with these organisations in pursuit of the provincial EE goals, Mr. Maja noted that they meet with the representatives from the organisations and work together in designing resource materials like pamphlets and booklets.

There are some representatives from the department, they have a meeting like the designing of the material some of my colleagues did spent some time developing materials with them, we always pick people from sub-regions and they go and develop the materials together

The provincial coordinator also added that:



If the organisations want to develop a poster, they would come to the department and we then give them relevant people such as somebody specialising in arts within the department to work on that poster.” The department itself only focuses on the curriculum. What we do is that for any lesson plan that we develop there must be an aspect of an environment.

The coordinator therefore emphasises the fact that the Department of Education does not work on its own in assisting teachers to integrate Environmental Education in the curriculum. They have a lot of support and assistance from other Departments and the Non-Governmental Organisations (NGOs).

These support organisations and departments enter into some form of collaboration agreements with the MDE to formalise their support:

We have to sign the memorandum of understanding because the other organisations that we are working with do not have the authority to go to schools without going via the department.

EE coordinator

From our conversations, it is clear that both the governmental and Non-Governmental Organisations (NGOs) work together in providing opportunities for the teaching and learning of EE in Mpumalanga. As a further example of how the government and non-governmental organisation work together in this province, the provincial coordinator related that,

For instance the South African botanical institute, we have an agreement with them that they should take so many learners in to their gardens, daily programmes and they



should report after sometime. We have that kind of a mutual agreement.

In the Mpumalanga province there is also what is called the Environmental Education Forum that brings together both the governmental and Non-Governmental Organisations (NGOs) to plan and discuss progress in their assistance and collaboration with regards to the integration of Environmental Education within the province.

We in Mpumalanga also have the Forum called Mpumalanga Environmental Education, that forum brings together some departmental officials who are involved with environmental issues, lets say from health, from local government, from agriculture and from other departments, I have been co-ordinating that forum and we meet once a quarter, four times a year. All these NGO's and other companies sit in the forum and discuss the planning of activities with the department of education.

EE coordinator

It is clear, therefore, that the Capacity of the Mpumalanga province to create significant Opportunities to Learn (OTL) EE is greatly enhanced by the collaboration with other government and Non-Governmental Organisations and structures.

4.1.3 Professional Development and Documents

To further enhance the Opportunities to Learn from the policy especially for the teachers, there have been a number of professional development workshops that have been offered in the province. Many of these workshops were organised by the Department of Education's National Environmental Education Project for



General Education and Training (NEEP-GET) project. The workshops were conducted mostly between 1997 and 2000 and from 2000 - 2005. Most of the workshops focused on professional development of teachers, materials development and curriculum development. The workshops were held for both subject advisers/curriculum implementers and the teachers as indicated in the sample programme attached (See Appendix 3).

The model we have been using all along is to have the curriculum implementers and all the teachers in the clusters. They work in clusters in a particular topic and you give them something to do and they go back and if it is a teacher, they go back to their schools and test it and then after a week or so they come back in to the cluster meeting and they discuss it and they agree and decide on the new topic.

EE coordinator

Indeed the curriculum implementer, Mr. Maja confirmed his attendance of the workshops that were convened by the Department of Education through the NEEP-GET project. The topics dealt with included, amongst others, Envirodays and the curriculum, Enviro Picture, Enviro issues, Re- defining Environment, Environment in my Lesson Plan/ Learning Areas- RNCS (See also appendix 3).

As noted earlier, it is clear that there have been a number of significant Environmental Education workshops that were conducted in this province by the Mpumalanga Department of Education (MDE) through the NEEP-GET project. And it would appear that the main idea in such workshops was to show the teachers how to integrate Environmental learning into their day-to-day teaching. Many other workshops have also been convened, however, by the Non-Governmental Organisations, as the teachers' stories will indicate later in this chapter.



Besides the workshops conducted specifically by the NGOs, the teachers and the curriculum implementers/subject advisers were also taken to the environmental education centres, such as the Delta Environmental Centre - where they studied biodiversity (plants, animals, biomes etc.) in general, and would later take their own learners to such centres too.

As discussed earlier in the chapter, many of the workshops not only invited the curriculum implementers and the teachers, but also invited people from outside the school environment to share about developments around the schools and the environment.

We invite curriculum implementers and teachers but during the forum meetings other people like extension officers and local community members are also invited...

EE coordinator

Such collaborations and networking with broader community members around EE seemed to enhance the teachers' OTL about EE also.

4.1.4 Curriculum Documents and Frameworks and OTL EE

I was able to get hold of some documents that are available for providing guidance and direction in the teaching and learning of EE in schools. Such documents include the white paper on Environmental Management (see Appendix 5), which sets out the vision, principles, strategic goals and objectives and regulatory approaches that government will use for environmental management in South Africa.



We work on what is called white paper but within that white paper we also have small pieces of environmental education or environmental learning.

EE coordinator

Other major documents that provide guidelines, as identified by the curriculum Implementer include the Enabling an environmental Focus in Language (technology, social sciences etc): A policy interpretation guidebook for the revised national curriculum statement for GET. The document was developed to help teachers interpret and include environment in the eight Learning Area Statements, with a view to developing Lessons Plans that support environmental learning through the Revised National Curriculum Statement.

There is also the revised national curriculum statement (See Appendix 6); it shows the learning outcomes and assessment standards that are too related to environmental education because it is not each and everything in the learning area that can relate to environment. So such a document does highlight how you would identify and see the link between a topic and environment.

Another document that is considered to be important in this province, to guide the implementation of EE in schools, is the School Environmental Education policy, which each school is, expected design for itself.

We actually do not have the environmental policy per se, but it is expected that every school have their own Environmental Education policy, one that will respond to their own environmental needs.

Curriculum implementer



From this quote, it was rather surprising to think how the schools are expected to develop their own EE policies while the province itself does not have such a policy. However, Mr. Maja noted that they also conduct workshops where they give teachers hints on how to develop their own school environmental policy, as well as why it is important to have one at school level. An example of one workshop that was convened for the teachers on such policy issues had such topics as: School Environmental Policy and Management Plan, What is the school environmental policy, why do we need a policy; and the Six step development process: 1. Appoint a coordinator 2. Convene a working group 3. School audit processes 4. Publish a draft policy, 5. Implement action plans, and 6. Evaluate and review (See appendix 7).

With the expectation that the schools should develop their own school Environmental policies, it is clear from the above evidence that some support in the form of workshops was provided for them on such issues. However, the degree to which such support actually reaches the schools and teachers across the entire province is unclear, as many schools continue to function without such a school EE policy document.

Some additional documents designed to support EE in the province include booklets that have been developed by the Department of Education during the National Environmental Education Project. Such booklets are important in helping teachers to integrate environmental education in their teaching. An example of such a book includes: "Supporting environment in the curriculum: lesson planning for a healthy environment." The book supports good quality lesson planning that will contribute to healthy environment in the classroom, schools and communities. It also supports meaningful environmental learning in the outcomes-based curriculum.



We have very good booklets on lesson planning, such that your lesson planning focuses on strengthening the environment in the curriculum. We also have another booklet (See appendix 8) that is talking about the partnership environment in mathematics, in social sciences, in languages so these are the departmental booklets, which are produced.

Curriculum Implementer

Furthermore, other documents that were commonly used in the teaching and learning of Environmental Education in this province include game books; puzzle books and essay competitions and textbooks (See also appendix 8). Most of these documents mentioned above are prepared through a negotiated forum constituted both from the governmental and Non-Governmental Organisations. The educators are sometimes included in the collaboration to prepare the documents together with specialists or experts in some fields.

If you want a small booklet in bio-diversity, we will get a specialist in bio-diversity to work with a group of teachers, if we want something in water and sanitation, we will get a specialist which works with water and sanitation. Some of the documents are prepared by non-governmental organisations like Bird life, Sheneth and Umngeni values.

EE coordinator

In summary, the provincial story that we have told above seems to illustrate, in many ways, how the new national policy on EE has provided the province of Mpumalanga with a mandate and platform to design and shape some significant Opportunities to Learn EE for the teachers and (also as we will illustrate next) for the learners of the province. The story also captures the important role of the NGO sector in improving the provincial capacity to implement the national EE policy in schools.



SECTION B

OPPORTUNITIES TO LEARN (OTL) ENVIRONMENTAL EDUCATION

THROUGH THE EYES OF THE TEACHERS

Case Study 1: Hillside Primary school

4.2 Introduction

In the section above, I have discussed how the Mpumalanga province went about developing and rolling out a framework for creating OTL Environmental Education throughout the provincial schools and classrooms. It is worth-noting, however, that the usefulness of such a framework can only be understood once we are able to appreciate the sense-making and interpretation by the schools and teachers in the province. This next section begins to examine the OTL EE from the perspective of the local actors, viz. the teachers and the learners at the school level. That is, I explore the provision of Environmental Education through the programmes and policies of two different primary schools in the Mpumalanga province. My goal in this chapter is to understand how each of the two schools made sense of the provincial policy, in order to create significant opportunities to learn EE at the school level. To understand and tell these school stories, I first identified and interviewed a number of lead teachers in each of the schools, and then constructed each school story around the reflections and conversations with



these teachers. I also interviewed the principals and other teachers at the school to complete the picture and story of each school.

4.2.1 MRS MAFOLOFOLO: THE SOCIAL AND ENVIRONMENTAL BUTTERFLY

Our first school is Hillside primary school. At a first glance, Hillside operates like any normal public school, in the sense that the official government policy on Environmental Education seems to be in place and well communicated to all the teachers at the school. The policy with respect to the teaching and learning of Environmental Education is that it is to be integrated into all the subject/learning areas at the school from grade one to seven. While officially every teacher has to operate within this integration framework of EE, the school has identified and assigned Mrs Mafolofolo, a 15-year veteran teacher leader, to take on the responsibility for leading the development and implementation of EE programmes and policies at the school. Consequently, we also identified Mafolofolo to be one of our lead informants and participants at Hillside for the present study.

