Enhancing learner centred education through the Eco-Schools framework:

Case studies of Eco-Schools practice in South Africa and Namibia

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ABSTRACT

Since the early 1990's both South Africa and Namibia have been engaged in educational reform processes to address the discriminatory impacts and orientations of education under Bantu Education which were implemented in both countries prior to independence (Namibia in 1990, and South Africa in 1994). A feature of both educational reform processes is the underpinning theory of learning which draws on social constructivism, and which is articulated as learner centred education. This approach to teaching and learning infuses both policy frameworks. Another common feature is the introduction of environmental education into the formal education systems of both countries, a process which has been championed by development assistance, and which has been supported by programmes such as the Eco-Schools programme which is an international environmental education initiative started after the Rio Earth Summit in 1992, and implemented in a number of countries, including South Africa. The programme has also been piloted in some schools in Namibia.

To date no research has been done on the way in which the Eco-Schools framework (its practices, organizing principles, evaluation processes etc.) enhance learner centred education. This study therefore aimed to investigate and understand how the Eco-Schools framework can enhance learner centred education. The study was conducted in 2007 in three Eco-Schools in Namibia and four Eco-Schools in South Africa in the context of the broader national programmes of implementing learner centred education policies, and environmental education histories.

The study used a case study methodology, using observation, interviews, and document analysis as the main methods for data generation. The analytical process followed two stages: the first involved an inductive analysis using categories which were organized into a series of analytical memos. The second phase of data analysis involved recontextualising the data drawing on theory and contextual insights to provide insights that address the research question, using analytical statements.

The main findings of the study are that the Eco-Schools framework provides numerous opportunities to enhance learner centred education, through contextualization of learning, through strengthening school-community interactions, and through enabling active involvement of learners in decision making and a range of contextually meaningful Eco-Schools practices. The study also showed that the Eco-Schools framework allows for empowerment of learners in relation to diverse needs, and also allows for learner initiated contributions, although this aspect was not well developed in the schools that were included in this study. The study also found that the benefits of Eco-Schools in terms of enhancing learner centred education were limited to only a few learners who were involved in club activities or who were being taught by enthusiastic teachers who were participating in the Eco-Schools programme. The study showed that these benefits can be more widely shared if more teachers were to get involved, and if the Eco-Schools programme were better understood in relation to the curriculum requirements of various subjects and learning areas, and if the Eco-Schools practices could be more successfully integrated across the curriculum. The study also showed that various forms of support were required for implementing the Eco-Schools programme, most notably the support of the Principal, and the Department of Education. The study also identified that parents and other stakeholders in the school were supportive of the Eco-Schools programme since it was perceived to have relevance to learning, as well as the community. The results broadly confirmed that the implementation of Eco-Schools using a whole school, values based and active learning approach promotes a school culture which enhances learner centred education more broadly across the school. The study also found that the Eco-Schools programme added a new dimension to existing discourses on learner centred education, which could be described as a community linked or situated approach to learner centred education.

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Dedication

I dedicate this piece of work to….

The honourable memory of my late aunt Sandra Haingura Kasiku Maureen who was not able to see the moment of completing this thesis, to her I owe my life. She has been a pillar of strength in my life and she has shaped and moulded me into the man I am today.

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LIST OF ABBREVIATIONS AND ACRONYMS

BETD	Basic Education for Teachers Diploma
CERI	Center for Educational Research and Innovation
ESD	Education for sustainable development
EE	Environmental Education
ENSI	Environment and schools initiatives (Europe)
EEASA	Environmental Education Association of Southern Africa
FEE	Foundation for Environmental Education
IUCN	International Union for Conservation of Nature
LCE	Learner Centered Education
MDG	Millennium Development Goal
MBEC	Ministry of Basic Education and Culture
NIED	National Institute of Education Development
NEEP-GET	National Environmental Education Project-General Education and Training
NDP 1	National Development Plan 1
NGO	Non Government Organization
OBE	Out Come Based Education
GRN	Government of the Republic of Namibia
IPCC	Intergovernmental Panel on Climate Change
RSA	Republic of South Africa
RNCS	Revised National Curriculum Statement
SADC	Southern African Development Community
SADC- REEP	SADC Regional Environmental Education Programme
SEP&MP	School Environmental Policy and Management Plan (Botswana)
SEEN	Support Environmental Education in Namibia
OECD	Organisation for Economic Cooperation and Development
UNEP	United Nations Environmental Programme
UNDESD	United Nations Decade of Sustainable Development
UNCED	United Nations Conference on Environment and Development
WEEC	World Environmental Education Congress
WESSA	Wildlife and Environment Society of South Africa

CHAPTER 1

OVERVIEW OF THE STUDY

In this millennium we have the opportunity to create something wonderful or something disastrous with our lives, with each other, and with the planet. Even the scientists today tell us that global survival not only depends on our brain but on our hearts (Fien, 2003: 3).

1.1   INTRODUCTION

This study focuses on a new policy development in Namibian and South African education, namely learner centred education (LCE), in the context of the Eco-Schools programme, which is an international environmental education initiative. The study sought to investigate how the Eco-Schools framework can enhance learner centred education. This chapter introduces the aim of the study and provides the background to the research project, and introduces the Eco-Schools framework, and the policy change context in which the study takes place. It furthermore locates the study in Namibian and South African educational transformation contexts, where the Eco-Schools framework is being used. The chapter therefore provides a brief overview of the context of the study, and also introduces the main theories underpinning the study. It also provides a brief outline of the structure of the chapters in the thesis.

1.2   THE AIM OF THE STUDY

The main aim of the study is captured in the research question: *How can the Eco-Schools framework enhance learner centred education (LCE)?*

The research goals, to examine these learner centred education learning engagements are:

- Investigate the *learning interactions* associated with the Eco-Schools programme,
- Investigate what Eco-Schools *practices* support learner centred education,
- Investigate what *active roles* learners are taking up in Eco-Schools Programmes, and
- Investigate the *role of teachers, parents, subject advisors and node coordinators* in enabling learner centred education approaches in the Eco-Schools Programme.
- Investigate the role of *parents, subject advisors and node coordinators* in enabling learner centred education approaches in the Eco-Schools Programme.

With a view to:

Understanding how Namibian and South African teachers can use the Eco-Schools framework to enhance learner centred education in their schools.

This research question allowed me to investigate how a sample of teachers, learners, parents, subject advisors and Eco-Schools node coordinators implemented the Eco-Schools framework in a small selection of schools in Namibia and South Africa. From this I was able to analyse how the Eco-Schools framework can enhance learner centred education.

1.3   THE CONTEXT OF THE RESEARCH

This study is informed by the factors that influenced the fast growing international movement called the Eco-Schools, which has it roots in the 1992 Rio Earth Summit. The main outcomes of the 1992 Rio Earth Summit are documented in a text known as Agenda 21 (UNESCO, 1993) which is a major action programme setting out what nations should do to achieve sustainable development in the 21st century. The United Nations (UN) recognised the Foundation of Environmental Education's (FEE) schools programme (called the Eco-Schools programme) as a viable model to fulfill some of the Agenda 21 requirements envisaged in Chapter 36 particularly at school-community level. As a result the UN encouraged member countries to participate in the programme. Today many countries have adopted the international Eco-Schools programme, which is based on the Foundation of Environmental Education model (described in section 2.3), although some countries have adapted it substantively to suit their own environment. The Eco-Schools programme is an international initiative designed to encourage whole school action for the environment. It incorporates a recognised award scheme that accredits schools that make a commitment to continuously improve their environmental performance (see section 2.3).

As mentioned above, the focus of this study is to investigate how learner centred education (LCE) is enhanced through the use of the Eco-Schools framework. The Eco-Schools framework is seen to provide learners with the capacity and skills to make informed decisions about their life styles, livelihoods and relationships with their environment (Eco-Schools South Africa, 2006). It provides a mechanism for whole school development, which emphasizes education for sustainability and sustainability practices in the school and its community. It also provides schools with an incentive scheme in the form of a 'green flag', which is awarded for participation annually. It is a project that promotes the idea of a whole

school approach that allows for contextualisation of learning as an important facet in education (Lotz-Sisitka, Timmermans & Ward, 2005).

The Eco-Schools project in the Southern African Development Community (SADC) started officially in South Africa (SA) in May 2003 as an educational programme under the auspices of the Wildlife and Environmental Society of South Africa (WESSA) as an affiliated member of the international Foundation for Environmental Education (FEE). It started mainly in the Eastern Cape, KwaZulu Natal and Gauteng regions (Lotz-Sisitka, et al, 2005) with 50 schools registered in the first year. It built on an earlier initiative to support schools to develop school environmental policies and management plans. This programme has today become national and has spread into all the 9 South African provinces. Today (2008) South Africa has 870 schools registered with this programme, which is an indication of meaningful progress, and interest in the initiative.

As a teacher educator at a college of education in the Kavango region of Namibia, I have been involved in Eco-School type activities in the college grounds and I have been active in involving students in sustainability practices, which included improving the vegetable garden as well as pig farming activities at the College. As a result of this experience, I realised that a teacher was capable of structuring the learning environment to accommodate the needs, interest and abilities of the students in the class and outside through sustainability practices, hence my interest in the Eco-Schools framework and its potential for strengthening learner centred education.

In Namibia the Eco-Schools framework was piloted in four regions during the Support Environmental Education in Namibia (SEEN) project in 2001 – 2005. I was interested in understanding the Eco-Schools framework and activities, since two schools Olukonda and Kameru received green flags from the South African Eco-Schools model during this time. In addition, most schools that were involved in the programme managed to develop Eco-Schools policies, which were written out explicitly on the walls of the gate of the schools. Despite this progress with the two Eco-Schools in Namibia, environmental education (EE) policy in Namibia was inadequately activated within the education system (see section 2.5.3).

1.4   THEORY UNDERPINNING THE RESEARCH

Learner centred education (LCE) in Namibia is a cornerstone policy for the transformation of education in Namibia, as noted in the development brief *Towards Education for All* (Government of the Republic of Namibia, 1993) and expressed in the five major goals for education: access, equity, quality, democracy and lifelong learning. In my view all these goals are reflected in the Eco-Schools framework and objectives (see section 2.3). According to the above mentioned policy document, teachers are expected to be active creators and managers of the learning environment and not its masters or caretakers (Namibia. Ministry of Education and Culture, 1993: 41-42). This argument is at the centre of the intentions for the realisation of the Eco-Schools programme. Janse van Rensburg and Lotz-Sisitka (2000, 92) agree that South African's new education system views learners as active participants in their own learning rather than 'empty vessels' to be filled with information.

The policy goals on access in Namibia emphasise "… that learning in or out of school, leads not only to individual achievements but also self reliance, self confidence and empowerment" of the child in facing the challenges of the 21st century (Namibia. MEC, 1993:34). This argument for independent learning and the development of life skills is also illustrated in the goal of life-long learning "… that schools have to become preparation for life" in a far more direct way than has been the case in the past and that "… opportunities for learning have to be recognised" (NIED, 2003: p. 3). This reflects a belief that society itself has to become a learning society. This belief in lifelong, active and socially engaged learning is also reflected in the *Pilot Curriculum Guide for Basic Education* (Namibia. Ministry of Basic Education and Culture 1998b:23-24), which acknowledges that children learn best when they are actively involved in the learning process and respond best when they are interested in the activities they are learning. Learning is seen as an interactive, shared and productive process, where teaching creates learning opportunities which will enable learners to explore different ways of knowing and develop thinking abilities both within and across subject areas of the whole curriculum (Namibia. MBEC, 1998).

Social cultural learning theories which consider the learner's culture and language as being significant to the learning process (i.e. learning is more learner centred), developed from the earlier work of Lev Vygotsky, who researched how knowledge develops as one engages in dialogue with others (Palincsar, 2007). Palincsar (ibid) argues that conceptual development of learning and understanding are regarded as inherently socially and culturally shaped in contexts, which are themselves constantly changing. Since then, a number of interesting

aspects of this learning theory has been developed in which students assume a more active role in learning to explain ideas to one another and cooperate in finding solutions to complex problems (see section 2.6). Teachers**,** parents, subject advisors and node coordinators participate in the design of learning contexts and the facilitation and mediation of knowledge and activities. They also make efforts to make learning more relevant to learners' life experiences, and scaffold students by supporting and
shared knowledge and ownership of learning.

In understanding learner centred education in this study I will draw on socio-cultural learning theories (Palincsar, 2007) which place emphasis on a) interactions b) practice c) the active role of learners and d) a changed role for the teachers. I will develop an analytical framework, drawing on these four dimensions of learner centred education and how they manifest in Eco-Schools activities in the schools under study. Working with this analytical framework drawn from theories of learning, provided the means for understanding how Eco-Schools enables learner centred education (or not) (see Chapters 4 and 5).

This analytical framework therefore allowed me to examine Eco-Schools within a LCE approach that underpins the objectives for educational transformation in South Africa and Namibia. South Africa and Namibia both share a similar educational history which was shaped by apartheid policies, and as both countries gained independence in close proximity; they also share similar transformation ideals (see section 2.5.2).

To provide a more in-depth perspective on the Eco-Schools framework and its relationship to LCE I explain two approaches to Eco-Schools that I consider important for the study, as they are both relevant to Eco-Schools, and to the process of learning and meaning making. As such, they influence the possibilities and practice of LCE as supported by Eco-Schools. Eco-Schools has been defined in a variety of ways, two of the approaches to Eco-Schools being: 1) the *whole school* approach; 2) and the more recent *Education for Sustainable Development (ESD)* approach. Both of these approaches have potential to contribute to learner centred education, and are therefore of interest to this study as they define certain practices, active roles for learners, new roles for teachers and give rise to different learning interactions (see section 2.7).

All of the above-mentioned discussions about learners and learning are described in the development brief of Namibia (National Institute for Education Development, 2003**)** and the outcomes-based objectives of the South African curriculum (South Africa, 2002a). The Eco-

Schools programme can, in general, be seen within the broad parameters of socio-cultural theories of learning that underpin a wider shift to learner centred education around the world (see section 2.6). As indicated above, the central question of this study is to examine *how* the Eco-Schools programme enhances learner centred education in contemporary education systems that are under transformation in South Africa and Namibia. A review of the literature indicates that while descriptions of the Eco-Schools programme and its intentions to support active learning and learner centred education have been provided in these two countries (Lotz-Sisitka et al, 2005; Murray, 2002), no research has been done to consider whether or to what extent this is or may be occurring in practice.

In summary: the main focus of the study was to examine, via a case study, how the Eco-Schools framework enhances learner centred education in selected schools in two countries. This involved understanding pedagogic theories informing the Eco-Schools framework. As mentioned above, these falls broadly within socio-cultural learning theories and in more detail involve theories of active learning, the theory of action competencies, the whole school approach and Education for Sustainable Development (ESD) approaches (these are discussed in more detail in Chapter 2). Similarly it also involved understanding some of the primary learning and teaching theories underlying learner centred education (in the Namibian context) and Outcome Based Education (in the South African context) such as active learning and social constructivism. A significant outcome of the review of the pedagogies informing Eco-Schools and learner centred education was the notable degree of overlay and interconnection or potential synergy between the underlying pedagogical intent of Eco-Schools and learner centred education (see Chapter 2). What then still had to be established was whether this was reflected in the events and practices in the schools themselves, and in the Eco-Schools materials and framework (see Chapters 4 and 5). This work constitutes the thesis, contained in five chapters.

1.5   OVERVIEW OF THE CHAPTERS

The dissertation is structured as follows:

Chapter 1 introduces the research and outlines the main aim of the study, the context of the study and introduces the theories that underpin the study.

Chapter 2 describes the historical and contextual factors influencing the study. It highlights the background and factors that influenced the fast growing international Eco-Schools

movement and looks at international perspectives of Eco-Schools within some countries and in particularly the SADC countries. It also looks at the evolution of aspects of environmental education and education in Namibia and South Africa. It then focuses on the relevant pedagogic theories underpinning Eco-Schools and learner centred education and outcomes-based education in Namibia and South Africa respectively, identifying the overlaps between these, and the central theoretical underpinnings of significance within a wider international learner centred educational movement. It also reviews approaches to Eco-Schools and considers how these potentially may support learner centred education.

Chapter 3 explains the methodology applied in the study, and the associated research design decisions and research process. It discusses the research orientation. It provides details on how the case study approach was applied. The chapter also explains how various methods were used to collect data and how data was analysed. It discusses issues of trustworthiness, validity and ethical considerations within the study.

Chapter 4 presents the data collected from the semi-structured interviews, observations and document analysis in the case study sites. It presents a first level of analysis of the data using a series of five analytical memos devised for this purpose that were based on the theoretical framework outlined above, and in more detail in Chapter 2, focussing particularly on practice, teachers' roles, learners involvement, learning interactions, support for Eco-Schools activities and outcomes of the Eco-Schools processes in the schools.

Chapter 5 examines the research findings reported in Chapter 4 in greater depth. The approach used is to generate a series of analytical statements unique to this study. In this chapter the data continues to be considered in relation to the Eco-Schools framework within a learner centred education context, thus allowing for theoretical discussion of the results reported in Chapter 4. This chapter directly addresses the research question using the analytical statements, and makes recommendations. It also provides a reflective review of the study, and comments on lessons learned, the value of the study, limitations of the study and makes suggestions for further research. It also provides a brief summary of the study.

NOTE: In referring to the term *Eco-Schools framework* in this study, I refer to the range of Eco-Schools practices (e.g. auditing and involvement in resource use and management, action projects or information seeking activities); different approaches (whole school and Education for Sustainable Development approaches); values of care and concern for the environment as well as democratic and participatory values that are supported by Eco-Schools, and different

processes such as ongoing evaluation and review, working in teams, producing portfolios for participation in an awards scheme, and involvement of the community that are proposed by Eco-Schools. As discussed in Chapter 2, these are oriented towards learner centred education and environmental improvements in schools.

1.6   CONCLUDING SUMMARY

In this chapter I have provided an overview of the aims and context of the study and the structure of this report, as well as some introductory information on the Eco-Schools programme and the context of the research. I also introduced the theoretical aspects of the study, and I provided an overview of the different chapters and explained what I meant by the use of Eco-Schools framework.

In the next chapter I discuss the contextual and theoretical framework of the study further, providing more depth to the introductory aspects of context and theory presented in this chapter.

CHAPTER 2

HISTORICAL AND THEORETICAL CONTEXT OF THE STUDY

In some African countries ideological brainwashing (e.g. in Apartheid South Africa [and Namibia]) and violent indoctrination are fresh in living memory. South Africa has therefore been eager to embrace educational processes that encourage learners to think for themselves and tolerate different points of view. ... Constructivism as a philosophy is highly regarded in many 'progressive' education contexts today. A constructivist epistemology [has been called a] 'progressive consensus'. At the same time, however, "... its implications for teaching and learning constitute one of the most controversial and difficult visions to implement in education today"
(Taylor et al., 1999:21, cited in Janse van Rensburg and Lotz-Sisitka, 2000:14)

2.1   INTRODUCTION

This chapter provides an analysis of the contextual dimensions that influence the study as a whole. It provides insight into the broader context in which I was able to carry out the research.

Firstly, I discuss the historical context of the Eco-Schools originality by tracing it from the international level, which was influenced by the Rio de Janeiro Earth Summit in 2002. This discussion culminates in a description of the role that the Foundation for Environmental Education (FEE) is playing internationally in terms of its autonomous role in guiding Eco-Schools internationally.

The chapter also looks at various Eco-Schools processes in different countries like Sweden (Green School Awards), China (Green Schools Project), and New Zealand (Enviroschools) and how these have contributed towards environmental education activities in schools. The chapter describes further how the Eco-Schools movement is growing within the African context in particularly in the Southern African Development Community (SADC) region, with emphasis on the policies and projects that helped shape the growth of environmental education in South Africa and Namibia. The chapter reveals that learner centred education is a central focus of these initiatives.

To provide further depth to this discussion, I also consider socio-cultural (also referred to as social constructivist) theories of learning, which have influenced the learner centred education movements in post-apartheid education in South Africa and Namibia. I also review two approaches to Eco-Schools namely the *Whole School Approach* and the *Education for Sustainable Development Approach* to schools and sustainability initiatives to orient discussions on learner centred approaches to Eco-Schools. As indicated in chapter 1 (see section 1.4), this is to understand the overlaps and synergies between the theoretical underpinnings of Eco-Schools and the educational reform initiatives in the two countries, and to develop an adequate analytical framework for analysing *how* the Eco-Schools framework enhances learner centred education (or not).

2.2   BACKGROUND TO THE STUDY

To gain sufficient background to this study, it is important to understand the context in which the Eco-Schools movement originated and how it is influencing the current set up of Eco-Schools activities within schools.

Eco-Schools is a fairly new concept within environmental education discourses of learning, which emerged strongly after the 1992 Rio Earth Summit also known as the United Nations Conference on Environment and Development (UNCED) held from 3-14 June 1992 in Rio de Janeiro, Brazil. One of the main purposes of the Summit was:

> To *work towards* international agreements which respect the interests of all and protect the integrity of the global environmental and developmental system and to *recognise* the integral and interdependent nature of the Earth, our home … this proclaimed that human beings are at the center of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature (UNCED, 1992:17).

During the time of this conference stronger emphasis was placed upon trying to integrate thinking and action around ecological, social and economic systems in the global arena (Gough, 2006). The conference developed a document called Local Agenda 21 as a guiding document in the fight against the destruction of the environment, which gave different stakeholders different responsibilities at a local level, with the explicit intention of decentring global policy discourse to a local level.

Stakeholders participating in the formation of Local Agenda 21 ranged from international organisations, to national governments, Non-Governmental Organisations (NGOs), regional and local government as well as certain sectors such as education. The Namibian and South African governments as well as other nations are signatories to the implementation of Local Agenda 21. In the broader Agenda 21 document, a chapter on '*Promoting Education, Public Awareness and Training'* (Chapter 36) was included which focuses on the opening of schools towards the outside world and seeing schools as a place of teaching and learning *in* and *for* the community (UNCED, 1992). This had relevance to the concept of Local Agenda 21 initiatives and involvement of schools in local actions to address environmental and development issues at local level. Chapter 36 of Agenda 21 emphasised the importance of:

- Improvement of the quality of basic education at all levels,
- Reorientation of existing education at all levels towards sustainable development,
- Enhancement of public understanding and awareness of sustainable development,
- Capacity building and training to address sustainable development issues in all sectors of society (UNCED, 1992).

This reflects that all sectors of society need to participate in the new demands, processes and challenges of the 21st Century i.e. to participate in environmental education processes that respond to environmental and sustainability issues. Chapter 36 of Agenda 21 (ibid) encourages member states to be involved in promoting environmental education within their own contexts and to reorient education towards sustainable development, which I regard as an important activity emerging from its principles.

During the Rio Earth Summit, the idea of ecological conservation, which was seen to be a primary focus point of teaching environmental education since the Stockholm Conference in 1972, shifted to Education for Sustainable Development (ESD), thus influencing environmental education discourses (UNCED, 1992). Posch (1991), writing from a European context and experience of environmental education, explains that this shift implies that learners will no longer see environmental education as only based on field trips or celebrating recognized international environment days. He argues that the Education for Sustainable Development discourse will promote dynamic qualities based on taking an active part in solving future environmental problems in learner's immediate surroundings (Posch, 1991). His argument reflects the learner centred dynamic of this shift, as learning is to be oriented towards active participation in locally relevant problems in immediate surroundings. This is a key discourse of the Eco-Schools movement as described in section 2.7 below.