Mrs. Rose Mafolofolo is one of the 38 teachers at Hillside primary school, a school located in the middle of one of the townships of Nelspruit in the Mpumalanga province of South Africa. The school is located in the middle of a residential neighbourhood, slightly behind the houses and partly obscured from the main road. Not very far from the school are a police station and a medium size shopping complex and a local taxi rank. Mafolofolo has been teaching natural sciences to senior phase classes (viz. grade 7) at the primary school level for the past 15 years. She currently teaches natural sciences in grade 7 and computer sciences to both learners and teachers of Hillside primary school. Initially, Ms. Mafolofolo never liked the idea of being a teacher but seems to have been forced into it by her own circumstances:



You know we were channelled... you know I just found myself that there is nothing that I can do either than going to a college and train as a teacher. I didn't like it but because of the system at that time and also at home you know when you have to go to a university it was a hassle to us. So you just have to go to a training college.

It is clear from the quote that Mafolofolo saw very few alternatives for herself, especially because she could not get a university entrance certificate that would allow her to explore other career options. While it is the case that many teachers may have entered the profession by default or circumstance, as in the case of Mafolofolo, once inside the profession things could change. Things did change for Mafolofolo, as she finally got to like the idea of teaching because it provided her with multiple opportunities for her to interact with young learners:

Anyway, but when I was in there (profession) I decided slowly to develop the love for science. You know since little kids you know uh... you find them from January you build them. You know it grows up gradually... you know I once said that uh... no man this is what I am supposed to do. I am doing it (and) I can

For her, it would appear that the most intense feelings for teaching came from the realisation that she was contributing to the building of the young learners for a better future. Significantly though, Ms. Mafolofolo also felt empowered by the new curriculum approach in the country which made her task as a teacher more relevant and in line with her goals of developing the younger learners for active participation in the broader life of their communities:

So I think it's a good thing that we build these learners young as they are..., to love their environment so that they can take good care of it.



Already the idea of engaging the young learners with their environment comes across very clearly in the foregoing snapshot of our conversation with Mafolofolo. Of course, Mrs. Mafolofolo made no secret of her attraction to the idea of integrating environmental education within the other teaching subjects as suggested in the new national and provincial Environmental Education frameworks. Asked about her previous experiences of teaching EE at the primary school level, Mafolofolo noted that she had started including EE in her teaching of the natural sciences a while back, even before the changes in the curriculum were drafted. For her, it was the love of nature and the attempt to teach natural sciences in such a way that the children are able to see, touch and feel the real life specimen that prompted her to include EE in her teaching (at the time):

I used to make sure that in my class whatever I teach the children they should see the model. They should touch it. They should feel it. We should not talk about a frog out of the blue.

To illustrate this approach of integrating Environmental Education in her natural sciences teaching and learning, she described an example of how she taught learners about pollution. Her starting point, as she described it, would always be something that the learners were familiar with. For example, in teaching about pollution in the Natural Sciences, she would often take the learners to the nearby rivers and would sit down near the river and talk about the animals living in the water, what makes the water dirty and the effects of polluted water on both the animals and humans. For her, teaching EE in this manner helped the learners to make better sense of what was being taught, much more than they would if they were just seated in the classroom.



4.2.2 ENVIRONMENTAL EDUCATION CURRICULUM AND CONTENT TOPICS

A critical issue to explore with respect to any examination of Opportunities To Learn (OTL) relates to what content topics the children of these Mpumalanga schools have a chance to explore in their classrooms. For, it is the content topics that will determine what the children will learn (ultimately). Given the fact that neither the national nor the provincial framework provides any direct guidance with respect to what should be taught as part of the integrated environmental education in the different subjects, teachers are often at liberty to pick and choose topics and appropriate content to integrate into their subject areas. While such an approach is a potentially empowering opportunity for the teachers, it is also fraught with dangers especially with respect to the learners' OTL. For some teachers, it could mean real uncertainty about what to include and what not to include in their lessons. On the extreme end, it could also mean a complete marginalisation of any environmental education content within some of the subject areas. To understand and explain the OTL environmental education at Hillside primary, we ask the question of how then Mafolofolo (and her colleagues at Hillside) approached the issue of curriculum and content determination.

In summary, Mafolofolo seems to rely more on identifying topics that seem to have some relevance to her learners and their local environment in developing the school curriculum. As captured in the previous conversation (about the topic on pollution), Mafolofolo identified several Environmental Education topics that she focuses on during her teaching of the senior primary learners at Hillside. First, she identified the topic of pollution as one of the main content topics she tackles with her learners, as they usually look first at their school (and surrounding) premises to try and solve the problem of littering. Littering therefore becomes a key subtopic she deals with under the broader theme of



pollution. To further illustrate this approach to creating the opportunities to learn EE through identification of some important content topics at her school, she gave an example of how she had approached the teaching of energy and forces to the learners. While other teachers would usually be satisfied with discussing energy in the abstract sense, her approach to the topic went a step further, to a consideration of the burning of things (heat energy), and then she required the learners to consider the effects of such burning on the environment. This allowed her to bring in the issue of air pollution and all other types of pollution like water, land and noise into the lesson on energy. To conclude the lesson on pollution, she would then take the learners all around the school (and surroundings) to do a cleaning up campaign, as a way of solving the problem of pollution within the school surroundings. For Mafolofolo therefore, the whole idea in the Environmental Education content is to “identify and solve a real life problem.”

The other topic that Mashaba and other teachers at Hillside focus on for environmental learning is recycling. As the teachers explained, their belief was that instead of picking up the waste and burning it, hence causing the problem of pollution, the learners had to get into the habit of reusing the waste materials such as paper and plastic to make new products. To illustrate this latter approach to the teaching of recycling at the school, Mrs. Mafolofolo keeps in her class a number of items that have been made by the learners from recycled material, such as toy planes made up of Colgate boxes, cars made up of wires, and many others.

My discussion on the selection of content topics for inclusion into the school environmental education curriculum thus suggests that Mrs. Mafolofolo is guided more by practical problems to which she would like to guide her learners towards finding solutions. Furthermore, the discussions with Mafolofolo and other teachers at the Hillside suggest that Mafolofolo is always instrumental in



distributing these content topics to her colleagues for inclusion in their own lessons.

I am trying by all means to show them that they can make their own activities using the materials that I provide to them (teachers) in our meetings.

This quote focuses attention on the fact that Mafolofolo assumes the leadership in identifying relevant content topics and assisting her colleagues at the school in the integration of EE in their learning areas. In spite of her supportive role, however, Mafolofolo does feel that it is not all the teachers at the school that have taken up the challenge of integrating EE into their learning areas:

Rome was never built in a day, so it's not everyone who is doing exactly what you want them to do.

From the above quote, we begin to understand the difficulties of trying to characterise OTL in the context of a school. That is, while Mafolofolo's story may allow us to capture and reflect the teaching and learning of EE at Hillside, it is important to remember that such a story cannot be a homogeneous tale, but is full of gaps and pauses as not all the teachers at the school embrace equally the new developments and changes in environmental education.

4.2.3 SCHOOL LEVEL ENVIRONMENTAL EDUCATION POLICY GUIDANCE

At Hillside, the teaching and learning of EE is guided by a number of the recent policy documents which assist the teachers in setting up their teaching goals:



You know when you don't have the policies you don't know where are you coming from and where are you going. You won't have your goals. You won't know why you are teaching this. You should have a purpose when you are doing something, you should have a purpose. You know you cannot just go into the class and say 'children today let us look at the littering'. What prompt you to talk about littering? You know the policy is guiding.

To have a provincial or school policy is one thing, but to understand the place of such a policy in providing some guidance on the day-to-day practice is the more critical thing. For the segment quoted above, Mafolofolo seems to be aware of the place of such a policy in helping to organise the work of environmental education at the school, from selecting content topics to setting the goals for teaching and learning. One of the key policy documents that is used at the school is the policy interpretation guidebook for the Revised National Curriculum Statement that is entitled "Enabling an Environmental Focus in Social Sciences/Technology/Arts and Culture etc." This guidebook for teachers is made available for all the learning areas through the NEEP-GET project office in the National Department of Education (DoE) (the same as Appendix 6). This guidebook document is designed to provide help to teachers on how to develop Lesson plans for all the learning areas using some environment-related learning outcomes and assessment standards from the Revised National Curriculum statement. Teachers are provided with exemplars of actual lessons on how to integrate environmental learning into their different learning areas. Mafolofolo and her colleagues considered the guidebook document to be one of the key documents that help to guide their teaching of environmental education at the school. They use the document to help guide them on how to draw their lesson plans.



Another major policy document that is used to guide the teaching of Environmental Education at Hillside primary is the School's Environmental Education Policy document that was developed by the science and technology teachers at the school. Hillside's School Environmental Education Policy document reflects, among others, the school's vision, mission and goals of where they want the school to be environmentally. Such a document is rather unique and uncommon in South African schools, especially at primary schools. Given this unique feature of such a document, I asked Ms. Mafolofolo about the reasons for the development of such a guiding document for the school's EE programme and how it came being at Hillside. She explained it in the following way:

What we usually do before we develop a policy here at school, we sit down and look at our needs of the school. You know what does the school need? What do we need? What do we want our children? Where are we taking our children? Then we develop our own that is going to suit us.

Her statement describes a general approach to policymaking at the school. It is clear that the environmental education policy was probably not the only policy of its kind that the school has developed. They seem to have an approach to policymaking that is based on the needs of the school and the teachers at the time. While we found the environmental education policy at Hillside to be unique in terms of its very existence at a primary school level, its development was not completely unexpected. The Subject Advisors (Curriculum Implementers) mentioned during our discussions how it was expected of every school to develop such a policy based on its needs and situation. An interesting question resulting from such a demand and expectation is of how different school environmental education policies could



be a reflection of their varied understanding and interpretation of the provincial and/or national policy.