2.3   THE ROLE OF THE FEDERATION OF ENVIRONMENTAL EDUCATION

As indicated in Chapter 1, the Eco-Schools movement is an international movement, which is an initiative of the United Nations (UN) in terms of creating environment learning that makes schools '… a better place in which to work, learn, live and play' (Murray, 2005:20). As mentioned previously in Chapter one, Eco-Schools is one of the projects that were recognised by the UN as a viable schools program that fulfils the requirements of Local Agenda 21. According to Mogensen and Mayer (2005), Eco-Schools was originally commissioned by the member organisations of a European Union schools network called the Environment and Schools Initiative (ENSI) through the Foundation for European Environmental Education (FEEE) with the support of the European Commission. FEEE was established in 1981 as a programme that was to promote environmental education for schools in Europe. In the early years of FEEE, the organisation was mostly active through internal meetings, external seminars and conferences and in a number of publications (FEE International, 2007).

With the dawn of a new era of globalisation that emerged in Europe and in the world in general, and with the focus on the democratisation of international institutions and expansion of global markets, the education system was also influenced. This impacted on FEEE, which was faced with constitutional changes that resulted from schools all over the world wanting to participate in the European model, and eventually it changed its name and functions to the Foundation for Environmental Education (FEE) in order to accommodate other countries.

Other programmes of FEEE were also affected by this internationalization trend. In the mid-1990s there was a growing interest in FEEE programmes from outside Europe. In co-operation with the United Nations Environment Programme (UNEP) and the World Tourism Organization (WTO), a manual for coastal zone management with the example of the Blue Flag was produced. With further support from UNEP, workshops on the Blue Flag programme were held in the Caribbean, Africa and Asia. Further interest grew rapidly in the Caribbean area and solid interest was shown from South Africa in this programme (FEE, 2007).

Building on this partnership, in 2003 the UNEP signed a Memorandum of Understanding with FEE to provide a framework for long term cooperation on areas of common interest relating to education, training and awareness for sustainable development globally, it stated that:

Education is critical for achieving environmental and ethical awareness, values and attitudes, skills and behaviour consistent with sustainable development for effective public participation in decision-making. Both formal and informal education is indispensable to sustainable development (UNEP, 1992:23).

This Memorandum of Understanding provided a solid basis for furthering the work already undertaken in collaboration between FEE and UNEP, in particular with regard to the introduction of FEE programmes and associated activities, especially in developing countries and those with economies in transition. This partnership was formed in recognition of the Eco-Schools programme being a preferred model of an international environmental education programme to help achieve sustainable development. In using its regional reach, UNEP's role was to identify partners for the implementation of the Eco-Schools programme across the world. As such, UNEP recognized the FEE Eco-Schools programme as a preferred model to assist schools everywhere to achieve the sustainable development programmes that were spearheaded by the world body. In response to this, the FEE Eco-Schools programme defined its role in contributing to Local Agenda 21 by offering schools the opportunity to link with their communities and work together to solve and prevent environmental problems at the local level. The Eco-Schools program is a product of this agreement and has been in existence since 1994. All 13 member states of Europe and Australia who were involved in the programme at that stage of the programme remain involved and other member countries of FEE and the UN are requested to participate in the Eco-Schools activities to strengthen Local Agenda 21 initiatives.

For a country to become a member of FEE it should coordinate and promote the program under a non-governmental and non-profit organization, which is allowed to affiliate to FEE. This center will also award a green flag annually to participating schools (Mogensen & Mayer, 2005) to acknowledge the work done by a particular school in promoting the ultimate goal of the UN organisations and member states to achieve sustainable development. The Eco-Schools programme leads to the prestigious international environmental award - the Green Flag (see Figure 1 and 2 below). The flag is awarded in acknowledgment that a school is committed to the highest standards in environmental education and management – something to celebrate and be proud of.

Figure 1:   **Figure 2:**

Eastern Cape (South Africa) schools receive green flags from Prof. O'Donoghue for their Eco-Schools activities

In most cases the Eco-Schools NGO partner in a country works in close partnership with the national education authority together with the secretariat of FEE international, which is currently based in Portugal. When an international organisation/institution or a second national organisation wishes to be connected to FEE, it is possible through becoming an affiliate member of FEE, and its membership must be approved by the already existing FEE member organisation from that country.

When a national organisation is accepted as member of FEE it becomes an associate member of FEE. Within 3-5 years of FEE membership, the organisation must become a full member of FEE, which means that it has to fully implement at least two FEE programmes (FEE, 2007). Organisations therefore become members of FEE through full, associate and affiliate memberships of FEE in a process that takes place over a period of three to five years. Initially FEE has five main areas of cooperation in which member countries are registered and participate in officially (Eco-Schools UK, 2007) as participant. For a country to register, it needs to have not less than two of the following programmes (years of establishing the area by FFE) or activities in its country programme that needs to be in operation at the same time.

1. The Blue Flag (1990)
2. The Eco-Schools (1994)
3. The Young Reporters for the Environment (1994)
4. The Learning about Forests Programme (2002)
5. The Green Key Programme (2003)

As mentioned in Chapter 1, the Eco-Schools program is a project that promotes the idea of a whole school approach to development in a school, and supports environmental learning in the curriculum focused on the contextualisation of learning as an important facet in education (Lotz-Sisitka, Timmermans & Ward, 2005; see also www.eco-schools.org accessed 03/04/2008).

2.4   INTERNATIONAL PERSPECTIVES

In this section I review the Eco-Schools initiatives internationally to better understand the broader Eco-Schools movement in a southern African context especially the links between Eco-Schools and learner centred education. I particularly examine the range of programmes that promote environmental education activities through the whole school approach. I discuss the ENSI project, the Green Schools project in China, the Green School Award of Sweden and New Zealand Enviroschools in the context of FEE international, which I have already introduced.

2.4.1   Environment and schools initiatives (ENSI, Eco-Schools 1986)

The Environment and Schools Initiatives (ENSI) is an international government-based environmental education learning network, which operates under the umbrella of the Organisation for Economic Co-operation and Development's (OECD) Centre for Educational Research and Innovation (CERI). ENSI has currently more than 16 members originating mainly from Europe and Australia. ENSI provides opportunities for member countries to come together in formal settings and share practice and research in environmental education and one of its main projects relate to research and school development work in Eco-Schools.

The aim of the ENSI Eco-Schools project is to develop, test and publish methods of teaching and learning which define good practice of environmental education, by setting up international school partnerships and conducting comparative studies in areas such as quality criteria for Eco-Schools development. At the same time ENSI provides opportunities for reflection, communication and professional development through seminars and cultural exchange, electronic forums, and research publications for all stakeholders interested in whole school approaches to sustainability.

ENSI is underpinned by a pedagogical approach of constructivism and the research approach of action research and promotes a reorientation of education to student centred learning and changes in student community and school community relationships.

ENSI identifies teachers as core agents of change in innovative and transformative educational processes, which promote education for sustainability, although research has indicated that there is still a gap between theory and practice (ibid). It has also been reported that teachers think that they are undertaking environmental education or Education for Sustainability, while what they do in practice is not aligned with the participatory pedagogic approaches advocated by Eco-Schools theories (Mogensen & Mayer, 2005).

2.4.2   Green School project, China 1996

China's Green School project is an initiative of the Ministry of Education (MoE) and is funded by the State Environmental Protection Administration (SEPA). A guiding document was introduced which promulgated '*The National Action for Environment Publicity and Education (1996-2010)*' as the model for schools to follow. China's Green School programme started in 1996 and is based on the international concept, which is informed by the European Eco-Schools module. Since 2000, the program has been run by the Centre for Environmental Education and Communication (CEEC) and their local networks (Nan, Xiaoqiang & Jin, 2003: 64).

The program's key environmental focus areas include whole school environmental management and protection, and environmental education curriculum and professional development. Its focus is on building of skills and knowledge for environmental management in school grounds and the wider environment. The programme promotes student awareness of, and participation in sustainable development activities.

Schools must undertake a series of steps before applying for Green School Awards. Awards are categorized through a stage development process, starting at municipal, provincial and then national level.

When the CEEC took over the running of the Green School program, it realized that there were some evaluation problems and in 2002 they introduced a set of assessment criteria for the national level and at district level. The district criteria contain the provincial and civic

criteria, which were originally developed in the Guangzhou region (ibid: 65). The set of national assessment criteria contain ten core indices. These are:

- Establish a committee for green schools and appoint an environmental manager. Develop a plan to guide green schools construction,
- Provide special financial support for environmental education in schools,
- Ensure effective approaches for preventing pollution, reducing and recycling garbage, saving energy, etc.
- Collect and keep all materials related to green school construction,
- Put the context of the environment into the main school subjects,
- Encourage teachers to take part in environmental education training programmes, and to undertake environmental education research,
- Form a school culture of environmental protection. Encourage higher levels of environmental awareness among students and teachers and ensure active participation in various activities,
- Encourage students and teachers to show life style choices that reflect environmental protection,
- Green the campus, and
- Establish a student's environmental group to foster student's participation in environmental management of schools (ibid).

2.4.3 Green School awards, Sweden (1998, Eco-Schools development process)

The Keep Sweden Tidy Foundation has coordinated the Eco-Schools programme in Sweden since 1996. The Foundation is a creator of public opinion that focuses on environmental issues, promotes recycling and combats litter through public awareness campaigns, awards and environmental education. The Foundation strives to influence people's attitudes and behaviour in order to encourage a sustainable environmental development (Eco Sweden, 2008). In Sweden, Eco-Schools is part of the Ministry of the Environment and Statistics. There are three levels of awards; bronze, silver and then the first, second and third green flag. After that the school will receive a permanent Eco-Schools award.

In 1998 the Swedish National Agency for Education in collaboration with program partners developed the *Green School Award* program under the ordinance of the Swedish Government. The purpose of the award is to encourage and support the development of methods for teaching and learning about sustainable development. Schools that apply for a Green School Award need to meet specific criteria before they can qualify for the award, which will be valid for the next three years. The criteria that a school needs to meet are based on school life, consumption, democracy, ethical, aesthetic, cultural and health considerations. By 2004 the

criteria had changed from ecological sustainability towards a broader process oriented view encompassing ecological, economical and social dimensions.

A distinctive feature of the (Swedish) Green School programme is that pupils, staff and parents are all involved as active participants in the development of a sustainable society (Nyander, 2004). It sees links to teacher training as crucial to support programme implementation and as a result a framework syllabus for environmental education was developed for further teacher training (ibid).

2.4.4   Enviroschools, New Zealand (2002)

The Enviroschools concept was developed in the Waikato region of New Zealand in the 1990's; it has since been extended into schools across New Zealand. Implementation is on a regional basis, along regional council boundaries.

The New Zealand Association for Environmental Education (NZAEE) has managed the programme from 2001 to 2003, until establishment of the Enviroschools Foundation. Since then the role of the Foundation has been to provide support and oversee the strategic direction of the national programme and Awards Scheme and the national office opened in Hamilton. In 2002 the Ministry of Education, Ministry for Environment and the Enviroschools launched the Enviroschools Awards Scheme as a result of a joint effort. The Awards are designed as an incentive to support schools that are not able to, or not ready to access the facilitated programme (see explanation below).

A review of the New Zealand Enviroschools programme document reveals a focus on creating critical thinking and futures thinking, worldviews and cultural perspectives and students decision-making. Henderson and Tilbury (2004) remark that Enviroschools regional coordinators support the programme by offering two options for schools involvement:

- The *Facilitated Enviroschools Programme* – where schools sign-up to a 3 year process of environmental learning and action; as an Enviroschool they gain access to an extensive resource kit and a trained facilitator.
- The *Enviroschools Awards Scheme* - an incentive scheme for schools to become actively involved in environmental education through achieving bronze, silver and green/gold levels with the assistance of an awards booklet (Enviroschools Foundation, 2003).

These options both focus on whole school approaches and sustainability, built around the themes of organizational principles, operational practices, physical surroundings and a living curriculum (ibid).

Enviroschools is a national programme that involves students in taking action towards creating a sustainable environment with the purpose of creating healthier, more peaceful, and sustainable communities. Through a whole school approach, students plan, design and create sustainable projects that benefit the school and wider community (ibid).

2.4.5   Eco-Schools International (FEE), 1994

This is the largest international Eco-Schools programme focused on whole school approaches with more than 40 countries involved. Originally founded as a European programme it has since expanded to countries in Africa, Asia, South America and Australia (see Chapter 1, and section 2.3.above).

Although the programme is coordinated through a common framework at the international level, member nations have flexibility in tailoring the programme to their needs. In general participating schools undertake a seven-step process to work towards the Green Flag certification, although variations exist in the content and the focus of the steps. The generally accepted steps are to:

1. Improve the school's environment,
2. Reduce litter and waste,
3. Reduce energy and water use,
4. Devise efficient ways of traveling to and from school,
5. Promote healthy lifestyles,
6. Encourage active citizenship,
7. Build strong partnerships with a variety of community groups.

<div align="right">(Eco-Schools, UK, 2007)</div>

The Eco-Schools programme is democratic and participatory and provides opportunities for young people to engage in schools and community action to promote sustainability, to engage in and experience active citizenship (Scottish Executive 2004). The FEE international framework is underpinned by the principles of Agenda 21, including the need for

environmental awareness and improvement of students' skills for active participation and decision-making (FEE International, 2007).

The Eco-Schools programme has been characterized by a strong issue focus that places emphasis on water, energy and waste as key areas of action throughout the year. Member countries can adapt the programme in order to meet their needs and priorities in the context in which they find themselves. In the case of the United Kingdom (UK) the focus has broadened to include litter, waste minimization, transport, and healthy living and school grounds as extra issues of concern. In the African context a need has been expressed to adapt the programme to pressing issues such as health, sanitation and community based natural resources management and poverty. The South African Eco-Schools promotes the needs for students to be involved in activities and democratic decision-making in implementing projects of this nature. In Kenya, the focus is on poverty alleviation activities in which schools are involved in micro projects that contribute to the goals of poverty alleviation (Eco-Schools International, 2007).

Schools that are involved in the whole school sustainability programme are recognised for their progress and achievements through an award scheme, which provides an important milestone. These awards (in the form of logos, plaques, flags, diplomas and certificates) serve as a motivation for participation and implementation and provide an opportunity to celebrate schools achievements for hard work and progress towards sustainability.

> The award scheme is seen to be very meaningful to teachers and learners especially those who struggle sometimes seemingly anonymously in isolated school situations. There is no winner in the Eco-Schools programme; rather Eco-Schools can be seen as an ongoing status for a school (Ward & Schnack 2003:143).

The Agenda 21 focus on FEE's Eco-Schools programme promotes local actions aimed at solving global environmental problems with education and it recognizes achievements in relation to this goal. Through this focus the FEE Eco-Schools programme offers opportunities for schools to link with their communities and work together to solve and prevent environmental problems at the local level.

2.4.6   The African context

Three countries in Africa (South Africa 2003, Morocco 2004, and Kenya 2002) are currently members of FEE and they have different interests in terms of their affiliation. All the three countries have registered for the *Eco-Schools* and the *Blue Flag projects* while Morocco is

currently the only country involved with *the Young Reporters for the Environment Project*, which is an activity for secondary schools. Tunisia received associate membership in September 2007, and operates only with the Eco-Schools project.

In Kenya, Eco-schools have been in operation since 2002 and an NGO, the Kenyan Organisation for Environmental Education (KOEE), runs the programme under the supervision of the Danish Outdoor Council (DOC) and with the financial support of Danida. Some of the major achievements of the first project phase include:

- The KOEE has under the supervision of the DOC successfully developed a Kenyan version of the Eco-Schools programme focusing on the linkage between environmental degradation and poverty.

- The KOEE has gained skills in coordinating and facilitating Eco-Schools at school level.

- Twelve pilot schools have been established as demonstration Eco-Schools in Nyanza Province setting up income generating micro projects addressing local environmental problems. Micro projects have been used for out-of-classroom curricula teaching and cooperation with the local community e.g. women's groups.

- Around demonstration schools, local community groups have been mobilized to support the school micro projects through donations, offering expert advice and acting as caretakers of micro-projects during holidays and working for free.

- School micro projects have demonstrated income-generating projects that have been replicated by groups/ individuals in neighboring societies in at least seven cases. This includes new farming practices such as agro forestry, introducing new crops, tree nurseries, poultry production and others.

- 24 teachers have gone through an extensive training course and act as Eco-Schools ambassadors encouraging other schools to effectively address local environmental problems through action based learning following the principles of Eco-Schools. An additional 208 teachers have been introduced to the programme on 1-day course sessions (Odeke, 2006).

In close cooperation with teachers and key governmental institutions the Eco-Schools project has developed the first ever-Kenyan environmental education materials that comply with the curriculum requirements to treat environment as a cross curricula subject. Thus, six environmental theme-packs for primary schools and six for secondary schools have been produced and made available to schools. Materials have been widely acknowledged by relevant authorities in the Kenyan educational sector (ibid).

2.4.7   SADC involvement in Eco-Schools, South Africa 2003

The Southern African Development Community (SADC) was originally formed as a co-operative resistance organization to address the impacts of the processes of colonialism and apartheid and to strengthen regional political independence efforts. Following independence of all southern African countries, SADC today serves as a regional economic community to strengthen economic cooperation and development across the region's 14 countries. The SADC region is home to some 291 million people, of which about 75% live in rural areas where a very large proportion of them depend on natural resources for their livelihoods (Lotz-Sisitka, 2004). SADC as a community is developing and shaping its own concepts based on international expectations. As a result the region is grappling to come to terms with environmental and social issues that are affecting its people such as poverty, illiteracy, the scourge of HIV/AIDS, shortage of energy and water, which affect its already vulnerable communities since the region has been identified as being economically one of the poorest in the world. In addressing these problems South Africa took the lead in participating in international programmes such as Eco-Schools in trying to address some of the environmental issues that are affecting the region.

The Eco-Schools project in the SADC region started officially in South Africa and it was launched in May 2003 as an educational programme under the auspices of the Wildlife and Environmental Society of South Africa (WESSA) as an affiliated member of FEE, mainly in the KwaZulu Natal, Eastern Cape and Gauteng regions (Lotz-Sisitka, Timmermans and Ward, 2005). WESSA is the NGO programme coordinator in South Africa and it encourages and supports whole school learning and curriculum-based action for a healthy environment. The programme was based on an earlier initiative, called the School Environmental Policy (SEP) project, which was taken up in other countries such as Botswana and Namibia to a limited extent.

This programme has today spread into almost all the 9 South African provinces. South Africa currently has 870 schools that have registered with this programme (2008 figures) (WESSA, 2008) which is an indication of meaningful progress. This is the only country in the SADC region that has been able to register with FEE and it is currently playing an influential role within FEE.

The WESSA Eco-Schools programme in South Africa is funded by a large packaging company called Nampak through the World Wide Fund (WWF) SA, which allows for a degree of managerial autonomy and flexibility in all aspects of programme development and implementation. For the Eco-Schools programme to remain aligned and applicable to national environmental education goals, WESSA has developed a partnership with the South African Department of Education to oversee its implementation (Eco-Schools SA, 2006).

The Eco-Schools programme encourages schools to develop an environmental policy and a series of environmentally focused lesson plans as well as to show evidence of school improvements (Lotz-Sisitka, et al, 2005). In the South African context it is clear that many teachers are keen to engage with environmental education activities and education for sustainability. However, programmes, activities and research available so far indicate and recognises that few teachers have adequate and in-depth knowledge and capacity to develop environmental education and education for sustainability activities in teaching (see section, 2.5).

The South African Eco-Schools programme is designed to encourage whole school learning with a key focus on curriculum-based action for a healthy environment. Its programme differs slightly from the Eco-Schools International (European) programme by focusing on strengthening curriculum and its implementation rather than beginning with a concern for environmental projects and activities in schools (WESSA, 2007). This approach sees the curriculum and pedagogical processes as a key starting point for work towards sustainability in schools and therefore it has a strong alignment to the revised National Curriculum Statement (NCS), which emphases principles such as human rights, a healthy environment and social justice (RSA, 2002). When schools register with the programme, both teachers and learners commit to an ongoing process of developing lesson plans and learner centred activities in line with the revised NCS (Henderson & Tilbury, 2004). For completion of the award, schools were expected to submit portfolios showing at least three Eco-Schools themes (from a possible seven), with associated lesson plans and evidence of school improvement.

Following an extensive evaluation in 2007, Eco-Schools South Africa revised its approach in 2008 in order to improve the Eco-Schools process because teachers found it too complicated and struggled to find time for working on the activities in schools due to an already heavy curriculum workload, and a too complex framework for portfolio and lesson plan construction (Rosenberg, 2008). Unlike in the past where schools were expected to concentrate on more than three themes and three projects per year to compete for the Eco-Schools award (annually), it was resolved that schools involved would only need to do one theme and one project per year group. Schools would also, in the first year of participation, receive a bronze award, silver in the second, and the green flag in the third year, with a gold certificate in the fourth year. After the fifth year of participation, they would be able to receive the international green flag after consistent completion of Eco-Schools portfolios for the five years. The Eco-Schools South Africa (national office) also selected five themes for 2008 in which schools are expected to participate. These include: nature and biodiversity, healthy living, community and heritage, global and local issues, and lastly resource use. This streamlined a previously complicated framework of seven possible themes which schools could choose from.

2.4.8   Environmental education process in Botswana (the Eco-Schools way).

The South African School Environmental Policy was adopted in the schools in Botswana as a pilot project under the *School Environmental Policy and Management Plan* (SEP&MP). It took a national team of developers three years to complete the Botswana version of the SEP&MP pack for the schools. The idea was introduced to Botswana in 1998 at the Environmental Education Association of Southern Africa (EEASA) conference that took place in Gaborone. The Ministry of Education in Botswana sponsored more than a hundred teachers to attend the EEASA conference in which the SEP&MP presentation was made in full attendance, and many in the audience were excited about what SEP&MP offered in assistance with the implementation of environmental education at the school level. Many teachers bought the pack for their schools and started their own adaptation process to be able to apply parts of it to meet their particular needs. One of the education officers took the implementation of the SEP&MP to a series of schools in her district as an assigned project from one of the environmental education trainer of trainer's courses (Russo & Lotz-Sisitka, 2003).

Botswana was one of the five (South Africa, Malawi, Mauritius, Zimbabwe) countries in SADC that was chosen to participate in the (IUCN) Networking and Capacity Building

(NETCAB) environmental policy development project at about the same time. The NETCAB project supported the development, implementation and enhancement of the understanding of environmental education policies at local, national and SADC sector levels. Since Botswana had at this time of the implementation stage a National Conservation Strategy (Policy), an Environmental Education Strategy and a five year Environmental Education Action Plan in place, it was decided by the National Environmental Education Committee (the umbrella group of environmental education based at the national Conservation Agency (NCSA) that the 1999/2000 period should be dedicated to training, and adapting the South African SEP&MP, to fit the Botswana needs (ibid). A difference between the Botswana SEP&MP process and the South African and Kenyan processes is that there was no Eco-Schools award framework for the SEP&MP.

As indicated by the discussions above, the Eco-Schools programme has been variously developed and adapted for use in a range of different countries. In almost all cases (except Botswana) an awards framework is used to motivate schools, and to encourage participation. In all other cases a framework for participation and support materials is provided for teachers, and in some cases, such as New Zealand, teachers can choose to participate in a facilitated support programme over a period of years. In other cases, the Education Ministries are very involved in the development of the concept and process, as in Sweden and China. The ENSI, South African, Kenyan, Chinese and Australian cases all showed that research-based information was also available on Eco-Schools (Henderson & Tilbury, 2004). However, there was no research that had looked *directly* at the relationship between Eco-Schools and learner centred education specifically, and the links between Eco-Schools, learner centred education and national policy changes, and the wider trend towards educational transformation within a learner centred pedagogical change framework although almost all research projects supported this aspect of Eco-Schools work (Henderson and Tilbury, 2004; Mogensen & Mayer, 2005; Rosenberg, 2008). In South Africa the Eco-Schools programme is specifically curriculum centred, and aims to contribute to educational transformation process introduced by the new government in 1994 (Rosenberg, 2008).