Another important set of documents that seem to guide the creation of Opportunities To Learn (OTL) Environmental Education at Hillside are the Learning Area Programme documents that are provided by some of the Non-Governmental Organisations (NGOs) that operate in the Mpumalanga province and schools. These Learning Area Programme documents have also been designed carefully to provide useful information to the teachers on how to integrate Environmental Education in the teaching of each learning area. For example, in one of these documents, specifically the Natural Sciences document, teachers are given an explicit example of how to integrate the teaching of water into the Natural Sciences topic on Resources. In the following segment, Ms. Mafolofolo explains why she finds such a document useful and how she uses it in her own teaching of environmental education in the classroom:

It should go hand in hand with the policy document. This one is for water, which I love. This is my loving topic 'water' you know. Here with this one, I love it because they write to the teacher they tell you what is the aim of teaching the learners about resources? You know what is it that they can look for? For instance here they say, *(she reads the document for the interviewer)* remember we live in a catchments and the responsibility rests with us all to look after our water resources. You know it is easier now for me to introduce to the children what is a resource? What are the catchments?

For Mafolofolo, therefore, the usefulness of such NGO-developed materials lies in the fact that they provide some form of a ready-made document to help plan and carry out the teachers' integrated environmental education lessons. While the many policies and materials we have discussed above are considered to be



primary for understanding the Opportunities To Learn (OTL) at Hillside, there is also another age-old resource that also helps to shape these opportunities to learn, viz. the textbook. In the construction of learning opportunities for environmental education, the school does not only use the policy documents and the materials provided by the NGOs, but also uses different kinds of textbooks that Mafolofolo is able to gather around. As Mafolofolo explained, she also uses such newspapers as “The Teacher” and the “Read and Write” because they tend to have activities that are relevant in the teaching and learning of Environmental Education at their school. Magazines are also helpful for her learners when she constructs environmental collages through cutting and pasting. It is important to remember, however, that policy guidelines and all other reading materials cannot stand alone as opportunities to learn. The degree of understanding by both the teachers and the learners of such documents must also be taken into consideration when thinking about OTL from such materials. It was therefore important for this study to find out how Mafolofolo and her colleagues at Hillside understood and made use of the documents they were provided with.

Unlike many other teachers in schools around the country, Mafolofolo did not sound out any problems with respect to understanding the documents that were distributed to her. A key consideration for her in adopting the materials provided to her was whether she considered such materials to be at the “appropriate level” for her learners and whether the materials contain some “interesting activities.” She described her approach as that of trying to always match the activities found in the materials with the policy documents, in order to create an alignment between her practice in the classroom and the school policy.



4.2.4 PROFESSIONAL DEVELOPMENT FOR ENVIRONMENTAL EDUCATION TEACHING

Indeed, teachers at Hillside primary school and Ms. Mafolofolo specifically, do seem to be way ahead of many of their colleagues, nationally, in their ability to bring environmental learning into the teaching of their subject areas. In the course of the study, I wondered therefore about how it is that the teachers at the school have been able to advance so much professionally in their approach to this new subject area of environmental education. To answer the question, I once again chose to examine the construction of Mafolofolo's (and her colleagues at Hillside's) own Opportunities to Learn Environmental Education resulting from the new policy on EE.

As a way of developing themselves professionally, many of the teachers at Hillside seem to have taken up opportunities and attended numerous workshops on environmental education especially between the years 2000 and 2005. Asked about the number of such opportunities and/or workshops that Mafolofolo and her colleagues have been able to attend to develop them in the six-year period, she answered as follows:

At least up to ten. We actually did something in uh... pollution. We were looking at uh... Mpumalanga, as a whole. How polluted Mpumalanga was? We went to Delmas... I was in Delmas recently Yeah recently I was doing a water... what do they call it? Water Awareness, with RAND WATER (company). We did activities for water... for awareness to people about water. And then uh... because I was working with them for so long so they gave me... an Afrikaans version to change it to English. I was busy with it from January I just recently finished it.



For Mafolofolo, intense professional development seems to have come not only from participating actively in such workshops but also from gradually assuming some leadership roles such as when she takes the role of translating the materials from one language to another. Such translations would require something more than just routine knowledge of the environmental education subject matter to accurately represent the purpose and substance of the content in the materials. Her sense of agency tends to distinguish Mafolofolo from many of her counterparts, and thus the kinds of opportunities her school was likely to create around the teaching and learning of environmental education: She is some kind of an Environmental Butterfly:

Also I am involved there is a competition run by DWAF (Department of Water Affairs and Forestry) uh... says 'baswa le metsi' (loosely translated to mean "Youth and Water"). Where ... there they are just trying to bring the youth to the awareness of wasting water. How do we save water? What are the plans that we can come up with in saving water? So what they are doing are the activities on water such as the drama about that, singing, poetry and something like that. So usually these DWAF people they come to me and ask me here to go to their workshops. And thereafter sometimes most of the time I become one of their adjudicators in the school's competitions.

Hillside appears to be one of the strongest schools in terms its ability to grasp every Environmental Education opportunity that comes along. Mafolofolo appears to be not content with attending the workshops as a delegate but she is also ready to immerse herself fully in the organisation of such opportunities, which in many ways brings her school into the forefront position with regard to taking these opportunities for knowing and understanding about the teaching and learning of Environmental Education. As a result of Mafolofolo's agency, the



teachers at Hillside are not only limited to attending workshops organised by the (provincial and/ or national) Department of Education, but also take up other opportunities for teacher learning provided by other government departments and the Non-Governmental Organisations (NGOs):

And also with the department of Education, Martha (the subject advisor) is working with SAAPI (Paper Industry) people. So whenever SAAPI people have the workshop she calls up. We did something on fire, we did uh... of the paper making because SAPPI you know they are busy with forestry. Yeah they trained us on paper-making. And then in return we come back and teach our learners. But mostly you find that it's not uh... from the department (of education)... from our department per se, it is from the NGO's or other (government) departments you know (that we get such OTL). But all the time I do attend because I love it and when I come back I do implement. This is why the principal loves me so much because when I come back with something I make sure that I talk to the (other) teachers, I have got this so let us meet in the afternoon. "There are one, two, three things that I have got and I think we need it here at school."

As highlighted by Mrs. Mafolofolo in the foregoing quotation, the workshops she attended were mostly organised by a number of Non-Governmental Organisations (NGOs), including large corporations and business organisations rather than by the (national and/or provincial) Department of Education. Throughout our conversations, Mrs. Mafolofolo continued to illustrate the point of how several of these NGOs, which in this case include the business structures and organisations (as long as they were outside of the governmental sector) provided many of these learning opportunities for her and some of her colleagues at the school and in the province of Mpumalanga as a whole. Some



of the NGO and other Governmental Department activities that were especially useful for the professional development of the teachers at Hillside (and in Mpumalanga generally) on environmental education include the:

- (1) South African National Biodiversity Institute (SANBI): where they integrate their training of communities with schools. For example, in the one case described by the teachers at Hillside, the SANBI invited two educators, three community members and three learners to an environmental education workshop, and carried on their involvement over a period of three years. Their focus was on teaching about the importance of planting indigenous plants and the dangers of exotic plants generally. SANBI also helped both the communities and the schools to plant their own trees and gardens.
- (2) Wild Life Environmental Education in South Africa (WESA): an association for natural environment that takes the teachers to Umngeni (Park) in Durban to do environmental studies for two weeks before providing them with a certificate. Furthermore, the WESA also addresses issues of sustainability of energy and hold competitions for the learners in the schools of Mpumalanga. Not surprising, given the potential for better Opportunities to learn EE at Hillside primary, the learners at the school have won several prizes in some of these energy competitions. In the most recent of these competitions, the schools' learners were awarded the first prize in the competition (See Appendix 9).
- (3) Department of Water Affairs and Forestry (DWAF): where they do activities on water conservation that would be appropriate for the primary school learners. The teachers also learn about how to audit water and they are taken (together with the subject advisors) to the environmental Education centres where they learn further about the plants and animals and latter arrange the field visits and take the learners to such centres.



DWAF also supports the schools in celebrating environmental calendar days, such as the water week, Abbor week, etc.

- (4) SAAPI: They train the teachers about papermaking and pollution; and the
- (5) Primary Schools Project (PSP): their focus is mostly on taking the teachers to the environmental centres where they learn about the plants and animals as discussed earlier.

Clearly, most of Ms. Mafolofolo's listing of the teachers' Opportunities To Learn (OTL) created through the new Environmental Education policy at her school seem to have come more from the NGO sector relative to the Governmental sector and specifically with respect to the education sector of government (the MDE and/or DoE). It was surprising and a bit unexpected to note the rather low levels of engagement by the MDE and/or the DoE in creating and shaping Opportunities To Learn Environmental Education for teachers in Mpumalanga. How then could it be expected that learners would have rich and complex opportunities to learn the subject if the teachers are themselves not provided with such opportunities to develop the competence and confidence to engage with the subject? Asked about the support of the Curriculum Implementers (CIs), Mafolofolo noted that there is currently not much support they get from the CIs in terms of the teaching and learning of EE in the province. However, she acknowledged the support they often get from the CIs with respect to the teaching of the other (regular) learning areas. All in all, Mafolofolo made the point that the CIs were more comfortable and supportive only with respect to their respective areas of appointment, and that environmental education did not seem to be a primary subject (or responsibility) for any of the CIs. Indeed, in my discussion with the provincial coordinator and CIs, it became clear that they were all assigned to a specific subject area (e.g. Agriculture for the Provincial EE



Coordinator and Natural Sciences for the CIs); with environmental education only being added onto this primary portfolio only as an integrated focus.

Our conversations about these issues of the teachers' Opportunities To Learn Environmental Education with Ms. Mafolofolo and her colleagues seem to point to a diverse number of EE topics that were covered in the workshops. Such topics included water conservation and awareness, pollution, energy, indigenous knowledge, plant and animal habitat, etc. as discussed earlier. Most of these workshops also varied in their duration from one day to seven days at a time and provided for multiple opportunities for teachers to learn and thus for schools to develop the necessary expertise to structure rich and better opportunities for their learners in environmental education.