2.5   HISTORY OF ENVIRONMENTAL EDUCATION AND EDUCATIONAL TRANSFORMATION IN SOUTH AFRICA AND NAMIBIA

The Eco-Schools activities outlined above, in South Africa and Namibia, are located within a broader process of educational transformation as indicated in Chapter 1 and have been found to be more curriculum centred than other Eco-Schools initiatives (Rosenberg, 2008). To

understand why the Eco-Schools initiatives in these countries are more curriculum centred driven than in other countries (Sweden, Australia, etc.) it is necessary to understand the context of environmental education developments, the educational histories, and the post independence efforts to address issues of relevance and quality in education through including environmental education in the national curricula .

2.5.1 Broader background to environmental education developments in South Africa and Namibia

Both South Africa and Namibia have been influenced by the international environmental movement, and both countries are signatories to various international conventions and agreements that address environmental concerns. Both countries have integrated environmental education into their major environmental policy frameworks, and both countries are experiencing similar problems with implementation of new policies, as described in the sections below.

2.5.1.1 Background to South African Environmental Education Development

South Africa is a country with high levels of biodiversity, but it is also a water scarce country. It is a semi-arid country that is adversely impacted upon by climate change and by vulnerability associated with poverty (South Africa. Department of Environmental Affairs and Tourism, (DEAT) 2006). The Department of Environmental Affairs and Tourism, in their Environmental Outlook Reporting (ibid) have identified water availability and quality, climate change, human vulnerability to environmental change, and loss of biodiversity and ecosystem services to be the major environmental issues that need to be addressed by the nation. Due to development pressures the country is losing ecosystem services. Since 1994 the government has made excellent progress in developing and implementing environmental policy and legislation to address the many environmental issues that affect the country's development path (ibid.; RSA, 1998). While South Africa has one of the highest levels of biodiversity anywhere in the world, it has also been identified as one of the countries' most at risk from climate change impacts, due to its high vulnerability levels, and because it is also a water scarce country with rapidly increasing development demands (South Africa, 2006).

The Environmental Outlook report (South Africa, 2006) indicates that inadequate controls over pollution and land use practices have led to a significant proportion of exploitable water resources being degraded, and the health of river ecosystems is declining. Because the

country is a water-stressed country with a well developed agricultural sector, it is particularly sensitive to changes in climate (ibid). The Department of Environmental Affairs and Tourism (South Africa, 2006) indicates further that levels of poverty and inequality are still extremely high in South Africa. They make use of the United Nations Development Programme Human Poverty Index measure which shows that poverty increased from 16.4% in 1995 to 31.7% in 2002, reflecting an increase of 1.7 million people living on less than US$1 per day (ibid). They also address the relationship between poverty and environment, when they explain that the main changes in the South African environment that are making people more vulnerable are increasing variability in the climate, declining air and water quality, degraded land, and declining natural resources due to over-exploitation (ibid). They emphasise the importance of environmental education as follows:

> It is important for all South Africans to understand that we have joint responsibility for protecting our environmental resources. The link between a healthy environment and improved quality of life today and in the future must become much clearer in people's minds. We need to understand fully that if we do not conserve our natural resources, we are undermining the livelihoods of vulnerable people today, and are denying future generations their environmental rights. Should our natural assets continue to deteriorate or be lost we will also loose key opportunities to improve South Africans' access to natural resources that was restricted through unjust government policy prior to 1994 (South Africa, 2006:16).

As shown by the above mentioned concern for environmental issues in South Africa, the new post-apartheid government is taking environmental concerns seriously, and environmental issues form part of the reconstruction of the country. Environment is seen as an important resource for development and for the well-being of the nation's people, and access to resources is a social justice concern following years of disenfranchisement and unequal distribution of resources during the colonial and apartheid periods.

South African history is marked by the apartheid legacy which grew out of a long colonial history, and was based on discriminatory policies of racism, sexism, violence, disenfranchisement and repressive laws. Some of the results of these discriminatory policies are poverty for the majority of black South Africans, unequal access to the country's resources, degradation of land, and poor quality education. South Africa's first ever democratic election in 1994 created a Constitution, which marked the birth of a democratic dispensation, which is acknowledged by the democratic world. Despite more than a decade of democracy, situations of extreme disparity exist amongst different socio-economic groups in

South Africa. This is both a legacy of apartheid, and a consequence of the neo-liberal economic development model that continues to perpetuate deep-rooted inequality in society.

It is generally agreed among scholars with different theoretical orientations that there is a close relationship between national political vision and national curricula (Christie, 1985), which is evidently the case in the South African context. These links are documented in the protracted history that played itself out in the process of political changes from the Dutch, to the British, to the apartheid regime and within the current democratic dispensation after 1994 (ibid). As the political change heated up in South Africa it was clear that the education system would be characterised by a democratic agenda, which would serve a new and radically different purpose from education in the old dispensation (Lotz-Sisitka, 2002).

At the heart of the education transformation process in South Africa is recognition of learners' possibilities for success, which, building on the earlier People's Education Movement, came to drive the OBE curriculum and a process of nation building and social justice (ibid). As reported by Lotz-Sisitka (2002) environmental education was included in the educational transformation agenda, and was included as a principle statement of the 1995 White Paper on Education and Training in the country, which led to numerous other environmental education developments at a national level, as reported in more detail in section 2.5.3.2. Lotz-Sisitka and O'Donoghue (2008) simplify the evolutional process that shaped the growth and development of environmental education within the region and in South Africa in particular as follows:

> The advent of environmental education in Southern Africa in the early 1980s was shaped by and has shaped the developing imperatives for school children and communities to participate in the resolution of environmental issues. Since then participation in education has become a key concern that has strengthened with the struggle for democracy in the post apartheid South African state. Within these processes environmental educators and researchers have embraced participatory perspectives amid the debris of colonial intrusion after an extended period of colonial and apartheid rule (ibid, 2008:112).

The history of environmental education is therefore intertwined with the struggle for democracy. Since the early 1990's the South African government has become a signatory to a variety of international conventions and agreements on the environment. Broad emphasis is given to the protection of the environment in the Constitution of the Republic of South Africa, which states, in its Bill of Rights (South Africa, Constitution,1996), that:
Everyone has the right-

a) To an environment that is not harmful to their health or well-being: and

b) To have the environment protected, for the benefit of the present and future generations, through reasonable legislative and other measures that-

    1. prevent pollution and ecological degradation

    2. promote conservation: and

    3. secure sustainable ecological development and use of natural resources while promoting justifiable economic and social development (Chapter 2 section 24).

Stemming from this a number of policies were developed that drove the process of environmental education forward. These include:

- **The National Environmental Management Act (NEMA) (RSA, 1998)**

  This legislation commits the South African government to sustainable development, and emphasizes the need for environmental education and capacity building in all sectors of South African society.

- **The White Paper on Education and Training (RSA, 1995)**

  The White Paper on Education and Training notes the need to integrate environmental education at all levels and phases of the education and training system. It emphasizes an active learning, integrated approach to environmental education in the formal education system.

- **The Norms and Standards for Educators Policy (RSA, 2000)**

  Previously known as the COTEP document, this policy requires teachers to identify and respond to social and environmental issues through their educational practice.

- **The National Curriculum Statement (RSA, 2002)**

  The National Curriculum Statement (NCS) set out an implementing framework for the outcomes based education system, which was advocated in the White Paper on Education and Training, and emphasises environmental learning in each Learning Area within a human rights and social justice framework. A healthy environment is included in the principles guiding the entire curriculum.

Curriculum reform in South Africa has not been a smooth process. At first a master plan document called Curriculum 2005 (C2005) was launched in March 1997. This plan was implemented over a period of six years, but soon after its introduction the minister called for a review as the curriculum was critiqued for being over designed and too complex to implement (Lotz-Sisitka, 2002).

According to Harley and Wedekind (2003) the C2005 design was essentially based on three features. Firstly the curriculum had *outcome based* features, which were positioned so

centrally that outcomes based education became synonymous with C2005. An *integrated knowledge* system was the second design feature while school 'subjects' were jettisoned and eight Learning Areas were introduced for grade 1 to 9. The third dimension of the curriculum was the promotion of *learner centred* pedagogy. These essential features remained in place with the revised curriculum, but more definitions, scope and progress criteria were specified in the revised national curriculum statement.

It is not clear how these features came to dominate but literature hints that individual personalities directly influenced the process and that they in turn were influenced by wider national and international discourses. Harley and Wedekind (2003) argue that there is a broad agreement that one of the central C2005 tenets, OBE, originated in debate around training models that influenced the labour movement in the late 1980's and encouraged a coalition between labour, government and industry. Learner centredness has also been linked to OBE. However, learner centred pedagogy also had its roots in a particular history of educational contestation, which was relatively independent of OBE, most notably the People's Education Movement and the growing international popularity of constructivism (ibid). These liberation education movement started in the late 1960's and it had an influence on the 1976 education uprising. The learner centred discourse in South Africa, with its roots in the People's Education Movement is therefore also linked to the democratization of education drive following the demise of apartheid in 1994. As reported by Lotz-Sisitka (2002) and Janse van Rensburg and Lotz-Sisitka (2000), the learner centred discourses also influenced the development of environmental education in South Africa, as discussed in more detail in the discussions on environmental education curriculum development below.

In Namibia, the government is also taking environmental concerns seriously, at least at the policy level. In the educational context, OBE discourse and an integrated knowledge system were not as heavily emphasised in the education reform process, but learner centred education has been the key focus of the education reform process, as discussed in the next section.

2.5.1.2   Background to Namibia's environmental education development

Namibia is sub-Saharan Africa's most arid country, and one of the most arid countries in the world. The entire western coastal area is a true desert, with a mean annual rainfall of less than 100 mm per year and mean annual evaporation about 30 times as great. The soils, in areas where rainfall is sufficient to support exploitable vegetation, are dominated by Kalahari sands of very low nutrients status, or by highly saline or rocky soils with low production potential.

The Namib Desert is one of the oldest deserts, with consequently a higher level of biological specialization endemism (Namibia, Ministry of Environment and Tourism, 1997).

Namibia's economy and the livelihoods of its people (approximately 80%) are dependent on natural resources, both renewable and non-renewable which are increasingly under pressure from unsustainable use resulting in environmental degradation. The challenge is to utilise natural resources sustainably in order to develop the economy while at the same time saving the environment from adverse impacts of pollution, soil erosion and deforestation as well as general degradation of land (ibid). Therefore Namibians must carefully manage their environment in order to sustain it for the present and future generations, by making it a priority to create an environmentally literate society, which understands the consequences of the past, and who are able to take action to live sustainably for the benefit of all Namibians.

Namibia, like South Africa has a long history of colonial rule, and was also affected by apartheid, since it was under South African rule before and during the apartheid era (as described in more detail in section 2.5.3.1 below). Since independence in 1990, the Namibian government has given greater priority to environmental concerns through various provisions in different policies. The Namibian government is also a signatory to various international conventions, which has made it possible to encourage environmental discussions.

An initial attempt to create environmental awareness took place through the drafting of the Constitution of the Republic of Namibia, Article 95(1) (Namibia, Constitution, 1990:52) which states that the State shall actively promote and maintain the welfare of the people by adopting *inter alia*, policies aimed at:

> …maintenance of ecosystem, essential ecological processes and biological diversity of Namibia, and utilization of living natural resources on sustainable basis for the benefit of all, both present and future; in particular the government shall provide measures against the dumping or recycling of foreign nuclear and toxic waste on Namibian territory…

In order to increase awareness of environmental problems, and to promote more sustainable natural resource management practices, the government of Namibia has identified environmental education within the formal, non-formal and informal sector as a priority (Hoabes, 2004).

The Government of the Republic of Namibian (GRN) gives high priority to sustainable and integrated natural resource management in its First National Development Plan (NDP#1), which covers the five year period from 1996-2000. The National Development Plan commits the GRN to:

> Promote sustainable development within all sectors, and across all regions, to ensure present and future generations of Namibia gain optimal benefit from the equitable and sustainable utilization of Namibia's renewable resources, to protect the nations biodiversity and maintain essential life support systems, to promote participatory, cross-sectoral and integrated programmes to improve understanding of the management of the natural resources on a sustainable basis (National Planning Commission, 1995:16).

The Namibian government acknowledges environmental education as one of the essential instruments for empowering Namibians to take up meaningful decisions concerning environmental issues, risks and challenges. This acknowledgement is essential for the sustainable livelihoods of many Namibians and therefore an important dimension of Namibian social and political reform.

Namibia was one of the first countries worldwide to incorporate environmental and sustainable development clauses within its national constitution. It gave power to these clauses by enabling its citizens to raise issues of environmental concern via the Office of the Ombudsman. In 1992, by means of *Namibia's Green Plan* (Namibia. Ministry of Wildlife, Conservation and Tourism, 1992), Namibia created a national common vision around its environmental issues, priorities and future actions, drawing together government, NGO, private sector and community in an unprecedented coalition to work towards a common future – a coalition that started to break down the highly sectoral ways of the past. His Excellency President Sam Nujoma formally tabled the Green Plan at UNCED, on behalf of the Republic of Namibia. The Green Plan led, in turn, to *Namibia's 12 Point Plan for Integrated and Sustainable Environmental Management* (GRN, 1993), a short strategic implementation document, which was tabled and adopted by Parliament in 1993, and this in turn was incorporated into the first 5-year National Development Plan (NDP1). Namibia's portfolio of environmental programmes and projects arose from this process, and was designed as a complimentary and synergistic set of activities to address Namibia's environmental challenges and opportunities.

The Green Plan also commits itself in promoting a plan of action in which it promised to create a scheme that will enhance the socio-economic development and uplifting of the Namibian rural communities in becoming self sufficient in food production in the years to come:

> To enable Namibians to move from environmental awareness to understanding and action, the Namibian government will aim to provide all Namibians with access to environmental education, whether at the formal or non-formal level.
> (Namibia. Ministry of Wildlife, Conservation and Tourism, 1992: 19)

Despite all the contributions that government has made through its national policy (as indicated above) and also despite being a signatory to various international agreements and conventions, little has been done in practice. This is evident in a lack of comprehensive programmes to enhance environmental education and public awareness, although some progress has been made in including environmental education into the national curriculum (as reported on in more detail in section 2.5.3.1 below). It also fell short in developing a comprehensive and inclusive National Environmental Policy, until December 2007, when the Environmental Management Bill was passed in parliament. As indicated by Sasman (2007), the Namibian government has adopted all the right policies to achieve the United Nations Millennium Development Goal (MDG) seven on sustainable environmental practices, but its good intentions have floundered at the implementation stage.

2.5.2   The history of the legacy of Bantu Education in both countries: South Africa and Namibia

The new education systems that were introduced at the dawn of independence in both Namibia and South Africa were based on political decisions influenced by the liberation struggles in both countries. Both transformation processes were aimed at responding to the legacy of the brutal and discriminatory impacts of apartheid education. The new education systems in the two countries were both aimed at creating a society that respects the right of individuals as equals and that embraces unity in diversity and treasures the embodiment of a true and vibrant free society.

The statement above paints a picture of hope and prosperity in these new independent states in southern Africa. This is because the legacy of the apartheid regime in both Namibia and South Africa caused a scar that will take time to heal. It is the scar of inequality, and successive cycles of conquest, which subjected both countries and their people to severe social, political

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and economic injustices arising from racial inequalities and divisions between black and white. Ongoing problems in the education system and difficulties with implementing new educational policies (Jansen & Christie, 1999) indicate that this history cannot be brushed away overnight by the global market economy of the 21st century but will remain a hard to resolve legacy for present society, and future generations.

In 1915 Namibia was conquered by South Africa, which later succeeded in obtaining a League of Nation's mandate over it. South Africa imposed a military government, which ruled by decree. As from 1920, South Africa began its colonial activities under the Mandate. When the National Party came to power in South Africa in 1948, it proceeded to implement different phases of the apartheid policy in Namibia, and even tried annexing Namibia as a fifth province to South Africa. This policy was met with growing internal and international resistance and therefore the strategy changed to various attempts to create a pseudo-independent state under continued South African control (Amukugo, 1992).

Under apartheid, an educational policy of Christian National Education was introduced, which supported the South African National Party's program of apartheid by calling on educators to reinforce cultural diversity and separatism, and to rely on 'mother-tongue' instruction in the first years of primary school (ibid). The Afrikaner Christian Nationalist tradition developed out of a stream of British and Dutch educational scholarship based on a theory of education called fundamental pedagogics (Christie, 1985). The vision of apartheid and Christian Nationalism was informed by a 'Christian' interpretation of the Afrikaner as an '*uitverkore volk*' or chosen people (Lapping, 1987, unpaginated). D.F. Malan (one of the earlier architects of apartheid), who stood for drastic measures against the "black menace," coined the concept of "apartheid" and consistently enforced this devious policy, led by the National Party (ibid). In the new apartheid state after the 1948 elections, official attitudes towards African education were paternalistic based on trusteeship and segregation. In 1950 South Africa refused a UN request to give up the Namibian territory. It was renamed Namibia in 1968 (although South Africa continued to call it South West Africa). In 1949, the SA government appointed a Commission of Native Education under the chairmanship of Dr. Eiselen to develop education policy in South Africa. He was also commissioned to visit Namibia in order to assess the possibility of implementing the apartheid system. The Eiselen Commission completed its work in 1951 and recommended and supported the introduction of Bantu Education in South Africa (and by extension Namibia) as a means of control.

The Bantu Education Act (No. 47) of 1953 was first introduced in South Africa and then later in Namibia (as explained below). It had the result of widening the gaps in educational opportunities for different racial groups (Amukugo, 1992). Two architects of the Bantu education system namely Dr. Eisselen and Dr. Hendrik F. Verwoerd who had both studied in Germany, adopted many elements of National Socialist (Nazi) philosophy into the apartheid state. They introduced the concept of 'racial purity' which provided a rationalization for keeping black education inferior. This idea was clear in the statement made by Dr. Verwoerd. He said:

> There is no place for [the Bantu] in the European community above the level of certain forms of labour ... What is the use of teaching the Bantu child mathematics when it cannot use it in practice? That is quite absurd. Education must train people in accordance with their opportunities in life, according to the sphere in which they live (Lapping, 1987, unpaginated).

Dr Hendrik Verwoerd was the South African Minister for Native Affairs and later became Prime Minister from 1958 to 1966. In the citation above, he was speaking about his government's education policies in the 1950s.

The South African Bantu Education Act of 1953 was introduced to Namibia in 1962 as an official policy. It was preceded by a Commission of Inquiry into Non-European Education in Namibia (the Odendaal Commission of 1958), whose purpose was to make the necessary adjustments to the report of the Eiselen Commission in order to suit the Namibian conditions (Amukugo, 1992). The commission recommended that the African was to become a good servant that conforms to, rather that questions the existing order. Literacy levels in official languages was necessary to enable workers to sign documents whose content they could not understand, which indicated the limited education the workers received. The education system in question was geared towards creating a cheap African labour force (ibid).

In South Africa no new secondary schools were built in Soweto between 1962 and 1971 because the intention was to build schools in the so-called homelands. In 1972, the government reluctantly accepted the demand that the Bantu Education system would have to improve if the needs of the industry and business were to be satisfied. In a short space of time, the Department of Bantu Education increased the number of schools and by 1974 there were 40 new schools in Soweto (Bonner & Segal, 1998). In 1975 a decision was made to drop standard six and to introduce compulsory use of Afrikaans as medium of instruction from standard five. Overcrowded classes with poor conditions of learning were the order of the

day. All these and many other conditions of learning were unbearable and virtually impossible and students grew angrier by the day (ibid).

All these deplorable conditions happened at schools within a period of 20 years from 1953 when Bantu Education was introduced. On 16 June 1976, millions of South African black children took to the streets of Soweto. This education uprising in which the children refused to accept *Afrikaans* as the medium of education, was the turning point in the history of oppression not only in South Africa but in Namibia and on the continent as a whole. By the end of the year about 575 people died across the country and about 5980 people were arrested in the townships in South Africa. A number of black children were shot and killed with teargas and live bullets for refusing to go back to school and for participating in the mass demonstration in Soweto. After the Soweto massacre and international outrage that followed it, the then Prime Minister John Voster agreed that in future schools would be allowed to choose their own medium of instruction, which was seen as victory by the collective mass movement. A flame of genuine freedom was marked by this single event and situated the protracted mass killings of 1976 at the heart of the African revolution (Bonner& Segal, 1998). Today it is commemorated by South Africa and Africa in general as a national day called Youth Day, which honors all the young people who lost their lives in the struggle against apartheid and Bantu Education.

The consequences of this incident had far-reaching outcomes in the social arena. The Black consciousness movement started to become a symbol of unity and the power of the mass movement, under the leadership of people like Steve Biko rallied the youth of South Africa and had a huge influence on the Namibian struggle. The youths' militant and courageous stand during the street offensives contrasted with the submissive behaviour of parents and they started undermining the authority of the older generation. Parents were forced to listen to the voices of the youth who had taken the lead on the political front. A black student said:

> The struggle is ours, the ball of liberation is in our hands, the black students will stand up fearlessly… against a political system which is stinking with immoral policies … we shall rise up and destroy a political ideology that is designed to keep us in a perpetual state of oppression and subservience (Bonner & Segal, 1998: 99).

In conclusion, the struggle that the students underwent in South Africa was similar to that of Namibian students under the leadership of the Namibian National Students' Association (NANSO). It was an organisation that was formed at the heart of the time when the liberation struggle of Namibia was reaching its climax under the leadership of the vanguard movement

SWAPO. This is the struggle I personally experienced in the late 1980's as a young student leader who was jailed under the Administrator General (AG) Act 9 for 30 days for instigating a school boycott in my hometown of Rundu. This struggle has shaped the new intelligentsia society that is occupying leadership roles in post independent Namibia and South Africa. Some of the more unfortunate consequences of this history are still felt today in under-resourced schools where educational quality remains an issue, as a mixture of struggle history and lack of adequate resourcing and support for teacher education and innovation has resulted in ongoing quality of education problems in many schools in both South Africa and Namibia today. This history has influenced the way in which environmental education has been conceptualized and integrated into the curriculum in the two countries.

2.5.3   The Integration of environmental education in the curricula of South Africa and Namibia

As discussed above, Namibia and South Africa shared a history of oppression and an educational struggle which has left a particular legacy in the education systems of these two countries, and a common agenda to transform society through education. Post-apartheid initiatives such as learner centred education and environmental education are therefore deeply embedded in this transformation struggle. I now discuss these initiatives in the two countries, with specific reference to the initiatives that have taken place to integrate environmental education into the learner centred curricula (as introduced above in section 2.5.1 above).

2.5.3.1 *The integration of environmental education in the Namibian curriculum*

Integrating environmental education into the curriculum in Namibia has been a long process. A comprehensive and clear outline approach and strategy that are driven by the desire to meet the Namibia's education for sustainable development needs has been developed. In order to understand the process, I report on how events have unfolded over the period of time since the introduction of the post-apartheid education system. All the different approaches that developed and shaped environmental education processes in Namibia were supported by the Danish Ministry of Foreign Affairs through DANIDA funded projects which were implemented by the Danish NGO, Ibis, in partnership with the Ministry of Basic Education and Training and other NGOs such as the Desert Research Foundation of Namibia (DRFN), indicating that the innovation required external support which was sought through development assistance.

The *Support Environmental Education in Namibia* Project (SEEN) was introduced in Namibia from 2001 to 2005. This project (SEEN) was a follow on to the earlier project called *EnviroTeach*, which was initiated in 1993, as a component of the Desert Research Foundation of Namibia (DRNF) programme. The *EnviroTeach* project complemented, extended and built on a more substantive Danish funded project initiated to influence the national curriculum after independence called the *Life Science Project* which was implemented over a 10 year period from 1990 to 2000. The *Life Science Project* was designed to be a carrier subject for environmental issues (van Harmelen, 2000) in the Junior Secondary School. These three main projects were funded by DANIDA. DANIDA also funded some smaller project such as the Forest Awareness and Tree Planting Project in Northern Namibia. These environmental education projects have made significant contributions to the educational reform process and the subsequent implementation of learner centred education (Mbamanovandu, 2005).