4.2.5 LEARNERS' ATTITUDES TOWARDS THE TEACHING OF EE

A discussion of the school's opportunities to learn environmental education would be incomplete if we did not mention the learners and their attitudes to the subject as one factor that helps to shape such opportunities. At Hillside, the school's major goal is focused on trying to make sure that the learners are aware of how to take care of their (immediate) environment. The broader curriculum also has its own goals for the teaching and learning of EE, such goals as noted by Mafolofolo suggest that learners need to be able to observe, identify and solve local problems. While at Hillside, as in other schools in the province and nationally, there is no specific time period on the school's timetable that is specifically allocated for the teaching and learning of EE, Mafolofolo always creates additional time in the afternoons and on weekends specifically to work with the learners on their environmental education projects. At this school, every learner seems at a minimum to be exposed to EE, as it is part of all the learning areas. However, for the senior phase learners, Mrs. Mafolofolo arranges additional environmental learning opportunities by involving the learners in the



environment competitions and science expos. During the teaching and learning of EE at the school, learners are often given real life problems to solve as part of their assignments, such as when Mafolofolo asked the learners to think of something that they could re-use and recycle. In this example, one of the learners as a result came up with a large soap after cooking several smaller discarded pieces of soaps that she had collected from her fellow students. This same learner got a gold medal at the provincial science expo for her work with recycling soap.

In another set of opportunities to learn environmental education, the senior learners at Hillside are also assigned gardens and plots in the school for planting and cultivating vegetables for fund-raising and for the school's nutritional needs in their feeding scheme programme (See appendix 16).

It was also interesting to learn about how the fieldtrips are organised as additional opportunities for environmental learning and how the learners are provided with return assessment forms for them to provide feedback on whether the trip was informative and helpful to them as learners. Mafolofolo also assigns the learners tasks during the field trips that she uses to develop positive attitudes and outcomes about the environment. In one example of such tasks that are designed to develop the learner's attitudes, Mafolofolo described how she asked the learners about what could be done to solve the problem of littering in their own school campus. She concluded that to her surprise the learners decided to raise funds by asking everyone to pay R1 in return for not wearing a school uniform for a day and then used the money raised to buy new and bigger refuse bins for the school. In fact, it was obvious to me when I visited the school that the problem of littering had been dealt with once and for all, as there was no sign of any litter at the school during all my visits. Mafolofolo summed it up as follows:



You won't see even one small paper on the school compound, if one learner sees a paper, you will see her/him just picking it up. Because the attitude is, you are not the one who littered, you are not the one who has thrown down the paper, but it won't kill you to pick it up. That's a good attitude.

Our discussion so far attempts to paint a picture of a school that has tried hard to structure rich opportunities for the learners to engage with environmental education through a number of initiatives, including careful selection of content material based on among others on a well developed school environmental policy and guidance, knowledgeable teachers who display a lot of agency with respect to their work, and well structured learning tasks and activities and additional time for such learning both in class and outside. While my discussion has largely been positive in tone, it is important to note though, that the school does face a number of real challenges in its attempts to create these Opportunities To Learn Environmental Education.

One of the challenges, for example, is that of limited time for the teaching of Environmental Education within the context of the present school timetable. Mafofolo believes that part of the problem of lack of time arises because environmental education is not a subject on its own and thus has to fit within the content and time frames of other subject areas. Learner's projects in environmental education thus almost always have to be scheduled for the afternoons and weekends – something that is not ideal both for the teachers and learners.

The other major challenge arises from the fact that not all teachers at the school see themselves as teachers of environmental education. Some teachers see environmental education as something that should be done by the natural sciences teachers only. Some teachers are therefore much happy to defer to



Mrs. Mafolofolo as a natural sciences teacher and thus potentially deprive learners of enhanced opportunities to integrate the subject into all the learning areas:

“Rome was never built in a day” so it’s not everybody who is doing exactly what you want him or her to do, from teachers to learners, because we are a team here. If we are doing an activity or project at school, huh, it’s not...we are thirty-seven in a class, it’s not all the pupils or teachers who say, “it’s a good thing” Some will say, “heish le nto ya Rose” (loosely translated as “this is Ms. Mafolofolo’s thing”) You can see that oh God, they are bored, those are challenges. I believe that always when we agree on something or a project, if it is big, then it should involve the whole school, I just tell the staff in the morning that, I would like to introduce this...just when I say that some start saying, “here she goes again.”

While Mafolofolo, as the school’s environmental education leader, perceives the real challenge of getting everyone on board with respect to the provision of opportunities to learn environmental education at her school, she is not discouraged by the sometimes less than positive reactions she gets from the teachers and learners. She acknowledges the point that learning (for both teachers and learners) takes time and needs to be nurtured gradually when she retorted that: “Rome was not built in a day.”

In her struggles to create rich opportunities to learn environmental education at the school, indeed Mrs. Mafolofolo also recommended that the (provincial and/or national) Department of Education get more involved in supporting (substantively) the teaching and learning of Environmental Education in schools as this is a new area of competence for many teachers and most of her colleagues will continue to find it difficult to deal with it.



4.3 CASE STUDY 2: HILLTON PRIMARY SCHOOL

Our second school is Hillton primary school. Hillton, just like the previous school, also works within the official government policy on Environmental Education. As with the previous school, the school EE policy seems to be in place and communicates to all the teachers at the school about the new policy on EE. This school has also identified and assigned one of the teachers (Ms Tieho) to take responsibility in leading the development and Implementation of Environmental Education programmes and policies at the school.

Ms Tieho is one of the 37 teachers at Hillton primary school. The school is on the borders of the two townships of Nelspruit in Mpumalanga. Tieho has been a teacher for 29 years, being responsible for all the subjects in grade four for the first 18 years and then shifting to mathematics and science in the next 11 years. She is currently teaching natural science in grade six and seven at her school. In her own learning to become a teacher, Tieho went to a teacher's college of education where she majored in primary science and mathematics. From the onset, Tieho had always liked the idea of being a teacher and enjoyed the work in the early years of her teaching:

In the past years, teaching was not that difficult as it is these days, because we would do the preparations and all that but we would just do it for the sake of doing it, unlike now OBE wants us to accommodate every learner including learners with barriers.

Tieho considers modern day teaching to be rather challenging and cumbersome, as teachers now not only need to prepare lessons but to also be ready to work with learners who have special needs. Tieho's complains may be largely a result



of lack of support or preparation to work with some of these additional requirements and demands of teaching. The new national curriculum is one of these new demands on the teachers of Hillton like Tieho. On the other hand, however, Tieho finds the new curriculum interesting in that it provides for the learners to be taught to the level of their understanding and for all the learners to be involved.

It (the new curriculum) involves every body in the learning, with or without special needs so every one has his own work to do, learners work according to their level of understanding.

The above quote reflects the positive ideas about the new curriculum by Tieho. She feels that even though it is a hard work to teach these days, the advantage is in the attention paid to inclusive education, where an effort is made to involve all the learners directly in the teaching and learning processes.

As she continued with the discussion of the new EE curriculum, Ms Tieho also brought into the idea of integrating environmental education within the other learning areas or subjects,

I think to me it is an opportunity, I think it helps a lot because learners learn a lot from the environment that they live in. It helps them because they learn about something that they see, they touch and they are used to. I mean something that they are familiar with.

It is clear from this quote that Tieho feels that the introduction of EE in the curriculum is an opportunity, to both her as the teacher and the learners, to get more in touch with their own local reality. Such an approach to curriculum has more potential for the learners specifically as they would learn about something



that they know, understand and can relate to. When asked about her previous experiences of teaching EE at the primary school level, Tieho noted that she had started integrating EE in her teaching of the natural sciences a while back - about six years ago - before the changes in the new curriculum came around. It was an interest in greening and the love for the environment that pushed her into the teaching Environmental Education that early.

I started maybe six years ago, if I am not mistaken, but I started this thing with a club. I formed a club, an environmental education club it was after we saw a need that the school needed to look beautiful. The aim was just to beautify the school. We started planting the grass, flowers and the trees that you see. When these things of OBE were introduced then I realised that what I was doing was exactly what the OBE wanted us to do.

To illustrate how she and other teachers at Hillton primary integrates EE in their natural science teaching and learning, she gave an example of when she taught learners about living and non-living things. She explained that she would take learners out to the gardens that they made at school, walk around the gardens and show the learners the different plants (weeds) and small living animals on the garden. The learners would see the locusts, the birds on the trees, and all types of plants as part of their environmental or natural science lesson.

like in the topic of living and non-living things, we first look around in the classroom to see all the things that are non-living, I would then take them out to our garden where they would identify all the living things such as locusts, birds, and also the different kinds of plants that we have in the garden. When we go back to class they are able to tell the difference between the



living and the non-living because of their experience in the garden.

For Tieho, teaching natural science in this way makes her feel like she has integrated the environmental education in her teaching especially when she takes the learners for walks in the gardens that they have made themselves.

4.3.1 ENVIRONMENTAL EDUCATION CURRICULUM AND CONTENT TOPICS

As reflected earlier, both the national and the provincial framework provide no direct guidance pertaining to what teachers should teach as part of the integrated environmental education in the different subjects. Teachers are therefore compelled to choose topics and appropriate content to integrate into their subject areas. As a way of understanding how the environmental education content is done at Hillton primary, I asked the question of how Tieho and her colleagues at this school approach the teaching and learning of Environmental Education.

Asked about the topics that should be taught in the teaching and learning of EE, Ms Tieho noted that there are no specific topics as EE is not a subject on its own. She explained that all they have to do as teachers is to integrate it into the other learning areas like natural science or topics that they teach in class:

We don't teach this environmental education as an independent learning area, we incorporate what we do on our environment to our teaching and learning work because we don't have a special timetable for the environmental education.