For the purpose of this study, I consider an historical approach that shows the growth of environmental education in Namibia as a process, in terms of environmental learning, starting with a brief description of the EnviroTeach Project in Namibia.

- *The EnviroTeach Project (1993-2000)*

One of the front-runners of environmental education processes in the country was the *EnviroTeach* Project, which was an environmental education programme of the Desert Research Foundation of Namibia (DRFN). This organisation worked closely with the National Institute for Education Development (NIED), which had functions such as evaluating and developing curricular materials for the education system. It is also responsible for introducing effective approaches to teaching and learning, coordinating the development of instructional materials and educational research. It has two main divisions: the Curriculum Research and Development and Professional and Resource Development Division.

At the time when *EnviroTeach* started, environmental education was not an integral part of the curriculum, except for a few brief sections in certain carrier subjects such as Geography and Natural Science. What was interesting was that *EnviroTeach* had undergone a number of phases, with the overall aim of establishing environmental education in formal education. One of its earlier investigations was to see how best to include environmental education in formal education and the project decided on the infusion and integration of environmental education as cross curriculum theme (EnviroTeach: Pilot Phase, 1998:16).

During phase one of the *EnviroTeach* project, educational reform was just starting and implementation of this plan (especially teaching in a cross-curricular manner) faced many challenges.

Amongst the problems experienced during the implementation were:
- resistance to change on the part of the teachers, school management, learners and parents,
- lack of confidence and experience on the part of the teacher,
- lack of support from school management who in many instances did not understand new methodology being promulgated through educational reform, and
- lack of relevant, appropriate and user-friendly resources (ibid).

At the end of the first phase the project concluded that the most effective route for immediate implementation of environmental education was that of teacher education, specifically in pre-service targeting of the four colleges of education. This seemed to have been the right target and the right approach for environmental education implementation since teacher education was going through a reform process, in which it was implementing the new Basic Education Teachers Diploma (BETD) curriculum. The implementation of the *EnviroTeach* programme within the colleges was perceived a sound decision in view of the fact that the colleges as pre-service providers had the potential to spearhead the change process. The implementation of the programme brought some curriculum revision as well as introducing a number of cross-curricular initiatives within the college programmes (ibid).

The initial idea of the second phase of the *EnviroTeach* project was to *sensitize* teacher educators involved with BETD and students teachers enrolled for the BETD. The activities also included three main types of workshops namely: *introductory workshops* to introduce the project to the students and college lecturers; *thematic workshops* that incorporated drama as a dimension of teaching and learning within a learner centred approach; and *leaner centred support workshops* that were geared towards increasing participants understanding of the EnviroTeach resources.

The EnviroTeach project came to an end in 1999. During the remaining period of the project, it prepared itself to phase out activities that were geared towards the transfer of ownership from DRFN's *EnviroTeach* (EE) programme to the ministry through the relevant officials at NIED. The move of the project to NIED was considered to be an important step in view of the fact that it was NIED who was expected to take ownership of environmental education

activities in the future. The *EnviroTeach* project was unfolding at the same time as the Life Science Project, which I discuss below.

• ***The Life Science Project (1990-2000)***

After independence, the Namibian government introduced a new subject called Life Sciences (with support from DANIDA), which was established in 1992. The subject was introduced as a main 'carrier' subject for environmental issues. According Van Harmelen (2000:39) Life Science was also meant to spearhead the educational reform process in terms of pedagogy and learner centred education at Junior Secondary level.

The Ministry of Basic Education and Culture identified specific aims for Life Science grade 8-10 in which it clarified what was to be achieved by the learners studying the subject. Accordingly the Ministry reflected these aims in the syllabi of Life Science as follows:

Learners will:
- Develop an understanding of biological and ecological principles and interactions in the natural environment,
- Be encouraged to use the environment in a sustainable way,
- Apply basic scientific procedure in crop production,
- Develop an understanding of the basic human body in order to attain a healthy life style, develop a responsible attitude with regard to family planning and sexuality.
- Develop an attitude of curiosity and enquiry as well as critical and problem solving approach to both everyday and scientific evidence,
- Be encouraged to communicate and work together with other learners and members of their society in a democratic way, and
- Be suitably prepared for vocational activities and academic studies beyond Junior Secondary level.

<div align="right">(Namibia. Ministry of Basic Education and Culture, 1995: 3)</div>

The Life Science project adopted a constructivist epistemology in which to locate teaching and learning (van Harmelen, 2000:22). In her final evaluation of the Life Science Project, van Harmelen (ibid), indicated how the Life Science project impacted heavily on the education reform process through:

- The development of curriculum that focused, in the content and spirit, on promoting the views of democracy, equity and environmental awareness in its broader sense,
- Development of resources for learning and teaching that sought to facilitate empowerment through their focus on self-reliance and self-sufficiency,

- An in-service initiative that was dedicated to the promotion and development of learner-centred education.

Generally the Life Science project's support for educational reform in Namibia led to the consolidation and articulation of the reform vision as it left a legacy for change and laid a sound foundation for change, and as indicated above, both initiatives were strongly focused on learner centred education principles and practice. The lessons learned from the Life Science Project (van Harmelen, 2000) dictated that other efforts following up on the reform would need to give consideration to:

- Greater cohesion through the system and in particular the pre-service teacher education system,
- Development of the school structure and curriculum management,
- Development and dissemination of appropriate resources for teaching and learning,
- Build on the support model for in-service teacher education and re-examine the role of advisory teachers, and
- Ensure that infrastructure and academic/intellectual support is available within the system (van Harmelen, 2000:24).

Despite the large investment into the 10 years of the *Life Sciences* Project, and the *EnviroTeach* projects, one of the major concerns echoed by many in the environmental education fraternity in Namibia in the early 2000's, was that environmental education policy was inadequately activated in the curriculum (Murray, 2002: 2). Building on lessons from the *Life Sciences* and the *EnviroTeach* experiences, Murray (ibid) advanced further reasons why the policy seemed to be inadequately activated:

- Existing environmental education materials are often unsuitable: either they are too few, have the wrong focus; or are not used sufficiently,
- Environmental education concepts are inadequately defined,
- Educators are not sure how to introduce environmental education: in single subjects, within carrier subjects or across the curriculum,
- Teachers do not have the professional competence to develop and implement environmental education programmes,
- An individual environmental ethic is lacking among teachers and learners: institutions needed to develop environmental education policies and act consistently with them, and
- Monitoring and evaluation of environmental education experiences was insufficient (ibid).

Despite the investments made into the two projects mentioned above, and their allegiance and support for learner centred education, Murray (ibid) still reported that education approaches were not well understood or practiced, and that "… environmental education as practiced in Namibia does not seems to be in line with current ministry policy for learner centred, constructivist and socially critical education" (ibid, pg. 2). This situation led to the defining of a third project, namely the Support Environmental Education in Namibia Project (as outlined above).

- *The Support Environmental Education in Namibia (SEEN) Project (2000-2005)*

In Namibia, due to funding shortages, the SEEN project was only introduced in 2000 as a pilot programme in four regions (Caprivi, Ondangwa West, Ondangwa East and Erongo) for a period of four years (2000-2004). It endeavoured to adopt a stronger systems approach than the two previous projects and also strove to work with curriculum advisors using a cluster-based professional development model, and with a focus on whole school community contexts and curriculum to try out models of process and practice that could make a more substantive impact than the previous two projects, and which could address the issues identified by the EnviroTeach Project, van Harmelen's (2000) Life Science evaluation, and Murray's early assessment of the *status quo* at the start of the SEEN project (reported on above). In each region, the project selected certain schools that are in poverty-stricken areas of the country and in most cases it worked with no more than ten schools per region.

The project was tasked, amongst others, to test and review appropriate environmental education practice at school level in order to inform the current curriculum revision process and develop models for professional educators in the formal and informal sectors (Mbamanovandu, 2005). The SEEN project therefore piloted a variety of approaches to incorporating environmental education into the curriculum through a *whole school approach* (modeled to some extent on the South Africa Eco-Schools programme) and adopted a key focus on *curriculum*-based action for a healthy environment.

The project was managed from NIED by a national technical advisor (Steve Murray, who conducted the review reported on above) with a number of technical advisors (funded by DANIDA) in all the four regions.
Some of the functions that were expected from the technical advisors were to facilitate the school-based and cluster based professional development process. The process was done with the assistance of the Advisory Teachers (AT's) based at the regional offices of education and

those who were at the Teachers Resource Centers (TRC). The teachers who were based at the school were actually the people who facilitated environmental education processes at the school level and they were directly involved (ibid) through ongoing cluster meetings and actions in the schools, adopting a reflexive model of professional development that had been pilot tested in South Africa's *Learning for Sustainability Project* (see section 2.5.3.2 below).

Some of the key activities in the pilot regions where the project was in operation entailed the following:

- raising awareness and helping the schools to establish the process,
- assisting schools in auditing their current state of environmental practice in order to see what environmental learning opportunities are in place,
- assisting schools in the development of school environmental policies and plans that support their needs,
- facilitating the process of schools being able to design action plans and projects that meet their needs and those of their local communities, in order to adequately respond to local environmental issues and challenges (Murray, 2002).

This process was based to some extent on the school environmental policy materials produced by Share-Net, which are the same ones used in South African Development Community Regional Environmental Education Programme (SADC-REEP) and Eco-Schools in South Africa (see section 2.4.2, and Chapter 1).

The SEEN project piloted a variety of approaches to incorporate environmental education into the curriculum through a "*whole school approach*". When Murray (2002) was asked about the importance of the approach, he argued that the whole school approach to environmental learning implies that more than a few teachers of carrier subjects are involved and that the curriculum content is matched with the school's broader environmental practices. He argued further that all teachers at the school with the support of learners and parents need to drive the project in order to ensure that a shared understanding of the aims and objectives of an effective and coherent school-based environmental learning programme is secured (ibid).

The idea was to introduce certain environmental education issues with the aim of creating a scenario in which environmental education could be integrated into the curriculum. Environmental education in Namibian education is seen as one of the six cross curriculum issues, which needs equal attention across the curriculum.

Unlike in South Africa, the support in Namibia was not really mandatory through policies and at the end of the project there has as yet *not been a follow up programme*. As van Harmelen (2005) indicated, SEEN has been a highly successful project, particularly in the context of the major outputs of curriculum development and professional development, yet a lot of work still needs to be done in this area. Due to a change in government in Denmark and a consequent closure of DANIDA, and an associated loss of support for environmental education in Denmark, the project was not extended, and the development aid based interventions into environmental education in Namibia came to an end in 2005.

The Kavango region happened to be excluded from this exercise that was sponsored by the Danish government, although I was part of the project. During this period I was interested in understanding the Eco-Schools activities since two schools Olukonda and Kameru received green flags during this period from the South African Eco-Schools model (as mentioned in Chapter 1). In addition, most schools that were involved in the programme managed to develop Eco-Schools policies, which were written out explicitly on the walls of the gate to the schools (see section 4.2.3).

2.5.3.2 *Integration of environmental education into the South African curriculum*

As in the case of Namibia, South Africa also has a history of development aid interventions in supporting the integration of environmental education into the national curriculum. The influence of development aid interventions was, however, more strongly located in a mix of national activity and networking *and* development aid programming than was the case in Namibia, where development aid interventions provided most of the impetus for environmental education development. In South Africa the process of integrating environmental education into the national curriculum was spearheaded by a national networking process which led to the development of a participatory policy development process (the Environmental Education Policy Initiative - EEPI) which was later followed by a participatory curriculum development process (the Environmental Education Curriculum Initiative – EECI). Through these initiatives, development aid was sought as a means of building systemic capacity, and for the piloting of models and practices for integrating environmental education into the national curriculum. Two large scale development aid initiatives, funded by DANIDA were the *Learning for Sustainability Pilot Project,* which was followed by the *National Environmental Education Project for General Education and Training (NEEP-GET).* These initiatives were, however, strengthened, supported and extended by other national environmental education initiatives such as the Department of

Water Affairs and Forestry's 20/20 Vision Programme on water education; and WESSA's Eco-Schools project (amongst many others).

- ***The EEPI and EECI (1992-2000)***

In 1992 a multi-stakeholder conference was held at Dikholoto, marking the beginning of the process of incorporating environmental education into formal curricula under a new political dispensation. The importance of this conference is the fact that that the *Life Sciences Project* from Namibia was in attendance at this meeting in South Africa, where early knowledge exchange in environmental education between the two countries began**.** This initiative was led by the Environmental Education Association (EEASA) who partnered with the Department of Environmental Affairs. Many committees, working groups and individuals worked hard to contribute to this process. Various projects piloted different approaches, and many resources were developed to help participants to get to grips with these issues of environmental education.

The EEPI (the Environmental Education Policy Initiative) was established prior to Dikholoto, and involved civil society and state actors. The EEPI attempted to influence new policy and curriculum development activities around environmental education, and led to the inclusion of a principle statement on environmental education in the 1995 White Paper on Education and Training which stated that environmental education should be integrated into all levels and phases of the education system, and that it should adopt an active learning and integrated approach (RSA, 1995). The EEPI was followed by the EECI (Environmental Education Curriculum Initiative) an extension of the state-civil society partnership of the EEPI, and was mooted at a conference held by the Environmental Education Association for Southern Africa (EEASA). The EECI impacted on the curriculum development process of Curriculum 2005 and strengthened other curriculum development activities in colleges and universities. The EECI was responsible for ensuring that environment was included as a cross curricular phase organiser in Curriculum 2005 (Lotz-Sisitka, 2002). The EECI also took part in resource development, research and supporting teacher education. The DANIDA funded *Learning for Sustainability Pilot Project* was also involved in the EECI process, since it was running concurrently (see below).

As mentioned in section 2.4.7, the Eco-Schools initiative started with the earlier School Environmental Policy initiative, which was established in 1998 as an outflow of the Department of Environmental Affairs and Tourism (DEAT) environmental management

policy making. Following the promulgation of the National Environmental Management Act in 1998 (RSA, 1998), DEAT wanted to support the introduction of environmental management at school and community levels, and the School Environmental Policy Project was initiated in partnership with DEAT, Rhodes University, NGO's and the provincial Departments of Education (DoE) (Lotz-Sisitka, Timmermans & Ward, 2005: 30). During this policy project educators developed school environmental policies and lesson plans using an active learning framework, which the approach to learning supported by the White Paper on Education and Training (as mentioned above). It was also the approach that the SEEN project adopted in the Namibian context. The School Environmental Policy project and the outcomes of the EEPI and EECI processes eventually informed active learning and cluster based professional development programmes in the NEEP-GET. The NEEP-GET, however, built on, and grew out of the *Learning for Sustainability Pilot Project*, established in 1996 as the first version of Curriculum 2005 was released for implementation in South Africa.

- ### *The Learning for Sustainability Pilot Project (1996-2000)*

The *Learning for Sustainability Pilot Project* was a pilot project focusing on teacher professional development for environmental education in two provincial education departments (Mpumalanga and Gauteng) in South Africa from 1997-2000. The project started officially in 1996 as a Danish funding partnership with the South African Ministry of Education. The *Learning for Sustainability Pilot Project* was initially planned to be based on the Life Sciences Programme in Namibia, and was consequently staffed by two of the Namibians who had worked previously on the EnviroTeach and Life Science projects. These original intentions were, however, overtaken by the Curriculum 2005 (C2005) developments in which environment was defined as a phase organiser, and rather than start a new subject (as was the case in Namibian Life Sciences), the project focused on supporting teachers to interpret and understand the environmental focus in C2005. The outflow of the project from the Namibian initiatives, and the Danish funded implementation framework, helped to cement the links between Namibia and South African environmental education. As mentioned before, both projects in Namibia and South Africa were supported by the Danish funding (DANIDA) and both projects were implemented by the same Danish NGO (Ibis). Prior to the South African project's conceptualization and implementation the South African Ministry of Education from the two provinces visited Namibia to familiarise themselves with the Life Sciences initiative in Namibia.

The project was innovative in several respects:

- It piloted a teacher development model, which differed in a number of ways from the in-service training models used more widely in the country at the time.

- It introduced the notion of environmental sustainability to teachers, most of whom had no background in environmental education.

- It did so with the newly introduced outcomes based education framework of Curriculum 2005, at a time when new policies for teaching and teachers were still being introduced and piloted (Janse van Rensburg and Lotz-Sisitka, 2000).

The Learning for Sustainability project was informed by international and local educational developments including the outcomes based framework for Curriculum 2005 and the newly developed *Norms and Standards for Education* which were released in 2000 (South Africa, (DoE) 2000). Ideas such as learner centred education, constructivism, and critical pedagogy were part of the projects' overarching ideologies (ibid).

Like its post-independence Namibian counterpart, the South African Ministry of Education introduces a radically changed, internationally inspired policy framework of learner centred education, and activity based education towards democratic citizenship, which was supported by the liberal pedagogies prominent in Denmark and other European countries through development aid support. The South African government, different to Namibia, however, introduced an outcome-based approach to education based on pressure from the labour movement (ibid; Jansen, 1999).

The *Learning for Sustainability Pilot Project* aimed to integrate environmental education into the new South African curriculum through a three-pillared approach, which was similar to that which had been followed in the Namibian Life Science project. This consisted of:

- Teacher (professional) development,
- Curriculum development, and
- Resource materials development.

All of these were located in, and centred on constructivist learning theories and the philosophies of learner centred education (ibid). As the project started integrating with the

realities of its context, the latter two components particular resource development came to play a lesser role, which also resulted from the uptake of social constructivist theory within the project (ibid). The *Learning for Sustainability Pilot Project* therefore manifested mainly as a teacher development project, although some useful lessons were learned about curriculum development (ibid). Very little attention was given to resource development, except at the level of documenting the professional development experiences gained in the project.

- *The National Environmental Education Programme (NEEP) in South Africa (2000-2005)*

With the human rights clause on the environment in the Constitution in mind (see section 2.5.1.), the former Minister of Education (Minister Kader Asmal), in line with his broader commitment to a human rights culture in education, established a National Environmental Education Programme (NEEP) in the Department of Education. The programme was instrumental in facilitating cooperation amongst different school-based environmental education initiatives in the country (Lotz-Sisitka & Raven, 2001). The NEEP-GET effectively brought together the EECI, the Learning for Sustainability Pilot Project, and other governmental environmental education initiatives such as the DWAF 20/20 vision project. This effectively led to the amalgamation of the EECI and the Learning for Sustainability initiatives in South Africa, under the umbrella of a new project, also funded by DANIDA, specifically focused on environmental education in the General Education and Training Band, called the National Environmental Education Project for the General Education and Training Band (NEEP-GET). A pilot project was initiated for the NEEP-GET in which the active learning approach was tested in six provinces in the context of lesson planning and resource-based learning (Lotz-Sisitka & Raven, 2001). An extended project was then initiated in 2001 to 2005.

The NEEP-GET was preceded by the Learning for Sustainability Project, which, as mentioned above, piloted environmental education with teachers and focused on school based environmental education curriculum development, innovations in environmental education, as well as an appropriate professional development model. Instead of two provinces, the NEEP-GET operated in eight of South Africa's nine provinces. It was envisaged that at the end of the project provincial departments of education would have increased capacity to implement environmental learning in participating districts and schools (NEEP-GET, 2005a, and b).

The primary objective of the NEEP-GET Project was to build capacity in the South African system for environmental learning. In order to address this objective, NEEP-GET applied a number of approaches and strategies. These included:

1. Use of a broad framework for understanding environment, in which the social, ecological, political and biophysical dimensions of the environment were an important reference for deliberations on environment in the project.

2. Analysis of contextual issues, in which the teachers could recognise the contextual nature of many environmental issues, as these are often different from one another.

3. Exposure to environmental learning resources, in which educators where introduced to a wide range of materials on sustainable living practices, water management, climate change, biodiversity, industrial issues, etc.

4. Engagement with a range of environmental learning outcomes which helped the teachers to use the curriculum.

5. Contributions to curriculum policy, which foreground the relationship between human rights, social justice, inclusivity and a healthy environment (NEEP-GET, 2005a: 8).

Through working with its partners, the NEEP-GET was able to support the development of an environmental focus in all the Learning Areas in the South African curriculum (NEEP-GET, 2005a: 8), as shown in the table below.

Table 2.1: Environment is integral to each Learning Area in the South African curriculum

Natural Science	Emphasizes the importance of biodiversity and life support system
Social Science	Emphasizes learner's abilities to identify and analyse a range of environment and development issues
Life Orientation	Emphasizes environmental health, and makes links between human health and environmental health risks (e.g. water pollution)
Economics and Management Sciences	Emphasizes sustainable development and growth, calls for approaches to reduce waste and protect resources
Arts and Culture	Consider the importance of cultural and natural heritage
Technology	Emphasizes the importance of environmental friendly design, and encourages learners to investigate technological impacts on the environment
Languages	Develop critical literacy skills needed to analyse and address environmental issues and risks

Mathematics	Develops numeracy skills needed to analyse and address environmental issues and risks

Through this process, environment has been incorporated into all Learning Areas of the South African curriculum through explicit Learning Outcomes and Assessment Standards that articulate the environmental focus in each Learning Area. This was done within the framework of a curriculum principle that foregrounds the relationship between a healthy environment, social justice and human rights (NEEP-GET, 2005a), effectively introducing a human rights orientation to environmental learning in the South African National Curriculum Statements. This work was later extended into the Further Education and Training Band, where a principle on environmental justice is incorporated into all of the Subjects.

Therefore, when environmental education is incorporated into the school curriculum, in South Africa, students:

- learn **about** the environment,
- develop skills to investigate and solve issues **in** the environment,
- acquire attitudes of care and concern **for** the environment,
- adopt behaviours and practices which **protect** the environment, and
- understand the principles of ecologically sustainable development.

(Henderson & Tilbury, 2004)

This process is, however, not simple, and environmental issues are often contested, complex and without clear-cut solutions. For this reason, educational processes and outcomes need to be open ended. Hence the processes are multi-disciplinary focusing on nature, society and environment as interdependent and inseparable entities. The NEEP-GET pilot research indicated that preparing learners to address environmental issues required "…knowledge and skills best developed through active learning, critical thinking, involvement in real issues, and encounters in the learners immediate environment" (Lotz-Sisitka & Raven, 2001: 94).

As indicated in Chapter 1 (see section 1.4), active learning also formed part of the learning models of Vygotsky and Brunner. The theory promoted by the NEEP-GET (2005a, b) was based on constructivist learner centred educational principles that were articulated in an active learning framework (piloted during the School Environmental Policy development phase, and the NEEP-GET pilot phase) which was used in schools and professional development activities to assist teachers to implement social constructivist pedagogies. This framework encourages an open approach to learning and is based on certain key questions:

- What do learners already know (prior knowledge)?
- What information is needed?
- What inquiries can be undertaken?
- What action can be taken?
- What have we learned and achieved (assess and reflect)? (NEEP-GET, 2005a; Lotz-Sisitka & Raven, 2001)

In order to enable teachers to plan for environmental education processes in the context of outcomes based education or a learner centred education curriculum framework, it is important to recognise the prior knowledge and experience that the learner brings. Learning is oriented towards developing insights and competence for making better environmental management and lifestyle choices in a social context (NEEP-GET, 2005a). Much of the Post-Vygotskian work on learning theory has been more focused on the influence of social context (culture and history) on learning (Palincsar, 2007).

One of the features of both the South African and the Namibian environmental education programmes was their research-based orientation, and throughout the programmes various lessons have been learned. For example, one of the key outputs of the NEEP-GET pilot research in 2001 indicated that there is a need for greater reflection on how learning takes place, and a need for greater coherence of understanding about learning at all levels of education. Therefore, recommendations were made in which understanding of learning could be enhanced at provincial and national levels of education, such as:

- NEEP-GET should continue to provide teachers with scaffolding and guidelines, within an open-ended framework, for facilitating and assessing active learning in the OBE. This framework should involve a balanced mix of environmental education processes that contribute to meaningful environmental learning and to better environmental management and lifestyle choices.

- Teachers should be encouraged to plan their learning programmes to enable ongoing critical enquiry into an issue in a way that establishes clear linkages and conceptual development across the range of activities planned for the unit of work.

- In general attention should be given to a shift in focus from curriculum structures and jargon to learning processes that may lead to meaningful learning outcomes.

- The focus of a unit of work or a learning programme could be an environmental issue and risk or concern (Lotz-Sisitka & Raven, 2001:95).

These early research findings indicated some of the issues that need addressing when learner centred education is foregrounded. They include the understanding of learning, the focus and purpose of learning processes, planning for learning, and the relationship between curriculum and learning. The NEEP-GET (2005a and b) similarly produced useful insights into understanding the learning process and its relationship to curriculum. For example it found that:

- A useful starting point for school-based curriculum development work with educators is the environmental learning focus articulated in the **learning outcomes** _and_ a consideration of learner and community **context,** making the starting point *learning area in context*. This requires both: an in-depth exploration of the environmental focus within the learning area and a good understanding of contextual issues. (NEEP-GET, 2005b: 3, emphasis original)

- **It was noted in the project that when the active learning framework is** used in the context of learning areas**, it becomes more useful than when used generically at a conceptual level** (ibid: 10, emphasis original)**.**

- Without an **in-depth focus** on teaching and learning processes very little real change in teaching and learning practice can take place (ibid: 10, emphasis original).

- There is a need to support educators to develop **foundational knowledge** of environmental issues and risks, as many interpret environmental issues and risks superficially. This affects the scope and depth of outcome interpretation, and ultimately the learning outcomes of learners (ibid: 10, emphasis original).

This background information on South Africa's and Namibia's environmental education development processes sets the background for understanding Eco-Schools. One can see from the history of these projects that developing environmental education has not been an overnight process and that the institutionalisation of environmental education requires large investments in capacity building (the NEEP-GET project alone constituted an investment of more than ZAR 32 million). It is because of the background and efforts that went into environmental education policy, curriculum, professional development and research, that it is accepted in schools in these two countries today.

2.5.3.3   *Research insights into learner centred education*

As indicated above, these projects have, over the years all developed understandings of active learning, and learner centred education in South Africa and Namibia through research that was undertaken within the projects and through their formative monitoring and evaluation processes (van Harmelen,2000; Janse van Rensburg & Lotz-Sisitka,2000; Lotz-Sisitka & Raven, 2001; NEEP-GET 2005a, b). These understandings have also been extended by various other research projects. I summarise some of the main findings related to this body of research on active learning and learner centred education below.

Hoabes (2004), conducting research in the Namibian context into learner centred education in Life Sciences found that teachers were mainly interpreting learner centred education in terms of changes in method only. She found too that with some teachers there appears to be little understanding of their own practices as being learner centred. Teachers are also not in agreement whether learner centred education works. She recommended that continued support should be provided to teachers in the form of in-service training to help teachers: (a) understand LCE better (this would include understanding the social constructivist nature of the reforms in Namibia), and (b) understand how the methods they use reflect LCE.

Similar research was undertaken in South African schools looking at how action competency and active learning has been taken up by teachers and learners in their approach to the environmental focus in the learning areas, outcomes and context. One of the key challenges that have come forth is to move out of simplistic nature studies or superficial activities to more in-depth engagement with issues in context. Mbanjwa (2002) for example reported from his study into learning support materials and active learning, that there is a need to examine the usage of learning support materials, and how they are aligned with outcomes

based education approaches and methods with specific reference to how the materials are designed to promote learner centred education and group work.

Jensen and Schnack (1997) distinguish between action and activity in environmental education, arguing that one of the key features of an action is that it needs to enable learners to participate in investigating and solving environmental problems. Jensen and Schnack have found in their studies that action in lesson plans often appears to be understood as action for activity's sake, with little evidence of in-depth understanding of the issue. In most cases, they argue that it appears that learners do not always understand why they are doing activities, which affects meaningful learning. As reported above, the NEEP-GET research (2005a) also emphasized the need for teachers to have in-depth knowledge of the issues they are dealing with, since their knowledge also affects the learning opportunities for learners, and thus learner centred education approaches and how they are implemented. Such issues have been raised by other researchers, such as Mvula Jamela (2007), where she reports on an isolated activity making items out of waste which was considered to be an action. However, the learners did not situate the activity within the problem of waste management nor did they consider how reusing waste might reduce the waste problem. Mbanjwa's (2002) study indicated that the way that learner centred activities are planned and resourced are closely associated with the teacher's knowledge of the topic (e.g. waste management issues in this case), and the teacher's knowledge of *how* to teach in learner centred ways (i.e. pedagogical knowledge). The Mvula Jamela (2007) study sheds further light on this, since her study revealed that active learning approaches may also lead to a loss of valuable learning opportunities, particularly for learners to develop their reading and writing skills, as too much can be left up to groups of learners, without giving adequate attention to whether *each child* in the group is learning. She recommended that the use of active learning approaches require teachers to fully understand the enquiry process, and that teachers should carefully consider reading and writing opportunities available to learners in which individual reading and writing should be encouraged, even in group work activities.

The Mvula Jamela study revealed that Eco-Schools policy and active learning approaches are consistent with outcomes based policy and philosophy. She argues that the active learning approach allows for the constructivist orientation of the curriculum to be developed by teachers and learners, while the School Environmental Policy allows for contextualising of the curriculum, and for the building of school community relationships. Her study, by identifying specific pedagogical problems (such as the lack of adequate reading and writing opportunities in group work), and inappropriate levels of assessment, however, showed that even if

something is consistent with educational policy (e.g. Eco-Schools' consistency with outcomes-based education) it is still the teaching process, and the teachers' understanding of learner centred educational processes that are significant in ensuring that meaningful learning takes place. Mbanjwa's (2002) study showed that this has a link with how teachers inform themselves (i.e. improve their own knowledge) and how they use materials, *as well as* how the materials are designed. Hoabes' (2004) study in Namibia showed that understanding learner centred education requires teachers to see it as wider than just a change in teaching methods. As indicated above, the NEEP-GET (2005b) research also emphasized the importance of an *in-depth* understanding of teaching and learning processes. These issues have also been raised more recently in the Eco-Schools evaluation (Rosenberg, 2008) where the question of how Eco-Schools contribute to educational quality in South Africa has been raised.

In the next section I consider learner centred education in more depth, since it has been such a strong feature of environmental education developments in both Namibia and South Africa, as outlined by the overview provided above.

2.6   LEARNER CENTRED EDUCATION

2.6.1   Pre-independence education

As already briefly introduced in Chapter 1, the learning theory that underpins the main focus of this study (i.e. learner centred education) is a social constructivist theory, which has influenced educational transformation both in South Africa and Namibia. This is shaped by the history of the past education systems instituted by the apartheid regime in South African and Namibia in which, (simplistically speaking) the teacher was seen as the master and the learners as the subjects that must wait for the command of the master.

According to some South African researchers such as Jansen and Christie (1999), Janse van Rensburg and Lotz-Sisitka (2000) and NEEP-GET (2005a) the history of teaching and learning in both countries was situated within a behaviorist orientation, which was supported by fundamental pedagogies (the theoretical framework of the apartheid education system reviewed as mentioned above in section 2.5.2). This theoretical framework influenced the nature of teaching and learning in historically disadvantaged schools and impacted heavily on learner's experience and teachers' practice. In South Africa, the introduction of outcomes-based education through C2005 represented a strong commitment to transformation and a

significant change of orientation in the way learning was viewed, as is evident in this statement by the Department of Education in the revised National Curriculum Statement (which followed C2005 after a first revision).

> The curriculum aims to develop the full potential of each learner as a citizen of a democratic South Africa. It seeks to create a lifelong learner who is confident and independent, literate, numerate and multi-skilled, compassionate, with a respect for the environment and the ability to participate in society as a critical and active citizen (DoE, 2002b: 11).

Like South Africa, Namibia was also shaped by the past given the fact that it was essentially a colony of the South African apartheid regime from 1915 until it achieved independence (see section 2.5.1). Since independence the Namibian policy for reform in education is one of continuity and change. The policy states that there must always be change and not stagnation if learning is to improve but there are also areas where change is not prescribed and old practices continue.

Both the new Namibian education system and the new South African education system views learners as active participants in their own learning rather than as empty vessels to be filled with information (Janse van Rensburg & Lotz-Sisitka, 2000) as was the tradition under fundamental pedagogics. In both countries policy reforms foreground learner centred education as an approach to education and as a key orientation. In Namibia it is stated as a policy goal in the development brief *Towards Education for All* (MBESC, 1993). In South Africa the learner centered nature of the National Curriculum Statement (NCS) is explicitly referred to in the overview statement of this National Curriculum policy. In this context, as explained by Janse van Rensburg and Lotz-Sisitka (2000: 23), learner centred education means:

> Essentially, the term is used to refer to a shift away from an authoritarian approach, where the teacher's authority, assisted by the authority of the textbook, is presented as unassailable, and where learners are to be 'seen and not heard'. The current popular rejection of this approach is clearly related to its relationship to a totalitarian system... The shift towards focusing on 'the learner' is also associated with constructivist and humanist theories about individual learners' differences, cognitive styles and needs, and paying greater attention to these in supporting better learning. Cognitive research, which reveals that individual students "function" in "relatively unpredictable and uncontrollable" ways, has led educators to seek ways of creating more "open" educational environments. These often focus on two common principles: starting teaching with the *student*, rather than the subject matter, and *guiding* the student in his or her discoveries, *rather than teaching* them the subject matter (Bertrand, 1995:90).

Learner centredness is therefore often interpreted as a change in the teacher's role, from authoritarian dispenser of knowledge, to a facilitator of learning.

Some theorists argue that learner centred education emerged out of the child centred educational movement spearheaded in England and other Western countries, as discussed below.

2.6.2 From child centred to learner centred: distortions and misunderstandings

Child-centred education was a reaction and response to the strong behaviourism that was the dominant learning theory in education up to the 1960's in most countries. Child centred education was linked to a particular perception of childhood and the view that children are different from adults and thus their needs are different.

Historically, child centred education was popularized as a result of the Plowden Report that sought free primary education for all in Britain and saw the child's social, emotional, spiritual and intellectual characteristics as different from adolescents and adults and so primary school education should be different. Thus, "the initial focus of child centred education was to find alternative aims and objectives in and for education that were better suited to the 'level' of children and their specific 'needs'" (van Harmelen, 1998: 27). Van Harmelen goes on to argue that in this project the child centred theorists, while attempting to break free from behaviorist models of teaching, continued "…to base those theories (i.e. their theories of teaching) on the largely behavioural ideas of maturation – and objectives-driven curriculum." She argues that child centred-education was an attempt to provide an alternative approach to teaching and learning "without questioning the fundamental principles that dominated educational thinking of the time." (ibid)

In parallel to the emergence of child centred education was a collection of well known theories that were later to underpin learner centred education. In brief, it was the insights of cognitive psychology led earlier by Jeanne Piaget that evolved an alternative view to earlier assumptions of learning based on behavioristic psychology. Theories of linguistics and language acquisition were also influential in the shift from behaviourism to constructivism and associated learner centred education philosophies. From these theoretical developments the notion of children constructing knowledge using language emerged, as social constructivism after Vygotsky was popularsied. The work of cognitive psychologists came to underpin a new approach to education which was popularly known as learner centred

education (Janse van Rensburg & Lotz-Sisitka, 2000; van Harmelen, 1998). Lotz-Sisitka and O'Donoghue (2007) explain that this shift to learner centred education was also part of the democratization process of society in the post war years in Europe and later in Africa during the post-independence period, which may also help to explain its popularity in independent Namibia and South Africa in the 1990's.

Van Harmelen, however, points to the links between child centred education and learner centred education, and argues that many of the problems associated with learner centred education today are associated with misinterpretations of the child centred education movement. She identifies some of the central notions associated with child centred education theories, such as:

- education should meet the needs of those being educated ,
- these needs would be best met if identified with the interests of children,
- the curriculum should be based on experience and discovery, and
- rather than being subject or content based, education programmes should focus on activities.   (van Harmelen,1998:29)

She then goes on to argue that these ideas became transformed and distorted into what she calls a number of myths and that these 'myths 'then infiltrated the emergent learner centred education classrooms as:

- teachers do less work than learners,
- factual recall of any sort is of no worth,
- as long as learners are busy they are learning,
- all transmission teaching is poor teaching,
- children only develop at their own pace and that they have definite and fixed stages of development,
- only certain types of learning experiences are suitable for certain age groups, and
- learners know what is best for them.
                                          (van Harmelen,1998:30)

In conclusion van Harmelen (ibid) argues that examining these myths using a correct interpretation and use of social constructivism within an informed understanding of learner centred education reveals that: far from teachers having to do less work they must put in a great deal of effort into lesson preparation and delivery; factual knowledge is and should not be sidelined as the mental activities of critical thinking etc. cannot operate in a vacuum; that unplanned and ill conceived activities is not what is intended. She argues for well conceived

appropriate activities that are focused on initial and well conceived participation and that engage specific mental and social competencies. She argues further that social constructivist theories that use scaffolding to support learning, allows for the setting of limits to learning are possible at a particular time. Finally, she states that rather than adopting a 'the learner knows best' approach, good quality learner centred education allows learners to explore a range of options but in the final analysis the teacher is an authority (ibid).

A number of other studies have also pointed to distortions and misunderstandings by teachers around learner centred education. For example, Lotz-Sisitka (2002:114) argued that a sample of South African teachers studied in the *Learning for Sustainability Pilot Project* learned to use concepts such as constructivism, social constructivism and prior learning, but in most cases they merely equated these concepts with activity-based learning and group work. The understanding of learners doing things together in groups was seen to be constructing knowledge in learner centred ways. Closer probing of these issues indicated that teachers were "… modeling surface forms of learner centred activities without understanding the learning theories underlying them and without using them to mediate learners' engagement with substantive knowledge and skills". Lotz-Sisitka referred to this as "learner centered emptiness" (see also Hoabes, 2004; Lotz-Sisitka & Raven 2001; Mvula Jamela, 2007 where similar problems were identified).

2.6.3   The components of learner centred education

As mentioned in Chapter 1, and as indicated in the discussions above, learner centred education is an important philosophy or theory underpinning education policy reform in Namibia and South Africa today. But learner centred education is in fact, a collection of theories and pedagogic practices, some elements of which can be fairly clearly described while others are more difficult to nail down.

As indicated in the discussions above and in Chapter 1, learner centred education has its main foundation in the educational theory of constructivism. Very briefly constructivism holds that:

> Knowledge is constructed in the mind of the learner. … This notion challenges the view held by behaviorists that learning was simply the result of conditioning demonstrated through particular forms of behavior (Van Harmelen, 1998:30).

The most well known theorist associated with constructivism is Vygotsky (1978) who built on some of the equally well known but less popular (contemporary) educational work of

psychologist Jeanne Piaget. Later Jerome Bruner's work was also be become a popular addition to the work of Vygotsky in educational theorizing (Capel et al., 1995). Bruner's work built on the models of Vygotsky. Vygotsky and Bruner were also social constructivists, a theory which will be explored in some detail below.

In essence Vygotsky agreed with Piaget on the role of activities' as the basis for children's learning and the development of thinking. The central elements of Vygotsky's contribution (discussed in more detail below) were that: 1) there is a relationship between language and thinking; 2) social interaction, communication and instruction is vital in learning; 3) the zone of proximal development (ZPD) plays a key role in effective teaching and learning; 4) the concept of a child's readiness and capacity to learn with help; 5) that a child's current performance is different from his or her aptitude to learn with further instruction. i.e. some have a larger ZPD (Capel et al.,1995,218). Bruner built on Vygotsky's work and argued that: 1) culture is important in formation of the mind; 2) learning involves discovering "patterns, regularities and predictability"; 3) with instruction helping children discovering these patterns; 4) this instruction is necessary if the child's activities are to be transformed into rational thinking – (this underpinned the emphasis on active learning, which forms such as central feature of the approach adopted by the Eco-Schools pedagogy); 5) and he shared Vygotsky's view that "action is the starting point for the formation of abstract symbolic thinking"; 6) and "social experiences play a part in mental development" (Capel et al.,1995: 218).

Social constructivist theories recognise that knowledge is a social endeavour and they argue that knowledge is constructed through many varied social settings as learners interact in their world and that this knowing is articulated, refined and developed further through language. Social constructivism also explores implications of learning as a dialectic interaction between schools and community, and the socio-cultural and material environment through which learners internalise experience and actively construct knowledge and understanding, thereby changing community and environment (van Harmelen,1998). Social-constructivist theory identifies two aspects as central to the way people think and learn:

- The way in which the development of language is an enabling mechanism through which we make sense of our world, and
- The way in which language is acquired that is used through our lives to organise and restructure our experiences in the light of already existing experiences or prior

knowledge (Kozulin, 2007) (i.e. cultural and educational experiences are significant to this process).

Social constructivist learning takes place in a situated context in which other people are responsible for helping children to make sense of the world (these might be parents or teachers or any 'significant other'). Vygotsky (1978) argues that knowledge is not solely constructed in the mind of the child but through interactions within a social context in which learners share and construct their own knowledge and beliefs. Robert (2003: 27) held the view that the knowledge we have is not constructed in isolation from other people but through interactions with others. Vygotsky (1978) argues that we become ourselves through others, not only in how we learn but in what we learn; our culture determines our beliefs and indeed our knowledge. Therefore, a person is a person because of others persons: *Umuntu ngumuntu ngabantu.* This is a central cultural view that is held in the traditional setup of African society. For learning interactions to be meaningful, children need to, with purpose, interact with those who have more knowledge and experience (older children or adults) in social contexts where language and culture influence the interactions.

Such theories of learning indicate that learners are more likely to make connections with what is at hand since they will have access to the language of description and will be able to relate what is at hand to their experiential and environmental framework. New learning is a process where previous knowledge interacts with the phenomena and ideas with which we come in contact (Robert, 2003). Participation in learning takes place through engagement in socio-cultural settings, which are context based in the form of language, culture, history and environment (Janse van Rensburg & Lotz-Sisitka, 2000).

As explained by van Harmelen (1998) and by Janse van Rensburg and Lotz-Sisitka (2000), social constructivist models, theories and implications for teaching and learning were essentially all embraced by the philosophy (or policy) of learner centred education, which then influenced the way that teaching and learning was thought of, and practiced. Janse van Rensburg and Lotz-Sisitka (2002:16) state that Vygotsky and other socio-cultural learning theorists placed emphasis on

> … the *socio-cultural* nature and *context* of learning. Those constructivist theories, which frame teaching and learning within a socio-constructionist epistemology, can also be associated with the symbolic interactionists and other social theorists. It is perhaps in this context that the emphasis on group work associated with constructivist

teaching, originated. Today, however, group work is applied in many classrooms with little link to such underpinning ideas.

Constructivism explains conceptual change as the product of interaction between existing conceptions and new experiences. The expectation was that the social constructivist classroom would have the following features that can impact on the classroom practices and the quality of learning. These are not necessarily what actually has occurred but are ideal features such as:

- Learners are not viewed as passive but are seen as purposeful and ultimately responsible for their own learning. They bring their prior conceptions to the learning situation.
- Learning is considered to be an active process on the part of the learner. It involves the construction of meaning and often takes place through interpersonal negotiations.
- Knowledge is not 'out there' but is personally and socially constructed: Its status is problematic. It may be evaluated by an individual in terms of its extent to which it fits with their experience and is coherent with other aspects of their knowledge.
- Teachers also bring their prior conceptions to learning situations in terms of not only their subject knowledge but also their views of teaching and learning. These can influence their interaction in the classroom.
- Teaching is not the transmission of knowledge but involves the organisation of the situations in the classroom and the design of tasks in a way which promotes learning.

(Capel, et al., 1995:219)

To explain, structure and introduce the goals of learner centred education, a raft of policy and curriculum documents have been produced in both South Africa and Namibia, seeking to explain these concepts and provide some guidance how these theories might be translated into classroom practice. The latter have included learning outcomes; new assessment practices - most notably the introduction of criterion referenced and continuous assessment practices; an emphasis on group work; greater prominence to in-class learner activities etc. As indicated in the discussions on the history of environmental education developments in Namibia and South Africa, the learner centred emphasis has created new environmental education pedagogical models such as the active learning framework, and an emphasis on school-community context relationships, and on context in learning, which is exemplified in the Eco-Schools programme in both its whole school development model, and in the more recent Education for Sustainable Development model, which I discuss next.

2.7 MODELS AND APPROACHES INFLUENCING ECO-SCHOOLS IN DIFFERENT WAYS

In order to contextualise Eco-Schools within a learner centred education approach, I now look at two models that influence the learning processes in Eco-Schools. Eco-Schools approaches environmental issues from different ways as reflected in the two approaches to Eco-Schools discussed below. The *whole school approach* to environmental learning needs to be contextualised in a whole school set up and therefore involves more than just curriculum activities, or a focus on the processes of learning and assessment, but expands to include the wider context of learning, and school-community issues as well as school improvements. The current debate on Education for Sustainable Development (ESD) provides further lenses through which educators should look at the diverse environmental challenges of the 21century to include social, economic and ecological aspects of practice. The *Education for Sustainable Development* approach is therefore the second approach that I will look at here, in order to contextualize learner centred education in the Eco-Schools programme in South Africa and Namibia.

2.7.1 The whole school approach

To begin this discussion, I would like to provide a general understanding of whole school development as the concept is understood in a general administration of education with regard to its generic role in society and its links to environmental education in schools. Today schools have become complex institutions where academic accomplishment is no longer the only core business of the day (for schools). Schools are regarded as organisations that are faced with a multiplex of challenges, more so than was the case before when academic accomplishment was seen to be the most important aspect of a school. Senge (2000:9) describes schools as follows,

> Schools face unique sets of pressure these days, unknown to any other kind of organisation … schools are expected to compensate for the shift in society and family: changes in family structures, rapidly shifting trends in television and popular culture, commercialism without end, poverty (and the inadequate nutrition and health care that go with it), violence, child abuse, teenage pregnancy, substance abuse, and incessant social upheaval. And at the end of it they are expected to produce well-rounded young citizens with sound academic records.

This is the terrain where learning is expected to happened uninterrupted everyday, and it needs all stakeholders in education to contribute to the realization of this effort (ibid).

In order to create a good learning environment, certain commitments are required from the school management, parents and teachers in creating a positive ethos within the school. Christie and Potterton (1997:23) identified eight key features of resilient schools, these are:

- A sense of responsibility and agency,
- The quality of leadership,
- A clear focus on teaching and learning,
- Appropriate authority and discipline,
- A culture of concern,
- Adequate governance structures, and
- Parental involvement.

These features stand in contrast to other more narrow and conventional definitions of what constitutes school effectiveness that emphasise academic achievement only. The whole school approach, as articulated in environmental education, involves schools that in addressing a range of complex and diverse issues such as school governance, pedagogy, resource consumption, community outreach, curriculum development and landscaping that will assist schools to become more sustainable. Schools that are employing whole school approaches practice what they preach and also reinforce their espoused sustainability values with action (ibid).

The *whole school* approach to Eco-Schools's broadens the agenda of whole school development quite considerably. A whole school approach, as conceptualized within the Eco-Schools framework, is designed to encourage whole school learning in order to promote a socially oriented curriculum based on action for a healthy and green environment. Most significantly, Eco-Schools aims to transform the entire ethos of the school into a positive and cordial atmosphere in which a person can live, learn, work and play better (see Chapter 1). This is in part promoted by improving pupil/teacher lines of communication and by uniting the whole school community behind a common cause (Eco-Schools UK, 2007).