It seems that Tieho and her colleagues at Hillton do not identify specific environmental education topics, instead they teach it within the context of their specific learning areas. As illustrated in the previous conversation about the topic on living and non-living things, there is no special environmental education topic that she focused on. As part of the integration, she took the learners out to the garden where they could see the plants and animals she was referring to in her teaching. The topic remained the same for the natural science lesson. It was rather difficult to figure out how Tieho and her colleagues at Hillton are able to know when they were integrating environmental education in their teaching, given that they design no specific environmental education topics. I therefore posed the question to Tieho, of how she was able to establish when it was that she focussed her teaching on environmental education. Tieho noted that she and her colleagues at Hillton are guided by the environmental education calendar that had been provided by the Department of Environmental Affairs and Tourism.

I don't find it stressing as I have an environmental calendar which indicates what should be done every week, say its water week. We would incorporate topic water on to our learning classes the whole week, e.g. Maths teachers will be doing auditing and measuring of water, science teachers will be doing water purification and junior phase do water conversation.

In summary, Tieho and her colleagues seem to draw their EE topics mostly from the environmental calendar and follow the special weeks or days throughout the year. The following is one example of how such a calendar is used to guide curriculum development for the teaching and learning of Environmental education at Hillton primary.



OMGEWINGSKALENDER / ENVIRONMENT CALENDER

February: 2: World wetlands day

21: International mother language day

March: 17-22: National water week

21: Human rights day

22: World day of water

23: World meteorological day

April: 7: World health day

21: Family day

27: Freedom day

May: 1: workers day

15: international day of families

22: international day for biological diversity

June: 1-6: National environmental week

5: world environmental day

16: Youth day

17: world day to combat desertification and drought

July: 11: world population day

August: 9: international day of the world's indigenous people

September: 1-7: National labour week

5: Casual day

16: international day for the preservation of the ozone layer



- 20: Coastal cleanup
- 21: international day of peace
- 24: Heritage day
- 27: world tourism day

- October: 6: World habit day
- 12-19: International weed buster week
 - 13-17: National marine week
 - 16: World food day
 - 17: National marine day and International day for the eradication of poverty.

- November: 20: Universal children's day
- 29: International buy nothing day

- December: 1: World AIDS day
- 3: International day for disabled persons
 - 10: Human rights day
 - 16: Day of reconciliation

In the discussion of how the school selects the content topics for integration into their environmental education curriculum, Tieho suggests that she and her colleagues are guided by nothing else but the above environmental calendar. Our discussions with Tieho also suggested that she was always accommodating in distributing the content topics to her colleagues for them to include in their own learning areas. Tieho also noted that all the teachers were actively involved and that she believed that all the teachers were engaged in the teaching EE, given that she always made sure that the teachers were provided with the topics that should be treated every week or every month.



Okay, let us say, for instance this month, we are approaching water week, with this; we incorporate it in our learning areas. I usually bring in the topic with the entire staff and I tell them, guys, this month we are observing this, please incorporate this in your teaching in your classes. The maths teachers will be involved too they do auditing and measuring of the water, the science teachers as well, they do water purification, and the lower groups that is the junior phase, learn about how to conserve water and the English teachers also asks the learners to write creative writing on how can they save water at school or at home.

From the above quote, it is worth noting how the teaching of environmental education at Hillton seems to be decentralised. Teachers responsible for the different learning areas seem to have an idea of what is expected of them in the teaching and learning of environmental education and are left to their own devices in terms of determining what content to teach and how to do it. However, it was also clear that much of this integration of EE at the Hillton happened through the efforts of the lead teacher at the school – Ms Tieho

Yes, we have the meetings more often to help the teachers to design the lesson plans that include the environmental education. Sometimes they come to me individually and I am always eager to help and to listen to what they have to say.

To illustrate further the point that Environmental learning at this school is indeed decentralised, the gardens in the school are used as a resource by all the teachers in the school, to provide the examples from their own learning areas.

It (the gardens) help(s) every teacher at the school because they take the learners to the garden as well and



show them the real thing. The foundation phase teachers, also when teaching counting, they also take the learners to the garden to count the trees, every thing is practical and when the learners go back to the class, they know what the teacher was talking about.

Tieho and her colleagues have also introduced an environmental education club called "Hillton primary Enviro – club." The club is formed by a number of learner volunteers who ensure that the school environment is clean, and that the watering and gardening is done properly all the time. The issue of the environmental clubs emerged as no surprise as one of the documents that were provided by the teachers in this school entitled: Clubs, Adventures and cultural activities reads as follows "Environmental clubs exist in many school. Activities in which clubs can become involved include camps, excursions, developing field guides, etc."

4.3.2 SCHOOL LEVEL ENVIRONMENTAL EDUCATION POLICY GUIDANCE

The teaching and learning of EE at Hillton primary, as with the previous school, is guided by some of the recent national policy documents. The policies assist teachers to set up their teaching goals.

Yeah we prefer to use policies, without policy documents we are just going no where as they guide us on how to teach.

One important document that the teachers at Hillton use is the policy interpretation guidebook for the Revised National Curriculum Statement: entitled "Enabling an Environmental Focus in Social Sciences/Technology/ Arts and culture etc." The guidebook is exactly the same as the one used in the previous



school, as we described in the previous case. It is also used with the same purpose, which is to assist in guiding their teaching of environmental education in their school. The document provides examples of how to draw lesson plans of certain learning areas, integrating environmental education. Such similarities, between the two case study schools, are not surprising as both schools belong to the same cluster and have attended many of the same provincial EE workshops.

Documents and guides from the Department of Agriculture also guide the teachers at Hillton primary. An example of such a document lists and describes ways of integrating EE in the different learning areas. Teachers at this school use such documents in drawing up their lesson plans for the different learning areas. As with the previous school, the natural science teachers at this school have developed the School Environmental Education Policy that is also used to guide their teaching of EE at the school.

We wanted something that would be relevant to our situation in this school. However, before we draw our policy we always consider first the policies department of education; we compare and contrast so that our own school policy does not read so different.

The above quote shows the common culture in the development of the school Environmental Education policy in the Mpumalanga schools. However, as illustrated earlier, the subject Advisers (curriculum Implementer) mentioned during our discussions how it was expected of every school to develop such a policy based on the needs and situation of individual schools.

Another important set of documents that seem to guide the creation of Opportunities to Learn (OTL) Environmental Education at Hilton primary are the



Learning Area Programme documents that are provided by some of the Non-Governmental Organisations (NGOs) that operate in the Mpumalanga province and schools. As this was the case even with the previous school, it is clear that more of the NGOs indeed provide critical information and resources for the Mpumalanga teachers on how to integrate Environmental Education in the teaching of each learning area. The importance of such materials as illustrated earlier, is to provide some form of a ready-made document to assist in planning and carrying out the teacher's integrated environmental Education lessons. Teachers at Hillton also use other material such as pamphlets and charts in addition to the policy documents

Yes, we do use some pamphlets and some charts...ama wall charts, as I have said now, the Department of Agriculture promised to deliver some posters for the water week. Maybe next week we will be having them posted all over the walls of the school as the learners are made aware of the importance of water. We also put them on the walls in our classrooms to refer to them as we teach.

The role of such resources and policy guides in the construction of learning opportunities for environmental education can thus not be disputed. Tieho and her colleagues, however, have not been as much resourceful in finding materials for teaching EE as they believe EE is not a subject on its own.

As I said earlier, Environmental Education is not a subject on its own and therefore we cannot focus on looking for the resources that help in the teaching and learning of Environmental Education. You can only look for resources for the teaching of your learning area only; I think the pamphlets and the charts are always enough in integrating environmental education in our teaching.



The discussion with Tieho seems to confirm the minimalist approach that Hillton has taken to the provision of OTL Environmental Education at the school. That is, while taking it seriously enough to include it in their teaching, the teachers at Hillton are conscious not to spend too much time and energy on this rather marginal subject focus.

4.3.3 PROFESSIONAL DEVELOPMENT FOR ENVIRONMENTAL EDUCATION TEACHING

To help prepare the teachers adequately to provide better opportunities to learn in this new focus area of EE in this school, many of the teachers at Hilton seem to have taken up opportunities for them to learn, by attending numerous workshops on environmental education between the years 2000 and 2005. Asked about the number of such opportunities/workshops that the teachers at this school have attended to develop themselves, in the five-year period, Tieho answered that:

The CIs and NGOs, they all conduct workshops on Environmental Education. The Department of Agriculture sends their officers to our schools to workshop us on environmental issues and sometimes at their own place in town. Last week we attended one organised by Botanical Gardens at Tika primary school. The BMW seed program also organised the environmental education workshops and there is also the “adopt a school yard” it is also organised by the NGOs. In fact, they are mostly organised by the NGOs, I can’t even remember some, I attend these workshops every month.



There is no doubt, from our discussions, that the intense professional development of the teachers at Hillton seems to have come from their attendance of such workshops. Once more, there seems to be a combination of opportunities that are provided for the teachers at the school through the Mpumalanga Department of Education (MDE) and others through a number of Non-Governmental Organisations (NGO's). Relatively more opportunities again seem to have come from the NGO sector than the Government sector. Several NGOs, which include the business structures and organisations outside of the government sector, provided most of the learning opportunities for Ms Tieho and her colleagues in Mpumalanga. Some of the opportunities for the teachers to learn EE included those provided by the groups that are listed already in our previous case study. Most of the OTL EE for the teachers, therefore, seems to have come from the NGOs relative to the governmental sector.

Asked about the support of the subject advisers from the MDE, Tieho noted that the kind of support that she and her colleagues got from such people included the school visits and the distribution of relevant documents such as the document she received recently on water and plants.

I will talk about the one that I work with, Macy, she is very supportive, and every time you want her she is there for you. You phone her, she in there on time to answer your problems, anything that you ask for. You call her, she comes to the school, saying, "I have been phoned by Nancy (the teacher) and here I am" we will call her to the teacher's meetings and then she will help us in any way she can. She even distributes some documents to us such as the ones she gave me recently on water and plants."



It is clear from the above quote that the CIs still played an important role in assisting the teachers at Hillton with the integration of Environmental Education within the other learning areas. The importance of such leadership and guidance is thus repeatedly emphasised in our two case studies.