Of special significance for the goals of this study, is the potential of this approach to Eco-Schools (i.e. a whole school approach) for empowering students to be independent and positive minded in approaching educational issues. It encourages learners to take an active role in how their school is run, which is linked to a language of democracy. Teachers

acknowledge learners' contributions and ideas are not imposed on them. Therefore the professional development of teachers is a crucial component of whole school approaches in order to develop and improve environmental education and education for sustainability competencies (ibid.).

The importance of whole school development and improvement has been increasingly highlighted in South African educational transformation discussions (Eco-Schools, South Africa, 2006). As a result, a number of lessons can be learned from the South African context in which evidence shows that the Eco-Schools programme has the potential to help establish and restore a sense of community to schools. The partnership with other important members of the school community such as NGO's and government departments are gradually being recognised by the school authority for their contributions to school development. Establishing and sustaining partnerships and community involvement is often one of the greatest challenges to schools in South Africa and Namibia in general (Eco-Schools, South Africa, 2006).

Evidence also shows that the support and involvement of the school principal is a key factor in whole school improvement. Research is showing that "… where principals are actively involved, educators feels supported in their efforts and coherent school plan can be developed and implemented" (Lotz-Sisitka, et al, 2005:36). The principal is also central in involving all educators, not only the keen and interested ones in the activities of the school. This creates a more conducive environment for learner centred education. Similarly involvement in a wider range of activities in the school environment (such as helping to monitor and manage the resource use of a school) provides for a variety of learning opportunities that can be learner centred (i.e. where learners can be involved in investigations, and decision making processes) (Eco-Schools, South Africa, 2006). In the South African Eco-Schools framework for example, learners can become involved in helping to audit the school environment, helping to monitor and manage resource use in the school environment, making contributions to community and cultural activities, greening of the school, ensuring a healthy environment in the school, and participating in action projects (amongst others, as discussed more in Chapters 4,5 and 6), thus providing many opportunities for learner centred education.

2.7.2 The education for sustainable development approach

The idea of 'sustainable development' as a concept was introduced, first in the *World Conservation Strategy* of 1980, and then in the *Brundtland Report*, produced by the World

Commission on Environment and Development in 1987 (see section 2.2). In *Caring for the Earth, A Strategy for Sustainable Living,* which was a publication produced in 1991, just prior to the 1992 Rio Earth Summit by the International Union for the Conservation of Nature (IUCN), the World Wide Fund for Nature (WWF) and the World Commission on Environment and Development, this coalition of environmental agencies described sustainable development as improving the quality of human life while living within the carrying capacity of supporting ecosystems (Rosenberg, 2006). The Brundtland Report talked about development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Rosenberg, 2006). Both definitions are accepted as describing the concept of sustainable development which has been broadened and popularised through intervention discourses, and which also includes education.

The Education for Sustainable Development approach to Eco-Schools is a relatively recent idea and parallels the emergence of this discourse after the 1992 Rio Earth Summit, where the idea of ecological conservation in environmental education shifted to Education for Sustainable development (ESD) within environmental education discourses promoted mainly by developed countries (UNCED, 1992). Education for Sustainability has promoted a new role for schools which sees a reciprocal relationship developing, in which schools learn from the community and the community learns from schools (ENSI, 2004).

Breiting, Mayer, and Mogensen (2005) use the term Education for Sustainable Development (ESD) Schools instead of Eco-Schools so as to align school-based environmental education activities with the United Nations discourses and intentions for modern schools (see section 2.4). This discourse requires schools to consider sustainable development as a main principle to keep in mind when planning a school's changes and development. This term is used to emphasize some profound changes in the aims and roles of the educational institutions:

> ESD is not only dealing with aspects of life of people's dependence on the quality of the environment and access to natural resources now and in the future, but also aspects of participation, self efficacy, equality and social justice are essential perspectives in preparing pupils for their engagement in sustainable development (ibid.: 4).

A preliminary review of some of the literature on an ESD approach to Eco-Schools suggests that they have borrowed elements from the Green School approach (see section 2.4) and whole school approaches (see section 2.7.1) and from constructivism in education (see section 2.6.3), and then added some key new elements. The four new elements that appear are:

- Consider sustainable development as a main principle to keep in mind when planning the school's daily life and long-term changes and development,

- Emphasize 'perspectives for the future' in which students seek relations between the past, the present and the future, in order to get a historical understanding of the issue concerned,

- Emphasize appreciation for a 'culture of complexity' in which students and teachers accept uncertainty as a part of daily life and prepare themselves to expect the unexpected and to deal with it, being aware of the importance of the precautionary principle, and

- Emphasize 'critical thinking and the language of possibility' to imagine new possibilities and alternative actions (Breiting et al., 2005:4).

From Tbilisi (1977 – the 1st International Conference on Environmental Education) to the 2007 Ahmedabad Conference (the 4th International Conference on Environmental Education) education has been acknowledged worldwide as a fundamental tool to enhance the environmental protection and sustainable development. Until recently, formal education systems have integrated *environmental education* (EE), *education for environment and sustainability* (EfES) and very recently *education for sustainable development* (ESD) in the school curricula, particularly at the primary and secondary school level. The modalities by which environmental education and ESD are implemented in schools vary from country to country depending on a number of social, economic, cultural and institutional factors.

For instance, the model by which environmental education is implemented in primary schools in some of the Mediterranean countries (Greece, Spain, Jordan), involves inclusion of environmental education in the curriculum as a *separate subject area*. The *infusion* model is also used in primary schools in many countries to articulate environmental education as a cross curriculum topic. As such, environmental education is embedded in the curriculum disciplines, as is the case in South Africa (as described in section 2.5.3.2 above). This type of approach is particularly prevalent in secondary schools (Scoullos & Malotidi, 2004). The Education for Sustainable Development approach tends to favour the cross curriculum, or infusion model, foregrounding sustainable development issues in different subjects across the curriculum, and through thematic foci.

The model of integration of environmental education and ESD concerns based on transversal thematic modules (with topics such as: water, waste, energy, health, poverty, etc.) and implemented via interdisciplinary approaches is relatively new, not so frequently used, at least in the past, since it requires increased and efficient coordination, as well as a certain degree of

expertise of the educators involved. ESD approaches also tend to favour this model of curriculum integration.

However, the ESD approach, like the whole school approach, considers a different and broader relationship between education and development (that is not only curriculum centred, even if it is multi-disciplinary or thematic). The ESD approach argues for a more holistic relationship between education and development, and consequently that education should adopt a wider and broader perspective than that on offer in subjects or in a curriculum centred orientation. The ESD approach (Breiting et al., 2005) argue that in this modern era teachers and schools are important for developing environmental concerns in children (ibid). Therefore, ESD should be promoted and taught from early childhood education up to university level in order to create a culture of care and concern for the environment. This approach therefore emphasizes the culture building or cultural and social change potential for education, which is reflected in its interest in the future, complexity and in learners' ability to reflect critically on, and contribute to society and the future. It therefore introduces a broader ethic or ethos for schooling that is future centred, and concerned with contemporary development issues (i.e. sustainable development) which provides for an even broader view than that of the whole school development approach to Eco-Schools, described in section 2.7.1 above.

The focus on ESD within an Eco-Schools context could therefore potentially broaden the learner centred approach, since it can offer learners new opportunities to be constructors not only of knowledge, but also of future development options and plans. It can also involve learners in participating and addressing concerns relevant to the students' daily life and future, which has potential to extend their influence, and eventually to enhance their self-esteem and participation in social change. When combining critical thinking with the language of possibility, I concur with Breiting et al. (2005:15), who emphasise that "… to be critical human beings, one does not need to be negative and sceptical of all and everything in a deterministic way", but rather that critical thinking combined with a language of possibility in an ESD framework can create new options for learning, action and change.

2.7.3   Teacher professional development and Eco-Schools

As shown in the development aid projects that have influenced the emergence of environmental education in Namibia and South Africa, teacher professional development has received repeated emphasis, to support teachers to make the changes from the culture of

education promoted under apartheid, and the shift to a new culture and practice of education introduced through learner centred discourses under democracy. This emphasis on teacher education is relevant to supporting teachers to work with the whole school and ESD approaches to Eco-Schools, as reported in the recent Eco-Schools evaluation in South Africa (Rosenberg, 2008). In order to strengthen the Eco-Schools processes, as proposed in the whole school and ESD approaches reviewed above in sections 2.7. 1 and 2.7.2, it is important to recognise the indispensable role that the teachers as professionals play in the whole process. As reported above in section 2.6.1, 2.6.2 and 2.6.3, the significance of the teachers' role has also been emphasized in various environmental education research programmes including those associated with the main environmental education development projects in South Africa and Namibia. Therefore professional development within the context of Education for Sustainability and Eco-Schools can assist teachers in the following ways:

- Build upon environmental education knowledge, skills and competencies,
- Provide support and motivation to implement changes,
- Improve teaching and learning approaches, and
- Build capacity for institutional changes (Henderson & Tilbury,2004)

Based on cluster-based models of professional development developed in the Learning for Sustainable Development Pilot Project, the SEEN and NEEP-GET projects, in South Africa and Namibia, the Eco-Schools programme in the Eastern Cape and parts of KwaZulu Natal, and in some schools in Namibia, developed activities where teachers who are involved from district meet and discuss professional issues in a cluster. In these cases teachers participated in an in-service continuous professional development programme in which they focused on schools and sustainability activities. In both South Africa and in Namibia, the aim of these in-service meetings was to support the Eco-Schools programme and fulfill the Department of Education's curriculum requirements. The teachers were involved in a series of *work together activities* during cluster meetings where they discussed and engaged with common issues of concern to them, and then in a series of *work away activities* at their schools where they implemented aspects of the Eco-Schools or whole school approaches favoured in the NEEP-GET and the SEEN projects respectively. In South Africa, these workshops normally involved topics such as: understanding environmental issues, lesson planning, interpreting Learning Outcomes and Assessment Standards, and using learning support materials (Lotz-Sisitka, et al, 2005: 38), while in Namibia the workshops focused on curriculum concerns, but also on whole school development projects (van Harmelen, 2005). During these cluster

meetings teachers were introduced to other service providers and the type of support they can provide to schools for environmental learning.

In the Eastern Cape (South Africa) this cluster-based model of professional development was piloted within a wider accreditation framework that articulated with university-based upgrade qualifications for teachers. For instance the cluster meetings in the Makana District (one district in the province) were coordinated by the district Subject Advisor and Rhodes University. The cluster meetings that took place in Cintsa East District (another district in the province) were organised and coordinated by a subject advisor and an NGO partner (WESSA). The two clusters worked towards a common set of outcomes, which were afforded 12 credits in the context of an Advanced Certificate in Education qualification offered by Rhodes University (Lotz-Sisitka, et al, 2005: 38). In the case of these two districts, educators completed all the in-service professional development activities and submitted a portfolio for assessment, for which they were given 12 credits which was the equivalent of a 12 credit module on sustainability in the Advanced Certificate course programme (involving 120 credits).

During these cluster meetings, teachers were involved in developing reflexive and applied competencies through professional development, which required educators to:

- familiarise themselves with ideas, teaching and learning support materials and curriculum requirements,
- try things out and collect evidence of the work they were doing in the schools, and
- reflect on what they were doing in a supportive, reflexive environment.

This required ongoing professional development support focusing on the development of educator's foundational competencies and reflexive competencies (ibid). This model of professional development allowed the teachers to try out and work with new ideas such as learner centred, or active learning pedagogies, in a supportive environment, and to report back to teacher educators how they were working with these ideas, and then to extend and improve their practices over the time that they were involved in the cluster-based professional development programme.

Lotz-Sisitka, et al (ibid.) report that evidence in the programme indicates that Eco-Schools initiatives, when well supported, can enable learners to participate in active learning processes in the curriculum that help to teach the curriculum *and* that contribute to whole school

improvement (e.g. schools develop an Environmental Policy and link their lesson planning to this), thus addressing both whole school development concerns, and academic concerns, as well as wider concerns for a sustainable development ethic in society. Further findings were that through participating in the Eco-Schools programme, schools save resources, improve the school grounds, improve information resources in the schools, and many have improved food security for learners. All of these dimensions were said to contribute to the overall effectiveness of the school which could be used in whole school development and evaluation processes (ibid). The more recent Eco-Schools programme evaluation reports similar findings, but raises concerns that while Eco-Schools has these valuable outcomes, a critical area to attend to is the quality of the teaching and learning processes that the learners are involved in which means that teachers need to be supported to ensure that curriculum outcomes are met while the whole school development aspects are dealt with (Rosenberg, 2008). The Eco-Schools evaluation points to the need for further research into the relationship between Eco-Schools activities and learner achievement (Rosenberg, 2008), thus once again emphasizing the importance of pedagogical approaches and learning within the Eco-Schools framework.

2.7.4   Key pedagogic theories underpinning the Eco-Schools approach

Eco-Schools, in one of its primary goals, aims to raise awareness of and support action in environmental and sustainable development, but its pedagogies, especially through its emphasis on active learning and learner participation in the learning process, are underpinned by a number of the learning theories discussed above in section 2.6.

As discussed earlier (see Chapter 1, and section 2.7.1-2.7.3 above) the Eco-Schools process seeks to stimulate and produce learners who are critical, motivated, have self-esteem, and who are engaged in socio-ecological actions. It further aims to empower students to be independent and positive minded in approaching educational issues. In addition Eco-Schools gives prominence to the whole school context, the community and the future in educational projects and in environmental actions. In addition education for sustainable development concepts such as the language of critique and the language of possibility help to locate Eco-Schools processes within the broader context of current approaches to encourage students to envisage the future differently and find ways to shape it.

The vision of the individual learner's role in the learning process in constructivist learning theories as described earlier overlaps on many points with the vision of the individual learner

as proposed within the Eco-Schools framework and models as described above. Learner centred education, like Eco-Schools, also seeks to develop a critical, self-confident, independent, motivated person who is committed to lifelong learning (Namibia. MEC, 1993). Learner centred education also has the strongly held view that knowledge is created in the mind of the individual through social interactions involving language and culture. Learner centred education, however, seems to place less emphasis on preparing the individual for being concerned about wider society, and the nature of the future (other than arguing that a better education improves the chances of individuals to make their way in the world) or see themselves as potentially shapers of different futures. Also learner centred education seems to be less sharp in its focus on the need to create individuals with the ability to take action for the social good.

With respect to their respective pedagogies and learning theories, learner centred education and Eco-Schools are also very similar. As indicated in previous discussions they both are founded on the cognitive psychological learning theories of constructivism - particularly social constructivism, and active learning as espoused by Vygotsky, Bruner and more recently some social learning theories (Wals, 2007), which are an offshoot or extension of Vygotskian theory. Both argue that learning is partially a social process and both give some prominence to the role that prior experience of the learners' plays (and can play) in their classroom learning. Where they seem to differ is perhaps in the emphasis they typically have given to some of these elements. It appears that Eco-Schools gives more emphasis to active and discovery learning and also teaching for action (NEEP-GET, 2005a) than is probably typical of most purely learner-centred education situations; also the role of the community in the range of learning interactions with learners and the schools is given more prominence in Eco-Schools than is probably given to learner-centred education activities in schools.

Another possible difference might be in the types of issues tabled for scrutiny by learners. While one will find progressive Social Studies classroom teachers tabling real and controversial social problems for research or scrutiny by students, this is not the norm in many traditional schools. On the other hand the Eco-Schools framework legitimizes the identification of local environmental issues and problems, and issues of sustainable development, poverty and power relationships, thus foregrounding societal and environmental concerns as focus for learner centred educational activities (Eco-Schools UK, 2007). This broadens the notion of learner centred education to incorporate a focus on concerns that affect learners and their families and communities in local contexts of learning and living. As reported earlier Eco-Schools programmes in South Africa and Kenya tended to focus more on

issues of poverty alleviation, which is a priority for government, communities and society in these contexts (see also Chapter 4). The South African environmental education curriculum discourses have also promoted (NEEP-GET, 2004) learners' engagement with local environmental issues and problems.

As discussed above, Eco-Schools may therefore provide teachers with new options for enabling learners to be active agents in the construction of knowledge, and for expanding and enhancing learner centred education in the context of new policy developments in South African and Namibian schools.

2.8   CONCLUDING SUMMARY

The discussion in this chapter has provided an historical outline of the origins of the Eco-Schools and its introduction into the SADC region. It indicated that in both South Africa and Namibia government's attention to the environment is reflected in their Constitutions, and numerous environmental and environmental education polices and initiatives have resulted, with firm commitments to environmental education in policy. In practice, the chapter has shown that to implement these policy commitments, governments in both countries have had to rely on development aid initiatives to pilot and develop environmental education practices, but also that in South Africa this also involved a mix of development aid and local initiatives. The review of these developments showed that learner centred education was foregrounded in the emergence of environmental education as it has become integrated into the national curriculum systems in both countries, and in other associated projects such as Eco-Schools. The chapter then discusses the meaning of learner centred education in more depth, highlighting some of the misrepresentations that have occurred in interpretations of learner centred education. The chapter finishes with a discussion on how the Eco-Schools programme has tended to emerge within two main approaches namely a whole school approach and an ESD approach, both of which provide a wider context for learner centred education opportunities in schools. This discussion also emphasizes a broadening agenda for Eco-Schools within ESD discourse, but also indicates that curriculum work remains a critical issue in the context of Eco-Schools in South Africa and Namibia and that there is a need for in-depth understanding of learner centred education and what this means for teaching and learning in an Eco-Schools context, raising the issue of teacher support. This discussion raises the central questions for this study: viz. *How can Eco-Schools enhance learner centred education*?

The discussion shows that on the face of it, key elements and goals of the whole school and ESD approaches to Eco-Schools match some of the key goals and aspirations of the learner centred curriculum. They have similar, though not exactly the same, visions of the kind of individual they are trying to develop, and the individual's relationship to society. They also draw from the same key learning theorists and advocate similar pedagogies; though they appear to differ in the emphasis they give to some pedagogic practices.

In the next chapter, I discuss the research design decisions and the methodology and methods employed to investigate the key question guiding this study.

CHAPTER 3

RESEARCH DESIGN DECISIONS AND METHODOLOGY

3.1   INTRODUCTION

This chapter outlines the research design decisions, methodology and methods used to collect data in this study. The theoretical framework which informs the design of this research, and the data generation techniques relevant to the research focus are described. The chapter also explains how the study participants were selected as well as the decisions that shaped the final design and conduct of the study. It also explains how and why the case study approach was used to probe the research question stated in Chapter 1 and it gives an overview explanation of the data generation and analysis process, and how these were used to arrive at the research findings which are reported in Chapters 4 and 5. This chapter also includes a discussion on the issues of validity and ethical matters as well as the trustworthiness of this thesis.

As described in Chapter 1, the research question was: "*How can the Eco-Schools framework enhance learner centred education (LCE)?* Chapter 1 also describes the four research goals of the study in which I examined learning interactions, Eco-Schools practices, learners' active roles, and teacher's roles to investigate how the Eco-Schools framework enhances learner centred education. This was done against the backdrop of the literature review and the historical discussions provided in Chapter 2, with a view to understanding how Namibian and South African teachers can use the Eco-Schools framework to enhance learner centred education in their schools. The study was therefore focused on *understanding* rather than prediction or testing, which influenced the research design of the study.

3.2   RESEARCH ORIENTATION

For investigating of the relationship between learner centred education and how it can be enhanced through the Eco-Schools framework, I decided to draw on an interpretive case study orientation, because I was interested in *understanding* the issues involved, as described above. In most cases interpretive case study will use a qualitative approach. Terre-Blanche and Kelly (2002) define interpretive research as a method that describes and interprets people's feelings and experiences in human terms rather than through quantification and measurement. Janse van Rensburg (2001: 16) describes an interpretive researcher as being "interested in the

meaning people make of the phenomena". Therefore, this research is aimed at drawing on the knowledge, skills and experiences of people who have been part of the activities of Eco-Schools in the last few years since Eco-Schools has been implemented.

Applying an interpretive methodology in this study indicates that this research is based on contextual meaning making. I selected particular stakeholders who are involved in the Eco-Schools programme in different ways to inform the study.

As indicated by Janse van Rensburg (ibid.), interpretive research provides well-grounded and rich information in the context of a study. Terre-Blanche and Durrheim (1999) argue that interpretive research strives to make sense of feelings and subjective experiences and is sensitive to social situations by studying their natural settings. This orientation to research makes it possible to understand other people's experiences by interacting with them using qualitative research methods, and through being on the school grounds (i.e. in the natural setting) as well as listening to what they have to say that is based on their personal experience (epistemology). Therefore, I recognised that their meanings are socially constructed and that meanings are always modified and interpreted according to one's specific context (Cohen et al., 2000) in order to suit the particular environment.

Working with this research orientation allowed me to provide knowledge and experience that the stakeholders in Eco-Schools have developed over a short period of time from 2003 onwards, and their experience in terms of how they are able to interpret the concept and transform it into learning opportunities within the new policy environment described in Chapter 2. It also allowed me to recognise that not all people have the same level of academic understanding and level of knowledge for meaning making. In this research, respondents varied from rural teachers in the Namibian and South African context whose level of English and understanding of contemporary environmental issues needed to be considered in relation to more experienced Eco-School node coordinators in South Africa whose mother tongue is English, and who have wider knowledge of contemporary environmental issues.

In line with the theoretical framework of this particular study (see Chapter 2), it was important for me to utilize research processes that are grounded in democratic values and beliefs in order to provide space for research processes that allow learning and reflection to take place. The qualitative interpretive case study allowed me the space to consider diverse perspectives with an open orientation that is respectful of democratic principles.

The interpretive case study orientation allowed me to purposefully sample the number of schools involved in the research. The sampling was based on the schools that are involved in the Eco-Schools activities at the moment since a very small percentage of schools are participating in the activities, particularly in Namibia. I therefore selected schools that had received green flag awards as recognition of being an implementing agency for the Eco-Schools programme in one district (Makana) in the South African context. In the Namibian context I selected schools that were involved in a pilot programme with the Support Environmental Education in Namibia (SEEN) project.

An interpretive research framework recognizes that the researcher works directly with individuals and their interpretations of their practice so as to develop theory with them and from the perspectives and experiences they share (Cohen et al., 2000). Cohen et al. (ibid) suggest that theory should emerge from the data arising in particular situations rather than for these situations (Chapter 5). Based on this, I developed a set of analytical statements which explain how the Eco-Schools framework can enhance learner centred education (see Chapter 5) that are based on, and emerge from the data in this study as reported in Chapter 4.

This research design was oriented to develop a research document that would hopefully provide a sound argument that could be used to inform educational decisions and environmental education in the Eco-Schools programme. My intention was also to make a case in which educationists could see the link between Eco-Schools and the learner centred education approach that is promoted in the educational transformation process. I also recognised that personal preferences, background and interests and various social and contextual factors, which are not fixed in time, often influence interpretation (Janse van Rensburg, 2001). Therefore consideration was given to the interpretation and analysis of the data when presenting my findings, which also took note of avoiding the possibility of imposing my own personal bias.

3.3   DESCRIPTION OF THE RESEARCH METHOD

As indicated above, this study was designed using the approach of an interpretive case study as a method in order to understand and interpret a specific situation in its own context. As indicated in Chapters 1 and 2, it is my interest to examine how learner centred education is enhanced through the Eco-Schools framework. As mentioned above, the study is qualitative in nature, and is based on understanding a situation in depth, in the case of this study, the Eco-Schools practices, learning interactions, teachers and learners roles in a selected number of

schools, as mentioned above. For this depth of understanding, I used a case study research design.

Yin (2003) defines case study research as an empirical inquiry that investigates a contemporary phenomenon within its real life context, especially when the phenomenon and content are not clear. In the case of this research, there has been no substantive research on how learner centred education is enhanced through Eco-Schools, as reported in Chapter 2, which provided further impetus to gain in-depth understanding of the phenomenon through case study research. Patton (1990) supports the use of case studies particularly where one needs to understand a particular group of people, particular problems or unique situations in great depth. He further explains that a qualitative case study not only seeks to describe units in depth but also brings out the issue of context and history of the particular issue under investigation.

Janse van Rensburg (2001: 6) makes the following observation about case studies:

> A researcher can take a close look at individuals or small groups in naturalistic settings, using in-depth case studies, often involving just a single case…. [and] would look for rich, detailed information of a qualitative nature through in-depth interviews or interpretation of documents.

In my view the purpose of an educational case study is to improve educational practices, and that is what my research is all about, which is to improve the understanding of how the Eco-Schools framework can enhance education with the broader transformational agenda as described in Chapter 2. This case study will enable the collection of information, which is specific to the particular case, since Stake (1995) notes that the idea of a case study is to understand the particular case under study.

This case study is trying to understand and make meaning of different stakeholders' existing experiences and understanding of the Eco-Schools framework which presents an educational concept that is aligned to contemporary national educational policy issues and international environmental issues, as described in Chapter 2. I therefore decided to look at how educators in Namibia and in South Africa incorporate Eco-Schools practices in their teaching and to understand the learning interactions that result, the roles that learners adopt and the roles of teachers, to get an in-depth understanding of the way that the Eco-Schools framework (and its associated practices) can enhance learner centred education in these two countries.

3.4   THE SAMPLE

As described above, since the research was focused on *understanding* a phenomenon in depth, I chose a case study design, using only selected schools from a larger number of possible Eco-Schools (as mentioned in Chapter 2, there are already over 800 such schools in South Africa alone, but few in Namibia, since they were only being included in a pilot project) based on convenience sampling. As a result, I worked only with seven schools in total, as I was interested in in-depth insight, rather than wide coverage or predictions.

There were three Eco-Schools involved in this study in Namibia and four Eco-Schools in South Africa. I was able to collect more data in South Africa because the Eco-Schools there have been active and running and the programme is in its 5th year of operation, while the Eco-Schools programme was last implemented in Namibia in 2005 only as a pilot phase. The programme took place in pockets of four regions with no more than ten schools per region and not all schools were participating in the Eco-Schools programme. Of the three schools that I interviewed in Namibia only one school managed to receive an Eco-Schools flag while all participated in the SEEN pilot project.

What makes matters interesting is that in Namibia, I was able to work with schools that were involved in the pilot programme that took place in 2001 to 2005 under the development aid project called SEEN which was affiliated with and implemented by the National Institute of Educational Development (NIED). I happened to be part of this project myself by attending meetings but I was not directly involved in the implementation of the programme.

In the case of South Africa, I focused mainly on three schools in the Makana District as this is where Rhodes University is located, and it was therefore possible to do the research without additional travelling costs. The Eco-Schools programme has been consistently implemented in this district for five years, and it is also the 'research hub' where much of the work on the active learning framework had taken place, which made it an interesting site to investigate because of the focus on learner centred education. Teachers in this district had also been part of some of the professional development activities discussed in Chapter 2. In the final analysis, I included the data from a pilot study that I did in a Durban school, since it also seemed relevant and provided further insight into the investigation, although I had not originally planned to do so, making four schools in South Africa.

Table 3.1: Summary of schools involved in the study

School	Code	Information on the where the school is located	
Olukolo J.S.S.	Namibia school 1	Rural School	(poor resource)
Omuhama J.S.S.	Namibia school 1	Rural School	(poor resource)
Engela J.P.S.	Namibia school 1	Rural School	(poor resource)
Saturday Advantages J.P.S.	SA school 1	Rural School	(poor resource)
Samuel Ntsiko J.P.S.S.	SA school 2	Rural School	(poor resource)
Kingswood J.P.S.S.	SA school 3	Private School	(resource school)
Durban J.P.S.S.	SA school 4	Urban School	(poor resource)

Since I was based in the Makana District during the research period, and the researchers at Rhodes University (in the Makana District) are also involved in supporting the wider Eco-Schools programme in different ways, it was also convenient for me to follow some developments around the efforts made to support Eco-Schools activities, such as the Eco-Schools evaluation and professional development activities. I was also fortunate to be able to attend some strategic meetings at a local and national level since 2007 was the year that the Eco-Schools evaluation was taking place in South Africa. This gave me exposure to some of the other node coordinators in South Africa. I was also able to attend a Cape Action for People and Environment programme regional Eco-Schools meeting in Cape Town which was focused on the Eco-Schools evaluation process. This gave me a chance to gain further insight into the Eco-Schools programme and its framework. Being a student at Rhodes University I was also fortunate to attend the World Environmental Education Congress (WEEC, 2007) in Durban where I was able to gain broader experiences from Eco-Schools international as well as insight into contemporary debates on environmental education. All of these experiences have influenced the study, and have helped me to develop a deeper understanding of Eco-Schools and its framework.

3.5   DATA GENERATION

In order to obtain the required information to answer my research question and to develop the case study, I used three sources of data generation:

- Semi-structured interviews,

- Observation, and
- Document analysis.

I will discuss each of the techniques briefly, to provide insight into how the techniques were used to generate data in the context of this study.

3.5.1   Semi-structured interviews

The main data generation technique that I used was the semi-structured interviews because I wanted to probe stakeholders' knowledge and experience in the Eco-Schools programme, as experienced by them. I also used semi-structured interviews as a natural form to interact with people in the data generation process. I also managed to interview key role players who are involved in supporting the Eco-Schools programme in their respective areas of jurisdiction. The questions that I posed were open ended in order to enable questions to be re-ordered, expanded and used for further probing if necessary. My intention was to get more detailed information on the nature of Eco-Schools activities. Cohen et al. (2000) argues that interviews in research allow for great depth.

I used this method to ensure free and rich conversations during which participants could openly explore their thoughts without fear of being intimidated. Semi-structured interviews allow for both responding to pre-determined questions and free responses.

An interview guide (see Appendix 3 & 4) was drawn up and administered to establish a clear focus in relation to what I wanted to achieve. The interview questions were developed to see how teachers used the Eco-Schools framework in enhancing learner centred education in their teaching. The interviews were also designed to assist me to investigate the perception, expectations, the achievements as well as the struggles teachers experience in grasping the Eco-Schools framework and practices in their daily teaching. Willington (2000) argues that interviews allow a researcher to investigate and prompt things that we cannot observe and that through interviews we can probe an interviewee's thoughts, values, prejudices, views, feelings and perspectives.

In order to get in-depth insight into the stakeholders' knowledge, I used a face-to-face approach with teachers, principals and node coordinators. I used group interviews with subject advisors in the case of Namibia because they were involved in the pilot programme although not very directly. I also used group interviews with the learners in all cases in order

to establishing their general understanding and views on their involvement in the activities. I developed different types of questions for all these three groups that basically all relate to the same outcome. All my questions where influenced by my research goals, which are based on *learning interactions*, Eco-Schools *practices* that support learner centred education, *active roles learners* are taking up and the *roles of teachers* in approaches to Eco-Schools Programme, as these four foci provided me with the means to probe the research question, as described in Chapter 1.

I conducted 19 different interviews in total (see table 3.2 below), involving two node coordinators, seven teachers, three principals, three groups of learners, and one group of subject advisors in the Namibian context and one interview with a district subject advisor in South Africa. The interviews were purposefully selected in order to capture a wide range of views from people who have experienced the Eco-Schools activities in different ways. The respondents in the study were all involved in the Eco-Schools activities in an observatory status where they were responsible for monitoring and supporting the development of Eco-Schools activities (as in the subject advisors and node coordinators) or participating in the actual happening of the teaching and learning process at schools and at the classroom level (principals, teachers and learners).

All the interview respondents were notified in advance of the interviews, to allow for preparation. In most cases I had telephonic conversations with the head of the institution, where I explained to him/her what the purpose of my intended visit to his/her institution was. The appointments were made and the time was arranged to get together with the written consent respondent. Upon my arrival I again first visited the person in charge of the institution to deliver a letter in which I requested permission based on our previous communiqué, which I left for their record (see Appendix 1). Despite making good arrangements prior to the visits, not all of the appointments were perfectly adhered to and in some cases I had to return twice or several times before I could manage to find the person that we had agreed upon.

As I was personally present at the research site, I would begin the process with familiarizing myself with the person I was interviewing. I did this by making sure that the respondent was familiar and comfortable with the interview questions in general before I used them. I first asked permission from the respondent to record the conversation. In general the tape recorder was useful in the transcription of the interviews, for direct quotations and unique expressions that needed to be captured. Using notes at the same time helped me to capture my impressions, reactions to the experiences as well as what the interviewee expressed through

body language and things the tape could not capture. All interviews were transcribed (see Appendix 4 and 5 for examples).

Table 3.2: Summary of the interviews with the specific codes used for identifying and referring to the interview sources in the study

School Sample	Interviews	Sample of participating Interviewees	Codes
Namibian school 1 (Olukolo)	1 2 3	Principal Interview Teacher Interview Learner Group Interview *Portfolio	P1 T1 LG 1 Port 1
Namibian school 2 (Omuhama)	4	Teacher Interview	T 2
Namibian school 3 (Engela)	5	Teacher Interview	T 3
SA School 1 (SDA)	6 7	Principal Interview Teacher Interview *Portfolio	P 2 T 4 Port 2
SA School 2 (Ntsiko)	8 9 10 11	Principal Interview Teacher Interview Teacher Interview Learner group Interview *Portfolio	P 3 T 5 T 6 LG 2 Port 3
SA School 3 (Kingswood)	12 13	Teacher Interview Learner group Interview *Portfolio	T 7 L 3 Port 4
SA School 4 (Durban)	14 15	Teacher Interview Learner group Interview	T 8 L 4
Node Coordinator 1	16	Cape Town	NC 1
Node Coordinator 2	17	Grahamstown	NC 2
Subject Advisor	18 19	South Africa Namibia	SASA 1 SAN 2
*ES reports		WESSA SEEN Eco-Schools pack	W 1 S 2

* Note: I include reference to some of the documents analysed here, to allow for easy reference to the coding used for distinguishing the data.

As indicated above I was not able to interview principals at all of the schools, but I was able to interview teachers and learners at all of the schools. In Namibia, I was only able to

interview the principal, teachers and learners at one school, and I only interviewed teachers at the other two schools. This was because I could not gain access to interview the learners as well due to timing of the interviews. In South Africa I interviewed two node coordinators, one from the Makana District, and one from Cape Town, as I thought this would give me a wider view of the Eco-Schools programme, particularly since the Cape Town node co-ordinator was also the regional coordinator for Eco-Schools in the Cape (which is a wider function than a district node coordinator). In South Africa I interviewed the subject advisor responsible for the Eco-Schools programme in the Makana District, and in Namibia I interviewed the subject advisor responsible for the schools, who had also been participating in the SEEN project.

As indicated in the table above, I extended the interview data with observations and document analysis, as described above.

3.5.2   Observations

The distinctive feature of observation as a research process is that it offers an investigator the opportunity to gather live data from natural occurring social situations. In this way a researcher can look directly at what is taking place in situ rather than relying on second-hand accounts (Cohen at al., 2007). Because Eco-Schools involves practical and hands on exercises, I decided to observe the activities that were done in the Namibian schools and to see if the whole idea that was there during the SEEN project had been discarded or whether some activities are still happening. In the case of South Africa I was fortunate to observe the development of the Eco-Schools activities in the schools, even though these activities were still in the infancy stage of understanding the bigger picture and framework of Eco-Schools, in terms of integrating their teaching into the local environmental issues.

Observation was therefore one of the methods that I applied to collect my data for the study. The purpose of observation according to Cantrell (1993: 93) is to give the researcher direct first hand experiences with the phenomena under study which she regards as similar to "walk in the shoes" so to say. Hopkins (1993) indicates that observation in educational research plays a crucial role not only in classroom research, but also in supporting professional growth of teachers. See Appendix 10 for an example of the observation schedule I used for the observations that I undertook in the schools. Table 3.3 below indicate the date and time when the observations took place in different schools.

Table 3.3: Observation schedule outlining the specific days with code references used for schools involved in the study.

Observations	Date and time of the observations	Code
Olukolo J.S.S.	16 July 2007, 14h00	Namibia School 1
Omuhama J.S.S.	17 July 2007, 11h00	Namibia School 2
Engela J.P.S.	19 July 2007, 15h00	Namibia School 3
Saturday Advantages J.P.S.	10 September 2007, 09h30	SA school 1
Samuel Ntsiko J.P.S.S.	12 September 2007, 11h00	SA school 2
Kingswood J.P.S.S.	15 September 2007, 14h30	SA school 3
Durban J.P.S.S.	06 July 2007, 19h00	SA school 4

As mentioned above, I was also able to observe some of the wider activities related to the development of the Eco-Schools programme more widely. I therefore included observation of these events in the observation data of this study, since they provided useful insight. The WESSA workshop focusing on the Eco-Schools evaluation that took place on the 1st June 2007 in Cape Town provided invaluable information that was able to provide for a more in-depth perspective of the activities and framework of Eco-Schools. This meeting broadened my insights into the understanding of the Eco-Schools activities and operation in terms of its history, logistic, administration, its approach to class teaching, lesson plan and portfolio usage at the national and international levels. This meeting was a watershed in building my holistic understanding of Eco-Schools as an international movement and its initial objectives. This meeting took place before my field work in the schools, and as such I recorded it carefully to provide me with background and understandings that were useful in developing the data collection instruments for the study. From this, I was able to conceptualise and better understand the dynamic, concepts and the language that is used in the Eco-School programme, and was therefore more able to talk to the schools about the programme and its objectives.

3.5.3   Document analysis

As mentioned above, I also used document analysis as a data collection strategy in this research. Patton (2001) observes that documents provide valuable sources of evidence in research, not only because of what can be learned directly from them but because they also

stimulate a path of enquiry. Yin (1994:80) states "…documentation is a stable source that can be reviewed repeatedly."

I analysed a range of different documents for different purposes (see Table 3.4 below for a summary). Documents that were developed by the Eco-Schools Project (such as the Eco-Schools pack) and the SEEN project were analysed, as were the national policy documents that provided insights into the inclusion of learner centred education as a key teaching strategy. Data that I collected from the documents was labelled as a source and was treated as a data item. I also collected a wider corpus of material on the Eco-Schools Programme, particularly documents and research reports on Eco-Schools in Europe, Australia and other countries, as well as information on Eco-Schools from the Internet. I used this mainly for developing the background on Eco-Schools and learner centred education as reported in Chapter 2.

To gain more in-depth insight into the links between *how* the Eco-Schools framework could enhance learner centred education, in the South African context, I analysed the WESSA half-year report (the last three), the NEEP-GET materials, the Eco-Schools South Africa website, and documents that were developed in the Rhodes University environmental education unit for supporting the Makana Eco-Schools cluster. Most significant, however, was the work of the teachers and learners, and I collected and analysed school environmental policies (Appendix 9) and lesson plans that were used by teachers in Namibia before, and that are used currently in South Africa (see Appendix 7 & 8 for examples). These were obtained from an analysis of teachers' Eco-Schools portfolios (of which I analysed four). These were an important source for understanding the learning interactions and the integration of teaching and learning with the practical activities of Eco-Schools. Two lesson plans that were presented to the cluster meeting of teachers by schools responsible were used as source of direction in terms of its connection to the research question.

Table 3.4: Different documents that were analysed to provide data for the study

Document	Why it was analysed	What information I got from the document
Eco-Schools pack	To understand the Eco-Schools Framework and what it expected of teachers in terms of learner centred education	An understanding of the Eco-Schools Framework and its potential for enabling learner centred education

WESSA final year reports for year 4 and 5	To look for commonalities and differences in approach	Information to triangulate interview data on Eco-Schools practices, teacher and learner roles, and learning interactions (although these were not very visible in this data)
NEEP-GET documents (NEEP-GET 2005a,b)	Looking at the curriculum guidelines for SA and understanding the orientation of the Namibia and SA education	History and pedagogic understanding of environmental education in South Africa
NEEP-GET Lesson Planning for a Healthy Environment booklet (NEEP, 2004, included in the Eco-Schools pack)	How it supported the curriculum formation and implementation	To understand the curriculum much better, and the pedagogy of the curriculum. This document also provided insight into what was expected from teachers in terms of curriculum integration (it was also included in the Eco-Schools pack)
Environmental Learning (EL) in Namibia (SEEN)	Looking at the curriculum guidelines for Namibia	The framework for environmental learning in Namibia and its efforts towards ESD and whole school approaches.
NIED documents that were developed by SEEN	To understand the input of the 12 small documents that were designed for starting the SEEN project at the schools	What is expected from teachers and learners in the process of developing SEEN and Eco-School practices at the pilot schools
Eco-Schools different websites	Most of the data about the involvement of schools international in ES was collected from the website	The conceptual understanding of ES in general from research and experiences of those involved
Lesson plans (from Eco-Schools portfolios)	To show the degree of integration in teaching and also how schools in SA work collectively during Eco-Schools activities	Looking how Life Orientation (Medicinal herbs), Social Science (Litter and waste) and Physical Science Grd. 10 (Green house effect) i.e. examples of lessons in the Eco-Schools programme, are presented
4 Eco-Schools portfolios Namibian School 1 (Port 1)	To understand how schools were responding to the Eco-Schools framework, what Eco-Schools practices	Insights into Eco-Schools practices, and lesson plans, as well as teachers' roles and some of the learning

| SA School 1 (Port 2) SA School 2 (Port 3) SA School 3 (Port 3) | they were engaged in, and how they were linking Eco-Schools practices to learning opportunities, and learner centred education. | interactions. (Extracts of data from these are presented in Appendix 7,8 and 9) |

As shown above, the different documents had different contributions to make in the study. Some were more useful for background understanding and for understanding what was expected of teachers (such as the NEEP-GET and SEEN documents), while others were more useful for providing insight into the actual Eco-Schools practices that were taking place in the schools (such as the lesson plans and the Eco-Schools portfolios). Other documents were very useful in providing insight into the Eco-Schools framework and its expectations and its potential for enabling learner centred education. Here I specifically made careful use of the Eco-Schools pack (WESSA, 2007) as it presented the most detailed outline of what the Eco-Schools framework included and expected from teachers and schools.

3.6 DATA ANALYSIS

Once the data collection was completed, the interviews were transcribed directly from the tape recorder in order to keep to the original words of the interviewees (verbatim). I then coded the information from the interviews, considered my observations and related the interviews to the documents which I collected over the period of time through a process of triangulation.

After the above mentioned comparatives process was done, I then coded the interviews into the emerging categories that I had started constructing using the objectives of the study as starting point. Coding is described by Merriam (1998:164) as "… nothing more that assigning some sort of short hand designation to various aspects of your data so that you can easily retrieve specific pieces of data". Huberman and Miles (1994) express the importance of coding data from interview responses, partially as a way of reducing what is typically called data overload.

The data analysis process and original development of categories was influenced by the four research goals (see Chapter 1). I started by categorizing the evidence from the interviews using four categories based on the research goals, which I constructed into analytic memos. I used a system of colour coding at the initial stage (see Appendix 6 for a sample of the colour coded data using the categories). After a more refined process of analysis, I was able to

subsequently add another two categories, which I also used to construct analytical memos. This resulted in six categories of analysis, and six associated analytic memos at this level of analysis (see Chapter 4.1). The process of developing the analytical memo's helped me to further categorise the data into sub-categories under each of the six main categories (see Table 3.5 below). These sub-categories emerged from issues and data that were collected from the interviews and observations as well as documents available.

Table 3.5: Table showing the categories and sub-categories of data analysis

Categories	Sub- Categories
1. What are the Eco-Schools practices that take place in schools?	• Eco-Schools clubs • Environmental policy process • The different activities happening in schools
2. What active roles are learners taking up in the Eco-Schools practice?	• Learners raise concern about environmental issues in the school • Learners taking environmental action • Learners work with teachers in the community
3. What active roles are teachers taking up in the Eco-Schools practice?	• The enthusiastic teacher • The Eco-Schools coordinator • To gain registration, assessment and prepare the Eco-Schools portfolio for presentation • Taking care of the environment • Organising an Eco-Schools event • Bringing parents closer to the school activities • Principal's role in promoting Eco-Schools • The subject teacher • Teacher interest in Eco-Schools activities
4. What support is provided for learners engagement in Eco-Schools activities?	• Support from the parents and community • Support from the Principal • Support from teachers • Support from the other stakeholders
5. What learning interactions are taking place in the process?	• Peer to peer interactions • Learner and teacher interactions • Learner, environment and community interactions • Learner and environment interactions

6. What are the outcomes of Eco-Schools activities?	• Awareness • Understanding • Skills • Positive learning environment • Values • School improvement

As indicated above, the analytic memo's (see Appendix 11 for an example) were an important mechanism for processing the data, since I used these to synthesise insights into each category from all the data sources through triangulation. These analytic memo's and the associated data categories contained in each of them, formed the foundation for reporting on the findings of the study in Chapter 4.

After presenting the data according to these categories in Chapter 4, I then interpreted the data further in relation to research question, and the focus on learner centred education in the study, using the literature and contextual aspects described in Chapter 2, and the insights gained into the Eco-Schools framework and its potential for enabling learner centred education. I did this through using a set of analytical statements, which are used to structure chapter five. According to Bassey (1999), a useful way of handling and making sense of data in relation to the research question, is to try to condense the data into meaningful statements or what he calls analytical statements. He indicates that these statements need to be firmly based on the raw data and that links to the data is essential to enable one to go back and verify the statements. In Chapter 5 I used these analytic statements and show how they link to the data reported in Chapter 4. These analytical statements form the basis for the interpretation and discussion of the data. Bassey (1999: 71) explains that interpretation of the data involves addressing questions of 'how' and 'why' in relation to the analytical statements and the research questions. This analysis is presented in Chapter 5 along with the analytical statements where the data is interpreted. The analytic statements directly address how the Eco-Schools Framework can enhance learner centred education, thus addressing the research question. They are:

- **Analytical statement 1:** Eco-Schools practices contextualise learning at the school and community interface.

- **Analytical Statement 2**: Eco-Schools approach encourages learners to acquire a range of valuable new skills and take an active role in which they are empowered to contribute to a better environment, but it currently only benefits a few learners.

- **Analytical Statement 3**: The Eco-Schools practices encourages positive values and ethics (such as care, empowerment, participation, active learning) that also enhances learner centred education.

- **Analytical Statement 4:** Eco-Schools practices encourage and motivate teachers to integrate more learner centred activities into their teaching, but this involves participation and support of the principal and other stakeholders in the school.

- **Analytical Statement 5**: The Eco-Schools framework is consistent with and reinforces the reform policy and philosophy that underpinned South Africa and Namibian education reform which is based on learner centred education.

3.7   ETHICS AND THE RESEARCH PROCESS

In this research, I was aware that I was dealing with different types of people in terms of power relations. Therefore it was important for me to inform the respondents about the aim, purpose, findings and potential consequences of participating in the research. Before I started with the interviews, I made sure that the respondents were clear about the reasons for the research and why the respondents' institution was selected above the others.

The research process took account of three ethical values in social research: respect for persons, respect for truth and respect for democratic values (Bassey, 1999). Through respect for democracy, the researcher has the freedom to ask questions, giving and receiving information and publishing the research findings if all ethical procedure has been adequately followed. Similarly the respondents also had a democratic right to participate and were not forced to share their knowledge. Therefore, the researcher should have respect for the truth as a result the researcher is expected to be truthful in data collection, analysis and the reporting of findings. The researcher should have respect for the people who are providing information and recognize their ownership of the data. In this case all the interviewee's indicated that they didn't mind if their names were used in the study. From the start I indicated that I would not use names in the study, an exception being where I would use a picture of somebody, in which case I consulted the participant again to confirm his/her permission for ethical reasons.