During our conversations about the issues of teacher's Opportunities to Learn (OTL) Environmental Education with Tieho and her colleagues, they were emphatic about the fact that there was a limited number or even no Environmental Education topics that were identified as important content to cover in schools at such workshops. Tieho noted that because Environmental Education is not a learning area, there are no specific topics that the workshops focus on but only the manner in which the teachers could include the Environmental Education in their teaching.

Actually in most cases, they tell us about how to incorporate this and how to integrate these environmental things to the learning in our classes. It is not about planting trees or grass, saving water outside and saving water everywhere but mostly is all about how to incorporate that in the class. Those are the things that they teach us at the workshops.

Accordingly, at Hillton there are also no specific Environmental Education topics that are taught as part of EE and it is clear that this approach to EE seems to be the official policy of the MDE that is encouraged in their workshops. Indeed, in my discussion with the MDE CIs, it became clear that there are no specific topics that teachers were expected to focus on although the provincial coordinator had been at pains to identify some specific topics that were expected to be taught in the schools. Once more the issue here becomes that of the difference in the interpretation and understanding of the national Environmental Education policy



at the local levels. Most of these Environmental Education workshops varied in their duration from one to three days at a time and provided for multiple opportunities for teachers to learn and thus for schools to develop the expertise to structure rich and better opportunities for their learners in Environmental Education. However, as we have illustrated through the case of Hilton, teachers take different things from such workshops. The Hilton group saw it as an opportunity to gain with respect to pedagogy and classroom processes only.

4.3.4 LEARNER'S OPPORTUNITIES AND ATTITUDES TOWARDS THE TEACHING OF EE

At Hillton, the major focus seems to be on trying to ensure that the learners know about their environment and how to make use of it, as well as to conserve it. Tieho noted that the learners were to be taught about things that they know and that they could see as well as those that they could understand.

That is why I'm saying let them know about their environment than to tell them about something that you as the teachers does not know about, so it helps in that way because when you say this is morula tree, it is something that they know as it grows in their area and they can see it.

The broader curriculum also has its own goals and such goals as noted by Tieho suggest that learners be taught what they are able to see about the environment, from what they know to what they do not know. While at Hillton, as in the other schools in the province and nationally, there is no specific time period on the school's timetable that is specifically allocated for the teaching and learning of EE, Tieho mentioned how she always found it difficult to create additional time for environmental education at the school. This should not be



surprising however, as she and her colleague's approach to Environmental learning is that it should only be within the learning areas, something that comes from the national and provincial policy framework.

At Hillton, there are therefore not as many tasks that are assigned to learners for encouraging Environmental learning. A few of the tasks we discussed included mainly the colouring of pictures and drawings. However, the most visible task being when the learners are assigned gardens and make their own plots in the school for planting and cultivating vegetables as a way of fund raising and for the school's nutritional needs in their feeding scheme programme. (See appendix 16).

It also came to my attention that field trips are sometimes organised, as are other set of opportunities to learn at Hillton primary. It therefore became obvious as also reflected in the first school case study that the impact of trips on learners specifically in this province is measured by the assessment forms.

We took the learners to view the potholes at Sabi Arabia lakes, I also took the grade seven to the botanical gardens to go and study the wet lands, I also organised with the department of agriculture to come and help the learners understand what the wet land are.

Teachers in general find that such excursions have a positive influence on the learners as they always respond positively to their assignments and the assessment sheets given to them after the excursions.



Asked about the learner's attitudes, Tieho explained that the Environmental Education learning in this school has brought about different impacts in the learners.

It has different types of impacts on the learners, some enjoy to do the work and some don't, especially girls, they do not enjoy gardening at all. But sometimes, I give them the work that they enjoy such as cutting, bolding, and drawing.

Tieho also has a belief, as illustrated in the above quote, that some learners have a positive attitude towards the teaching and learning of Environmental Education as a result of the exposure to EE.

I mean because most of the time when we do environmental issues we do practical and remember learners dislike staying in the classroom all the time. They want to go out side where they feel they learn better because they are able to see, touch ad smell what they been taught.

The expectation on the learners after her lesson is that (they) learners should have gained knowledge, skills and attitudes that are positive towards their environment.

As with our previous case study, the issue of providing better Opportunities to Learn (OTL) Environmental Education at Hilton is not settled. While theirs is an honest attempt to expose learners to EE, it is doubtful though that learners at Hilton end up with significant environmental learning from what seems to be like a superficial exposure to EE in their approach. Their approach to EE, however,



does seem to comply with the provincial and national policy provisions as contained in the frameworks and policy documents. The schools cannot therefore be faulted in their attempts at implementation of national and provincial policy. That is the implementation dilemma!



CHAPTER 5

SUMMARY OF THE FINDINGS, DISCUSSION, CONCLUSION AND RECOMMENDATIONS

This chapter presents the findings and the implications of the study. It also discusses the limitations arising from the research approach, and thereby allows us the opportunity to consider some potential issues for further study.

The main aim of the study was to explore the distribution of Environmental Education “Opportunities to Learn” (OTL) in the province of Mpumalanga. Specifically, the study was conducted in order to develop an understanding of how the Mpumalanga province has responded to the national policy provisions and the priorities for the integration of Environmental Education within the primary school curriculum programme. Furthermore, the investigation sought to make sense of how the province has structured the teaching and learning of Environmental Education in the primary school curriculum. In exploring these issues of OTL in the area of Environmental Education, I wanted to make some contribution to our understanding of the issue of how provincial educational authorities or other such regional entities in decentralized education systems understand and interpret national policies and priorities in the teaching and learning of such integrated subjects as Environmental Education. I therefore, explored, more closely, the case of how a province or regional entity went about identifying and marshalling the resources for the implementation of an integrated Environmental Education curriculum within its frameworks and school programmes. In summary, the study provided answers to the following original research questions:



- What curriculum guidelines and provisions (policies) have been made for the teaching and learning of Environmental Education in the province of Mpumalanga?
- How are the curriculum guidelines and provisions understood and interpreted in the province?
- What are the consequences for student and classroom instruction in Environmental Education in the province?

In the previous chapter, I presented some of the major themes arising from the data collected in the form of case studies of OTL Environmental Education in Mpumalanga. In this final chapter of the dissertation, I wish to explore these data sets further, through a reflective discussion of the major findings as well as their implications and the conclusions arising from the data.

5.1 Summary of the findings

Chapter 4 presented a discussion on the distribution of OTL Environmental Education, by relating first the provincial story of how national policies got translated into provincial guidelines and frameworks. In the case of Mpumalanga, a provincial Environmental Education coordinator was appointed from among the existing provincial officials. In this case, it was the Agricultural Science specialist who was tagged on with additional responsibilities for Environmental Education for the entire province. Similarly, the provincial coordinator founded a small team of science education district specialists (subject advisors) who assisted him in creating a framework for guiding schools and marshalling the resources for the provision of OTL Environmental Education in the schools. Needless to say that, given the limited personnel and material resources for Environmental Education in the province at present, our provincial story therefore described a case of the inadequacies of provincial resources for Environmental Education and how these



limitations have led to the development of inadequate Opportunities to Learn (OTL) Environmental Education generally in the provincial schools.

Furthermore, our case studies on the provision of OTL Environmental Education within the schools in the province provided a glimpse of how schools have managed to cope with the limitations imposed by these provincial frameworks and resources. These limitations have in turn resulted in unequal and differentiated OTL Environmental Education across the different schools in the province of Mpumalanga. In general, some schools have managed to create better opportunities for the teaching and learning of Environmental Education than others. In the next section, these critical findings of the study are explored further.

I divide the discussion into several sections, each reflecting on the five (5) major findings arising from the data presented in chapter four. First, I discuss the finding on the provincial capacity; then I explore the findings regarding the provincial and district instructional capacity systems. Next, I discuss the use of professional development workshops and sessions to enhance the Opportunities to Learn Environmental Education, and the role of other governmental and non-governmental organizations (NGOs) in helping some of the schools to create better Opportunities to Learn Environmental Education than their counterparts.

5.2 Provincial Capacity for Implementing Environmental Education

First and foremost, my study has uncovered an important issue with respect to the latent capacity of the Mpumalanga province to implement the national provisions on Environmental Education. That is, I observed that the provincial and regional capacity for the implementation of the Environmental Education policy (framework) remains very thin. With only the provincial coordinator, who is at the same time a coordinator of another academic subject within the



province, to speak of as the provincial capacity, it is not surprising to observe that there was little substantive provincial coordination of Environmental Education to speak of in Mpumalanga. In good faith, the provincial coordinator made all attempts to put together a provincial Environmental Education framework and tried to develop groups of subject advisors and teachers to take the lead in the implementation of the new focus area. However, his efforts were far too sparse to make significant improvements to the quality of the Opportunities to Learn (OTL) within the schools. As the main driver of the new Environmental Education curriculum, the provincial coordinator plus the few science curriculum implementers (or subject advisors), constituted a very weak centre for driving the Environmental Education programmes in the province of Mpumalanga.

Examining some of the literature reviewed in chapter 2, Porter (1995), for example, observed that the recent standards policies in most developed countries have been designed to assure that the **schools** and the **districts** use resources and provide services effectively for **all** the students, based on the idea of Opportunities to Learn (OTL). He also noted that schools are expected to provide, and state and/or provincial governments are expected to guarantee, not only just course offerings but high quality curricular that would support the content and performance standards. Also in their definition of opportunities to learn, Elmore and Furman (1995) note that it is a set of conditions that schools, districts, and states must meet in order to assure that students are being offered equal opportunities to meet expectations embodied in the performance standards. All the above statements are premised on the understanding that **states, districts and schools play an important role in providing learners with equal opportunities to learn**. For the state or provincial levels in the case of South Africa, it was important therefore to examine the issue of their readiness or capacity to be able to drive the Environmental Education agenda as proposed from the national government level. With a handful of officials who are



themselves not focused full-time on the subject area, it is difficult to see how the province could claim to be adequately prepared for the challenge of implementation. This is a similar case to that argued by Elmore and Fuhrman (1995) when they draw attention to the fact that there is often “little correspondence among what people think states (or in our case, provinces) “ought to do, what they actually do, and what they know how to do” (p.435). While provinces are expected to be the key drivers in the implementation of the new Environmental Education frameworks and thus take the lead in the provision of Opportunities to Learn (OTL) the subject, they have historically been unable to fulfill such a role mostly because of the “lack of capacity at each level of the enterprise” (Elmore and Fuhrman, 1995). As Elmore and Fuhrman (1995) demonstrate, the problem of lack of capacity is not unique to provincial levels of government only. In fact, in the case of Environmental Education in South Africa, even the national government itself introduced the new environmental education policy framework without any permanent capacity of its own. Capacity for driving the new policy guidelines was brought in through the NEEP-GET project, which was funded by the Danish government for a fixed period only. For that reason, when the NEEP-GET initiative folded in 2003, there was a dramatic reduction of activities and national initiative around the project. Politically off course, the national Department of Education will claim to have handed the Environmental Education initiative to the provinces for implementation, which as we have uncovered in the present research have no capacity in place to drive this important policy. An important implication of this finding is that there is currently no strong center for driving the new Environmental Education policy framework in South Africa nationally and in at least the Mpumalanga province. This is why, according to Elmore and Fuhrman (1995), similar efforts to enhance Opportunities to Learn (OTL) as the case of Environmental Education in South Africa, have had such limited success historically.



5.3 Provincial or District Instructional Guidance System for Environmental Education

In Chapter two, we highlighted some of the recent efforts to use the concept of Opportunities to Learn (OTL) as a policy instrument, especially in political debates about national standards and equity issues in the USA (McDonnell, 1995; Stein, 2000). The major point in these debates was to make sure that learners were not held accountable for materials and skills that they never had the opportunity to master (Elmore and Fuhrman, 1995; Oakes, 1990; Porter, 1995; Stevens, 1993). That is, there was a need to discern between the failures of schools' and districts' inability to provide such learning opportunities versus student failure resulting from their own weaknesses or tardiness. As a policy instrument, therefore, Opportunity to Learn (OTL), seeks to make school delivery expectations more uniform so as not to penalize any student unfairly for attending schools that were themselves the problem.

My discussion of the Mpumalanga cases suggests that although there was an expectation that the schools would begin to integrate Environmental Education in their teaching of other subject areas, there were no substantial plans and guidelines on how this would happen in the schools. That is, the province and/or regions (districts) provided no locally adapted curriculum frameworks, no teaching and learning guidelines, no assessment standards, and no time-frames or guides for schools to use in setting up Opportunities to Learn Environmental Education for their learners. In other words, there was generally no instructional guidance system for Environmental Education to speak of in Mpumalanga. Decisions about what to teach, when, and how, and about what to monitor and assess are for the most part reserved for each classroom or subject teacher or at best in some few instances reserved for school level decision makers. The implication of this finding with respect to the lack of a coherent instructional



policy system in the province is that there is bound to be extreme variations in Environmental Education curricular offerings in the provincial schools. The province is thus in no position to determine and know for sure which schools and/or learners are getting the kinds of exposure to Environmental Education that is desired by the national frameworks and policies. For this reason, the different interpretations of what the curriculum needed to provide for among the policymakers in the province were not surprising. Consider the following example that illustrates these differences between the provincial coordinator and his subject advisors with respect to curriculum coverage:

At the provincial level, the EE coordinator believes the EE topics should be singled out and be taught separately as he explained:

We are looking at the forestry, soil degradation, littering, save water and others. Those are the topics we look at as Mpumalanga has a lot of mines, we try to be contextual and address the issues which are relevant to our community e.g. deforestation because many people are cutting down the trees and so on.

On the other hand, the subject advisers I interviewed noted that EE cannot be taught separately from the other subjects as it is not a subject on its own. Another subject adviser explained his interpretation of how to teach EE:



Actually, the way we teach it as I said it is not the issue that we say we are now teaching environmental education because it is the core of each and every learning area, we integrate it and learn it in each and every learning area because if there is no content on environment then you don't have a normal teaching.

Noting these two quotes, it is rather surprising how both decision makers make up different understandings and interpretations of the policy on this issue. The Curriculum Implementer believes that there should be no specific topics singled out for Environmental Education, while the coordinator himself listed a number of such topics to be studied specifically. While individuals, on their own and in various coalitions, are important in understanding how state policy is interpreted and adapted locally, the situation of their work is also likely to be influential. Cognition, after all, is situated (Brown, Collins, & Duguid, 1989; Resnick, 1991), and local policymakers' understanding of reform is influenced by the context of their sense-making. The data in the study, based on the same finding, also suggests that decisions on how to teach EE are taken by individuals. The teachers in the study reflected diverse ways of teaching and learning of EE in their schools. This provides further evidence that there is no clear guidance on how teachers should approach Environmental Education in this province. For example, in one of the schools in the study, the teachers seemed to rely more on identifying topics that have some relevance to their learners and their local environment in developing the school curriculum whereas in the other school teachers seemed to draw their Environmental Education topics mostly from the environment calendar and follow the special weeks or days throughout the year (Refer to the table in chapter 4). This point is however, emphasised in recent scholarship drawing on developments in the cognitive sciences (Leinhardt, 1992; Resnick, 1991), which suggests that local educators' interpretation of policy is more complex. Specifically, interpreting policy involves teachers constructing



ideas about instruction. The ideas they construct are influenced by, not only the policy but also their beliefs, knowledge, and dispositions. The other reason for the difference in the teaching of EE in these schools could be that of the difference at the policy level, where the policy decision makers have differences in their understanding and interpretation of policies within the same province. This therefore makes it rather difficult for the teachers and the learners as they are influenced by these individual's understandings and interpretations of the policy. However, as noted by Spillane (1998) in the case of States in the USA, school-level efforts to guide teacher's instruction contributed to the lack of uniformity in the district's response to the state policy. He goes on to indicate that responding differently to the state and district-level instructional guidance, school leaders communicated to their staff messages about instruction and the state policy that varied from one school to the next and frequently differed from those broadcast by some part of the district's central administration.

5.4 Professional Development Support

The third finding suggests that professional development workshops and sessions constituted the main source of support and point of communication by the Mpumalanga Department of Education (MDE) around Environmental Education for the teachers. Significant as these workshops were to the teachers, they have always been few and far between, and designed mostly around the NEEP-GET workshops during the life of the project. With the winding down and subsequent folding of the NEEP-GET project in the past few years, such professional development workshops have become even more scarce at provincial and (regional) district level.

The notion of ongoing and lifelong professional learning and growth for teachers, in relation to new reforms in education, has been highlighted by many researchers and scholars (Fullan & Stiegelbauer, 1991, Schon, 1983, 1987,



Clarke & Hollingsworth, 2002). These researchers argue that if professional growth is to occur, teachers need to have sustained and substantive learning opportunities involving serious ongoing discussions with critical colleagues such as mentors and continued reflection on all aspects of their practices and beliefs. Clarke & Hollingsworth (2002) also emphasize the need to provide opportunities for support of teacher professional growth in realistic contexts, with the view of “teachers as learners” within schools as learning communities. Beattie (2000) and Carter (1993) suggest some innovative ways teachers can undertake professional growth using reflection through narrative, either written or verbal. Such narratives allow the teachers space to voice their most pressing issues or concerns, examine prior knowledge in the light of new understandings and construct new knowledge through the processes of reflection, dialogue and inquiry.

In one of the few positive aspects of the provincial implementation story, my analysis in this study suggested that the MDE, the National Department of Education (DoE) through its NEEP-GET project and several Non-Governmental Organisations (NGOs) took the issue of teacher development seriously. In fact, as argued earlier, teacher professional development seems to have been the most dominant strategy the province had for building school capacity for instruction in Environmental Education. As illustrated in the previous chapter, it was obvious that the teachers at the schools I visited had been able to advance so much professionally in their approach to this new focus area of environmental education through these professional development workshops. One teacher explained the number of workshops she attended and the topics that were treated in the workshops as follows:



At least up to ten. We actually did something in uh... pollution. We were looking at uh... Mpumalanga as a whole. How polluted Mpumalanga was? We went to Delmas... I was in Delmas recently Yeah recently I was doing a water... what do they call it? Water Awareness, with RAND WATER (company). We did activities for water... for awareness to people about water.....

Also from the provincial policy side, there have been a number of professional development workshops offered to the teachers of the province. Many of these workshops were organised by the Department of Education's National Environmental Education Project for General Education and Training (NEEP-GET) project. Highlighting this focus on teacher professional development, the EE coordinator explained how they conducted such workshops within the province:

The model we have been using all along is to have the curriculum implementers (subject advisors) and all the teachers in the clusters. They work in clusters in a particular topic and you give them something to do and they go back and if it is a teacher, they go back to their schools and test it and then after a week or so they come back in to the cluster meeting and they discuss it and they agree and decide on the new topic.

Clearly the fact that such professional development workshops enabled the province to communicate and coordinate the provision of Environmental Education effectively should be enough to motivate for its continuation. Sadly, however, as noted by Elmore and Fuhrman (1995), provinces are not always well resourced financially and in capacity and skills to undertake some of these important functions allocated to them through national policy. My observation, in the case of Mpumalanga, is that with the reduction in the commitment and



number of professional development workshops on environmental education organised by the Department of Education in the past year or two, continuous communication and guidance on Environmental Education are threatened.

5.5 Local (School) Initiatives and OTL Environmental Education

Another major finding in the study, suggests that some schools in the Mpumalanga province have managed to create significant opportunities to learn environmental education through their own local initiatives and inventiveness, coupled with the provincial (and national) EE policies and programs. As discussed in the previous chapter, the data reflects that some schools have designated Environmental Education coordinators to facilitate and assist all other teachers in the school with the integration of Environmental Education in other subject areas. It is through the initiatives of such a designated coordinator that the schools were able to create extensive and meaningful Opportunities to Learn (OTL) in the subject. My findings in this respect are not far from what has been suggested by Neal and Palmer (1990) who posit that the inevitable conclusion from their research is that each school should have a coordinator for environmental education, someone rather more than a teacher with 'responsibility for environmental studies'. Similarly the Conservation and Development programme of the United Kingdom (1983) proposed that, each school should designate responsibility to a member of staff for planning, co-ordination and oversight of environmental education - perhaps as part of an overall responsibility for introducing related topics across the curriculum. Without adequate co-ordination, there is a danger that certain topics and issues covered by more than one teacher will not be complementary. The teachers in the present study as reflected in the previous chapter were the lead teachers in the teaching of Environmental Education in their schools. They are what we would consider the environmental education coordinators at their schools. As one teacher explained:



As I said, as an EE facilitator in the school, I usually go the workshops and come back to have a meeting with my colleagues. I am trying by all means to show them that they can make their own activities using the materials that I provide to them (teachers) in our meetings.

It was interesting to note that such schools as reflected in the data had also developed their own school environmental education policies with input from all the teachers in the school. The school policy was developed based in the individual needs of schools.

What we usually do before we develop a policy here at school, we sit down and look at our needs of the school. You know what does the school need? What do we need? What do we want our children? Where are we taking our children? Then we develop our own that is going to suit us.

(Interview with Ms. Tieho, 28 February 2006)

In this sense, my case study schools were in line with the suggestions by Neal and Palmer (1990) that the task of the coordinator must be to facilitate the implementation of the school's policy for environmental education. In order to do this, the school had to have such a policy first. It is unlikely, however, that given the conditions in many primary schools across Mpumalanga specifically, and South Africa generally, schools would be able to create their own Environmental Education policies and mobilize adequate resources for the implementation thereof. Against this background therefore, the implication of our finding with respect to variations in school capacity is that the nature and quality of the Opportunities to Learn (OTL) Environmental Education in Mpumalanga is likely to vary by school, and by classroom with some providing



better opportunities than others depending on local inventiveness and resources. In schools with stronger Environmental Education coordinators, opportunities for teaching and learning of the subject may be better.

5.6 Interactions between Governmental and Non-Governmental Organizations

My final set of findings in this study suggests that the Mpumalanga Education Department (MDE) on its own appears to have limited intellectual and material resources with which to build the schools' instructional capacity for the implementation of the new Environmental Education policies and programs. As described in the data, the workshops attended by the teachers from the case study schools were mostly organized by a number of Non-Governmental Organisations (NGOs), including large corporations and business organisations as opposed to those that were facilitated by the (national and/or provincial) Department of Education. A number of participants continued to express the point of how the NGOs, which include the business structures and organisations (all outside of the governmental sector), provided many of the learning opportunities for schools in the province of Mpumalanga as a whole. Making a similar point about the situation in the United Kingdom, Neal and Palmer (1990) point out that the Local Education Authority (LEA), people and agencies in the neighborhood and national organisations are all available for professional exploitation in the cause of furthering the environmental policy. They further note that further afield, there are many other organisations that also promote environmental education opportunities. Several organisations provide environmental study facilities for schools (Neal and Palmer, 1990). In the case of Mpumalanga, such organizations as SAPPI, BMW, Botanical Gardens, etc. provide such added opportunities for teacher enrichment and development in Environmental Education. In fact, I further noted that even when government was involved, it was often not the Mpumalanga Department of Education, but



rather such other agencies of government as the Department of Water Affairs and Forestry (DWAF), and the Department of Environmental Affairs and Tourism (DEAT). The latter finding is a splendid example of how some of the schools in the Mpumalanga province have made meaningful links with the NGOs in their local area in order to enhance their capacity for instruction in Environmental Education.

Furthermore, I found that as a consequence of these interactions between the governmental and non-governmental agencies around Environmental Education, some schools and circuits with stronger ties and longer term relationships were able to provide better Opportunities to Learn Environmental Education. That is, more significant Opportunities to Learn (OTL) Environmental Education seem to be created where and when the interactions between the governmental and the non-governmental structures were stronger and long term than when the Provincial Education Department tried on its own with its limited capacity in Environmental Education. The obvious implication of this finding is that given the selective nature and scope of operation of most NGOs and businesses, Opportunities to Learn (OTL) Environmental Education cannot be provided consistently and equitably throughout the Mpumalanga province. When provincial Environmental Education capacity is largely determined by the strength of such selective interactions, an equitable provision of opportunities can therefore not be guaranteed.

5.7 CONCLUSIONS AND IMPLICATIONS FOR FURTHER RESEARCH

Based on some of the current literature reviewed in this research, the introduction of Environmental Education as an integrated subject in the primary schools curriculum of South Africa since 1996 was a very bold and progressive step in the right direction by all accounts. About 10 years later, it remained to be seen how far that progressive move of a decade ago had permeated the



schools and classrooms in the various provinces. To be specific, I was interested in this study, in understanding how the various provinces had translated that national mandate for the introduction of environmental education into real opportunities for teaching and learning about the environment for various kinds of learners in our schools.

To piece together the course of events, and the story of environmental education policy through the provinces, I was guided by a body of literature that seeks to define and make sense of the issues of equity in the provision of teaching and learning in the schools. I chose to use the literature on Opportunities to Learn (OTL) to help me make sense of what the children in the various provinces were being exposed to in the name of Environmental Education. In OTL, we pay particular attention to curriculum coverage and to the policies and practices that condition such coverage. Such questions as what is the curriculum that is being provided, to whom, where and when, with what time frames and resources became important in my construction of the provincial implementation story. I chose to focus my writing on a single province as a case study, the Mpumalanga province, after being overwhelmed by the sheer volume of the data after I had begun putting the story of two provinces – Mpumalanga and Gauteng. This is probably one limitation in the present study, that it gives a story of one case instead of nine (for each of the nine provinces in South Africa). Having collected data for the Gauteng province as well, and analysed extensively the Mpumalanga case, I am satisfied that there are interesting lessons and themes that would resonate across all the nine provinces. This has been rather a beginning in understanding how decentralized systems translate national provisions for new curriculum innovations and change. It is by no means a complete story, just a slice across from my perspective as a Masters Student. Further research on the variations and commonalities by province should be interesting to pursue. Also, even just the story of another province, maybe less rural than Mpumalanga would yield other interesting themes.



I am also cognizant of the fact that, as a Masters student, I was a bit rushed by the timeframes for completion of the dissertation, in line with the requirements of my university. I therefore, chose to tell the story from mainly the interviews with teachers, principals, and subject advisors. While these interviews provided rich descriptions of the teaching and learning of Environmental Education in the province that allowed me to construct a picture of the Opportunities to Learn in Mpumalanga, at least from a policy perspective, it is possible that interviews with learners and classroom observations would have changed my story somewhat. However, that probably would be a different dissertation, which is yet to be pursued. That is, the classroom story of Opportunities to Learn (OTL).

With all the caution detailed in the foregoing paragraphs, the present study has managed to uncover some important findings with respect to how Opportunities to Learn Environmental Education are structured and created in Mpumalanga. It is probably an undeniable fact, not only with respect to education only, that provincial and local capacities are very thin and limited in many areas of service delivery generally. For the present study to have uncovered this inadequate capacity in the provinces and regions of Mpumalanga to implement the new curriculum provisions is not by itself great news. It is an important finding of the study nonetheless. What seems to be great news from the present study is the fact that **such provincial inadequacies can be overcome** – and that such can seemingly be done without necessarily appealing to higher budgets and/or more funding from government. An interesting story to emerge from this dissertation is how the **interactions between governmental and non-governmental structures and programmes seemed to be the key determinant of the strength of Opportunities to Learn (OTL) in the different schools and regions**. A key emerging recommendation from my findings therefore would be for provinces and/or districts (regions) to figure out how to harness their programmes, resources and energies, with those of other



non-governmental players including those other (non-educational) government departments with a stake and interest in environmental education.

A second recommendation arises from another key finding in the study with respect to what is critical in driving Environmental Education in the province, district and/or schools. My case study suggests that almost without fear of contradiction, the role of an Environmental Education Coordinator is a critical one. Whether the EE coordinator is at the level of the school or of the district or the province as such, their role was critical. In the Mpumalanga story, I was a witness to the role of these coordinators at the provincial and at the school levels. Sadly, the district (or region in our case) had no such role player and it was not surprising that the district role was thus peripheral in the implementation of Environmental Education. Our recommendation in this case is that each level of implementation should thus designate an Environmental Education coordinator. If such coordinators could focus solely and extensively on Environmental Education, that would be better given what I saw of the divided attention of the provincial coordinator in the case of Mpumalanga. Among the responsibilities of such coordinators, would be the development of a coherent instructional guidance system, each for their own levels and building, though a collaboration and interaction with each hierarchical level above and below.

Thirdly, the role of professional development in building the teachers and schools' capacities for instruction in Environmental Education cannot be overemphasized. In the case of Mpumalanga, teacher professional development seems to have been the only chord remaining between the teachers and the province with respect to guidance on Environmental Education policy and frameworks. Indeed, the literature we have reviewed has also underscored the importance of providing the teachers with the very Opportunities to Learn (OTL) Environmental Education that we seek for the children. Our recommendation in this case is that ongoing professional development of teachers should be



provided, but that such teacher development should be tightly focused on the Environmental Education content, instructional approaches and assessment standards and that appropriate, subject specific resource should be marshaled for implementation in the schools.

Finally, as a former schoolteacher myself, I have learned a lot about how educational change can become complex. This is even more so in our case in South Africa, where national and provincial structures both have responsibilities for leading such changes in schools. However, I have learned a lot about the power and value of collaboration, even between people and structures. No single structure or person can have all the “capacity” to provide for high quality Opportunities to Learn (OTL). This provincial story has been positive in its illustration of how some schools, and teachers specifically, have managed to create better OTL Environmental Education in spite of the limitations in their own individual capacities. The interactions and collaboration do seem to multiply individual capacities many times! Against the evidence presented in this dissertation, there is still hope for better Opportunities to Learn (OTL) Environmental Education in Mpumalanga and South Africa generally.



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