Terre-Blanche and Durrheim (1999) argue that in a research process, there should be freedom for research participants to withdraw from the research at any time. For this research I informed all participants that the interviews were voluntary and that they could withdraw. I also assured the participants that the information that they were giving me would be treated with all the confidence it deserved. None of the respondents expressed any reservations about how I was planning to share the data (i.e. in the thesis) because they all saw it as an educational exercise that could help to improve and enhance Eco-Schools, to which they were all committed.

3.8   VALIDITY AND TRUSTWORTHINESS

In order to ensure a good quality case study, I used multiple sources of information in face-to-face interviews generated from different stakeholders who have different experiences of the Eco-Schools activities with the aim of comparing the data and ensuring that the findings are valid and trustworthy. According to Maxwell (1992: 282) "… all qualitative researchers agree that not all possible accounts of some individual, situation, phenomenon, activity, text, institution, or programme are equally useful, credible or legitimate". I also used different types of data (interviews, documents and observations) to get a fuller account and to triangulate the findings gained from one source of data. This allowed me to develop 'thick descriptions' from the data, as shown in Chapter 4.

All the data that I collected from the participants was carefully coded and the emerging issues were clearly mapped out from the data in the form of carefully constructed analytical memo's. Through the coding I was able to trace back to the original data sources, providing a data trail, that enhanced the trustworthiness of the study. I also used member checking to ensure that the data that I had transcribed was an accurate reflection of what had been said in the interviews. The categories cut clearly across all the data generated by the participants, which confirmed the validity and trustworthiness of the categories in the research.

The trustworthiness of case study research is determined by a number of factors at various stages in the research process including the collection of data, analysis of raw data, interpretation of analytical statements and the reporting of the research (Bassey, 1999). Bassey (1999:75) provides a checklist for checking trustworthiness in case study research when he asks 'has there been prolonged engagement with the data sources?' during the data collection stage and 'has there been sufficient triangulation of raw data leading to analytical

statements?'. As can be seen from the analysis process followed in this research, and from the careful coding, I attempted to provide for trustworthiness of the case study, by addressing the questions posed by Bassey (ibid.).

3.9   CONCLUDING SUMMARY

In this chapter I presented an outline of the research design decisions that informed the research process. I went on to describe how the data generation techniques were used and how these complemented each other in the process of data analysis in a quest to answer the research question.

The main emphasis of this chapter was the discussion of the methodological framework of the study, and the research techniques used to generate and analyse the data. The way in which the interpretive orientation influenced the research design decisions was also discussed. I also discussed the sampling, and how each data generation technique was used, and how I developed the coding techniques, the categories and sub-categories, and the analytical statements.

In the next chapter I will outline and share the findings from the data that I collected for the study. This chapter will provide insight into the Eco-Schools practices taking place, the learning interactions, teachers' and learners' roles, support for learners, and the outcomes of the Eco-Schools activities.

CHAPTER 4

RESEARCH FINDINGS

4.1   INTRODUCTION

As explained in Chapters 1 and 2, the Eco-Schools framework involves different practices (e.g. auditing and involvement in resource use and management, action projects or information seeking activities); different approaches (whole school and ESD approaches); values of care and concern for the environment as well as democratic and participatory values, and different processes such as ongoing evaluation and review, working in teams, producing portfolios for participation in an awards scheme, and involvement of the community. As discussed in Chapter 2, these are oriented towards learner centred education and environmental improvements, but little research has been done to establish *how* the Eco-Schools framework enhances learner centred education (as discussed in Chapter 2).

In this chapter I present the research findings. These describe what is happening in the Eco-Schools programme, as studied in seven schools (three in Namibia and four in South Africa) through an interpretive, case study research approach. To provide perspective on what is happening in the schools, I consider the details of the Eco-Schools framework, as presented in the Eco-Schools pack that is used in schools in South Africa as a guiding document that directs the process as to what is expected from an ideal school situation. As mentioned in Chapter 2, the Namibian Eco-Schools programme drew its guidance from this pack, which has been used more widely in Southern Africa. It therefore represents a good source of data as to what is expected from Eco-Schools. Further data is provided from observations that I conducted in the schools (as described in Chapter 3), providing further insight into Eco-Schools practices. Observation data is supported with interview data with stakeholders, which provided further insights into the realities of the Eco-Schools processes within the schools involved in this study. The analysis of the portfolios collected provided an additional source of data which also verified and gave further insight into what transpired in reality with teachers who have been involved with practical issues in school activities.

As Eco-Schools is a broad concept, I will concentrate on reporting on issues that emerged as I engaged with participants in discussion on the practices that happened in the eight schools,

while providing perspective on this data through an analysis of expectations of the Eco-Schools process as indicated in the Eco-Schools pack, and outcomes of the Eco-Schools process as reflected in portfolios. As indicated in Chapter 3, perspectives are also provided from the interviews with the two node coordinators who coordinate the Eco-Schools activities on behalf of WESSA as well as subject advisors who assist in the facilitating of activities on behalf of the department of education. They, together with the teachers and learners also had useful insights into the Eco-Schools practices (see section 4.2), learners roles (see section 4.3); teachers roles (see section 4.4); support provided for Eco-Schools (see section 4.5), learning interactions (see section 4.6); and outcomes (see section 4.7) as discussed in the next sections.

4.2 ECO-SCHOOLS PRACTICES THAT TOOK PLACE IN SCHOOLS

4.2.1 Introduction

An analysis of the Eco-Schools practices that took place in schools indicates that every school develops different practices that fit the specific environment. Through the analysis of this data I was able to identify three main Eco-Schools practices: 1) Eco-Schools clubs, 2) Environmental policy and 3) Eco-Schools activities undertaken with learners in schools during teaching time. These three Eco-School practices reflect what happened in the schools that were observed. These are discussed in more detailed below.

4.2.2 Eco-Schools clubs

The Eco-Schools pack specifically encourages schools to establish clubs as an Eco-Schools practice. Clubs are identified as one of the seven focus areas for Eco-Schools. The pack suggests a number of activities that clubs can be involved in which include: camps, excursions, working at wildlife rehabilitation centers, working on recycling, working with museums and many other such activities. It also recommends that schools try to identify local support for their club from an NGO or government department. Furthermore the pack states that club activities don't have to be extra-curricular or rigid to what is planned and that Eco-Schools club activities can also be integrated into the learning programme of the school.

The pack suggests that schools audit their activities related to clubs, and specifically asks the schools to find out whether learners are involved in the leadership and planning of the club activities, and whether the clubs are working with, or can work with community groups. The

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pack also challenges schools to establish whether their club activities are linked to the curriculum, and to find out if their club activities are action based or information based or both.

Interview and observation data showed that <u>those schools</u> that are involved in the Eco-Schools programme spearheaded and supported by WESSA have all been able to develop clubs at schools, which are driving the environmental activities for the benefit of the school and community. <u>All schools</u> that I visited in Namibia and South Africa have an Eco-Schools club, and it is in most cases implemented under the auspices of a champion teacher, who spends much of his/her time organizing the Eco-Schools activities <u>at the schools</u>. In <u>most cases</u> these clubs have not involved more than thirty learners per school with one or two teachers involved who are helping the learners with activities and programmes. Most of the Eco-Schools club activities at the school are organised by the champion teacher and they are also the ones who are trying to integrate environmental learning in their teaching. <u>Principal 2</u> emphasised the fact that Eco-Schools clubs are established at schools to create environmental awareness among the younger generation in order to prevent the abuse of environmental resources.

Teachers and principals acknowledge the benefits that students derive from being active in the Eco-Schools clubs, and that these are also beneficial to the environment. <u>Teacher 6</u> explained that it is because learners belong to such clubs that they know the importance of not dumping litter or waste around the school ground. The teachers and learners involved in the clubs try to keep the school clean in cases of littering and also identified other benefits for the learners. For example, <u>Principal 1</u> stated that "learners who belong to the club derived some satisfaction in what they do and as a result they grew up as responsible leaders among their peers". Teacher 6 made an observation that learners who are more interested in the Eco-Schools club are also interested in most of the extramural activities at the school. Teacher 1 made an observational argument that "learners who are involved in the Eco-Schools club performed academically better than those who are not part of the club". He went on to justify his claim by explaining how two students who were involved in the Eco-Schools club that he used to teach before used to perform poorly in their junior classes but performed better during their Grade 10 external examination. The teacher was adamant that these two students have developed a kind of empathy for their academic work because of their passionate interest in the environmental education activities at school.

The analysis of the portfolio of school 1 of Namibia indicates that the learners who were interested in the environmental education issues had established various club activities with the aim of enhancing environmental learning in the school and participating in various activities. All portfolios that I looked at indicated that learners are part of the committee that is responsible for the Eco-Schools club at schools and their names are among the school committee. However, many schools express the concern of parental involvement in the Eco-Schools club activities at the school.

4.2.3   Environmental policy development

Another prominent Eco-Schools practice is the development of a school policy. The Eco-Schools pack encourages schools to have a School Environmental Policy, which needs to be drawn up by all parties involved in the effective running of the school. In general the policy provides a direction, a marker or a beacon for the school to aim at achieving. The policy needs to contain information and goals that are easily achievable and realistic in order to evaluate its objectives annually. The school Environmental Policy needs to include objectives that work towards the improvement of the school environment as well as objectives to guide the teaching and learning process (NIED, 2005). The Policy needs to include objectives that strengthen school-community relationships, and strengthen learners' participation in school activities and decision-making processes. The policy also includes a vision statement with aims and objectives that are shared by all the learners, staff and parents. It must eventually exist not only on paper but also in the thoughts and actions of everyone linked to the school (See Appendix 9).

Figures 3 and 4: School Environmental Policies written on the walls of two of the Namibian schools to show their focus and interest

Observations and interviews indicated that all the Eco-Schools involved in this research sample had a written School Environmental Policy which seems to indicate its prominence as an Eco-Schools practice. I found that most of the Namibian schools wrote their School Environmental Policies on the entrance gate of the schools to show the environmental emphasis of their school (see Figure 1 and 2 above). The display of these policies shows the interest and concern that the schools have towards environmental issues.

This Eco-Schools practice involves different stakeholders in a participatory process. Subject Advisor 2 acknowledged that teachers play an important role in encouraging their colleagues to join the Eco-Schools activities. Together with the learners teachers developed the School Environmental Policy in their schools, which becomes a guideline on how to handle environmental education issues. Teacher 4 also talked about the bargaining that took place during the establishment of the School Environmental Policy in which all stakeholders were involved. In addition the stakeholders conducted an environmental audit to identify environmental issues around the school, to help them shape the policy. According to teacher 4 the environmental policy also looks at issues like the environmental days as important components for schools, for example inclusion of Arbour Day in the school programme.

This Eco-Schools practice of developing a School Environmental Policy is generally oriented towards the curriculum, as shown in figure 1 above which cites "promotion of environmental literacy", and school improvements. Subject advisor 1 explained the importance of the School Environmental Policy as it helps schools to focus on environmental issues that are based on the curriculum requirements for environmental learning, and how the environmental focus in each Learning Area helps with the environmental activities in the school. The node coordinator 2 explained how focus on environmental concerns can help teachers understand the Learning Outcomes and how it may have potential to enhance active learning in teaching. This process of making these links is supported by the NEEP-GET (2004) document that was included in the Eco-Schools pack, in which lesson plans are also used to achieve the intended goals at school level.

With policy changes in education, schools are called upon to democratize their operations and to recognise the indispensable contribution of the parents to the children's learning. As a result many of the decisions and issues concerning the running of the school such as organizational and operational principles, school grounds improvement and inclusion of an environmental focus within existing subject areas require decisions to be made by the school

in consultation with these stakeholders (NIED, 2005). As such, Principal 1 was convinced of the value of engaging parents and others in school policy formulation because she felt that "Before the environmental policy was developed [through] involving the parents there was very much vandalism that took place" … like breakage from the community". She reported that after involving the community in the school affairs they realised that vandalism was reduced. These sentiments were also echoed by teacher 1, who agrees with the above mentioned principal, where he stated that,

> I think the community has been very helpful because throughout the whole project period of establishing the Eco-Schools activities until now we have not experienced any vandalism since the project started.

From the discussion above, the practice of developing a School Environmental Policy seems to be an important strategy for involving parents in the education process. This in turn can help to bring community involvement into the schools, which can help to strengthen the socio-cultural context particularly if the policies are also oriented towards the curriculum and towards creating a better environment for learning.

An analysis of the policies in the portfolios showed that all the policies analysed, reflected an interest in learner and community involvement in improving the school through improved school grounds, resource management, creating a healthy environment and through clubs. The emphasis was on participation in these kinds of school improvement activities, and less on curriculum. In terms of learner centred education, the policies (P1) showed involvement of learners in the action plans, where they were expected to work with teachers (See Appendix 9A and 9B).

4.2.4. Different Eco-Schools related activities in schools

The Eco-Schools pack indicate that after the schools have established a working group they need to develop a careful audit and look at the ways things are at the schools and look into the ways of how to improve the school and school grounds. The idea of the audit is to look at the school environment and identify learning opportunities. The Eco-Schools pack also encourages schools that do an audit right at the start of the process to continuously look back and review how much things have changed, through doing another audit a year later, and every year thereafter.

The Eco-Schools pack also suggests that after completing the school audit the school needs to choose a minimum of three focus areas from the seven general recommended areas. In order to qualify for the Eco-Schools award, the school needs to show significant progress in some of the focus areas, each of which represents different practices. The areas are as follows:

- School calendar (participating in environmental days)
- Environmental information and community knowledge (improving learning and teaching support materials, using indigenous knowledge in teaching),
- School grounds and fieldwork (improving the school grounds and going on field trips),
- Resource management (auditing and saving water and electricity, and recycling and waste management are some examples of practices),
- Health and safety (improving the health of learners, and the safety of the school environment),
- Action projects and competitions, and
- Clubs, adventure and cultural activities.

Observations indicated that there are a number of environmentally driven Eco-Schools practices happening across the schools that I visited. Most of these activities are supported by the international Eco-Schools requirement of having evidence of at least three areas of change in a year. These areas for example are waste management, water usage and a vegetable garden, which the school has to fulfill in order to be recognised for their efforts in promoting environmental learning activities. Although the emphasis of three learning areas has changed in the new Eco-Schools pack for South Africa from 2008, this study is based on the Eco-Schools practices that were promoted before the review of the Eco-Schools pack in 2008.

4.2.4.1. School grounds

The school grounds is also one of the seven areas that the Eco-Schools pack recommend that the schools need to work on in order to qualify for the Eco-Schools award at the end of the year. School grounds provide a broad range of options from which the school can choose an aspect or a practice that responds to the schools expectations and circumstances. In the schools involved in this study, schools looked at diverse aspects related to school grounds that that are within their reach and interest.

The observations and interviews that I conducted indicated that the practices to improve the school grounds are widely favoured as all of the schools that I encountered in this study were busy with some or other practices related to improving the school grounds. This is in accordance with the Eco-Schools framework that sees Eco-Schools as a process that is about "… making the world a better place to live and learn" (see Chapter 1). All the participants I visited, including the subject advisors, emphasised the importance of cleaning the school environment and creating a healthy school environment. Principal 1 of school 1 in Namibia explained the importance of the school grounds when she said "we have also learned how to keep the school environment very clean and that's why you see our school grounds are very clean" (see Figure 5).

Figure 5: A clean school ground in Namibia

Teacher 3 emphasised the importance of the beautification of the school grounds by not only picking up papers, bottles and plastics around the school but also by making the school grounds greener. Based on my observation in schools in Namibia it was clear that in some cases the natural grass is being leveled as opposed to planting lawns and some beautiful flowers are planted at the entrance of the school and in front of the principals' office as evidence of these Eco-Schools practice. Not all schools, however, have opted for greener school grounds because of the scarcity and maintenance of water usage at the school (as is evident in Figure 5).

Subject Advisor 2 gave an example of this practice when she said that "… learners at the schools are developing beautiful parking areas for the vehicles of the visitors, and sometimes erecting benches on which learners and visitors can sit and relax". Sometimes learners used

these erected benches for outdoor group discussions and in their leisure time they are used for study purposes.

Teacher 7 explained a project that the school has embarked upon by identifying a quiet area in the school grounds where they were developing a bird feeding area, which they wanted to transform into a bird friendly area. She elaborated by saying that

> With our bird friendly area we want the children to begin to observe which birds come and which birds feed and to make notes of which birds they have seen in that day. And again they can be very active and identify how many birds have come, and watch which birds comes first to the bird table.

From the above it seems that Eco-Schools practices focusing on school grounds are oriented towards cleanliness and tidiness, as well as leisure and that they can also create some new learning opportunities such as the case with the bird garden.

School grounds practices were analysed in the portfolios of the schools. From these portfolios it was evident that teachers also seemed to consider the vegetable gardens as a general part of school grounds improvement.

4.2.4.2 Herbal and vegetable gardening

The Eco-Schools pack suggests that an active learning programme requires that learners actively explore the school grounds and surroundings. It also suggests that perspectives developed in school learning materials do not often reflect knowledge that has direct local relevance. The school curriculum can thus be enriched with local stories, history and community experiences of change and how people used the local environment in earlier times. The pack sees the herbal and vegetable garden as part of the school's healthy environment.

The herbal and vegetable gardens were emphasised by all the sample schools in SA as an important activity in their Eco-Schools programme, with the exception of school 3. All these schools emphasised the fact that they have involved local and community experiences in getting the gardens running. From my observation the herbal and vegetable gardens activities have not been a strong practice in Namibian schools, as the focus in Namibia was more on the planting of fruit trees and shade trees, possibly because of climatic differences and water related issues.

In the South African school setting the herbal and vegetable gardens are becoming more and more a source of food supply to the school and to the community, especially in the area of poverty stricken schools. Therefore the schools have started with large vegetable gardens in which they are harvesting huge cabbages, spinach, carrots, beetroot, lettuce and other vegetables. Teachers in the three SA schools reported that almost every month the schools use and also sell vegetables to the local community for fund-raising purposes.

A member of learner group 2 emphasised the importance of the vegetable gardens when he said "… that the vegetables that we plant in the gardens at the school [are] used for the soup kitchen, since the learners are being feed from our own gardens" he went on to say that "… it helps learners who do not have food to eat at home". This is one of the reasons why the gardens are regarded as an important component of the Eco-Schools programme, since they extend and contribute to the school feeding programme. From my observations in the three schools involved in vegetable gardening, it was clear that most, if not all, schools in the townships in SA have a government funded school feeding programme, where learners receive food at school from the Department of Education. Teachers reported that the government funded feeding program is limited in that it provides bread, milk, porridge and soup on three days per week (Monday, Wednesday and Friday). The food from the vegetable gardens is therefore being used to supplement the school feeding program. It adds invaluable elements to the diet and also provides food on the two days in which the government program does not offer food to the children.

Teachers at these schools also reported that when learners get sick at school, they (the teachers) go to the herbal and vegetable garden and collect some herbal plants and use them for the learners as an interim measure before the child gets treatment at home or hospital. Because of the increased importance of the herbal gardens in the South African schools, teachers who belong to the Grahamstown Eco-Schools cluster group attended a quarterly meeting at a school in the township in which the host teachers presented a lesson to the fellow teachers in which they explained and demonstrated the importance and the usage of medicinal herbal plants (see Appendix 8). At this Eco-Schools support meeting, the teachers present were also shown through a lesson planning process how one can integrate the teaching of herbal plants into classroom activities.

Subject advisor 1 also explained the importance of the herbal plants as she said that they can be used to cure the minor illness of learners. She explained:

The teachers used onions and with brown sugar and then they will make a cough mixture out of that. And when the learners have a rash they say they have a cure for that as well. So in terms of being healthy, learners are healthier now and they attend school more often than in the past, because they know that they will have a meal. And also they enjoy the Eco-Schools activity because they know that they will go to the garden or there will be an excursion.

From this data it is evident that Eco-Schools practices associated with vegetable and herb gardening were strongly oriented towards the improvement of learner's health and well-being. It was not clear whether these practices were also used for learning about health and nutrition, or how learners were engaged in decision making associated with this Eco-Schools practice.

In the observations of schools in Namibia, I noted that all the schools I visited have guinea fowls and chickens as projects, which are still viable and active projects in the schools. As mentioned above, vegetable gardens are an important feature of Eco-Schools activities in South African schools, a finding that was supported by the Eco-Schools reports, with the exception of one school, which was a private school with well cared for children from wealthy families, and the teacher indicated that they did not see the need for such an exercise. In South African context schools in particular, the schools worked towards the three activities for the year as part of the Eco-Schools requirements but they also had activities that varied according to the interests and needs of their individual schools.

With regards to the portfolios, school 4 in SA, indicated in its portfolio that the school's emphasis for Eco-Schools was its focus on the vegetable garden. The other schools that were busy with herb and vegetable gardening all indicated that the poverty dimension was a driving force for choosing to promote the herbal and vegetable gardens as an important Eco-Schools practice in their schools.

4.2.4.3 Tree planting

Another prominent Eco-Schools practice in schools is tree planting which is also strengthened and encouraged by the emphasis of tree planting as part of the special environmental days (i.e. Arbour Day), which the Eco-Schools pack encourages. The Eco-Schools pack suggests that teachers can invite organisations that specialize in trees and tree planting to show learners how to plant different types of trees and also how to apply compost to feed trees in the school grounds. Learners can also be taught how to measure the distance

between the trees by pacing them out by foot or laying down the spade as a measurement. The pack also encourages learners who are involved in the garden to develop many skills including managing money and raising money for club and other events through selling trees and fruits.

Tree planting in Namibian schools is a common practice because it is very dry by nature and for the most part the soil is clay soil. In the schools that I observed learners are encouraged to plant more trees because of the scarcity of shade trees. As indicated above, there is also strong preference for planting of fruit trees in Namibia such as mangoes, oranges, guavas etc than gardens. In South Africa less emphasis is placed on tree planting because in most cases (in the Makana District at least) the area has naturally occurring big trees, and all of the school grounds that I visited already had trees.

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Figure 6: Trees produced by schools for planting and selling to the community for fund-raising purposes
Figure 7: An example of the type of trees that are planted in the school grounds (in Namibia)

From my observations in Namibia it was clear that for some of the schools it was important to plant extra trees each year in order to add to the existing trees. Planting trees is also given special attention in the school programme, and an official ceremony normally takes place at schools to which community members are invited. The local community are said to value the importance of planting trees in their surroundings because of the generic role that they play in providing shade, fire wood and as a source of food for needy people. Trees therefore seem to provide an important link to the community since they are valued resources in the community.

In some of the schools that I visited, tree seedlings are planted and prepared first in the school garden and later transplanted into the school and in some cases they are sold to the community at a low cost. Principal 1 reported that through this practice, the learners develop the skill of knowing how to plant and cultivate seedlings and how to successfully transplant these and care for the growing trees. Members of learner group 2 explained their tree planting practices by saying that "as learners at the school we must take care of the school grounds by planting many trees because we know that in order for a person to survive every person must plant at least five trees". Another member of learner group 2 also contributed to the discussion by saying that the school has been planting trees; and after receiving some trees from someone in the community, they have learned how to plant trees. This shows further that trees are an important link to the community.

Eventually this tree planting skill has in some cases become an entrepreneurial skill in which the students have started their own nursery and vegetable gardens at home and have started selling to the community. Principal 1 said, "… the same learners that are involved in activities at school have started nurseries at home and are also selling what they are planting at home for their own income." Principal 1 further explained how her school appreciated the tree planting exercise by saying that "...there are a lot of young plants and some are still growing, we are planting more trees because now we know the importance of planting trees."

Tree planting in Eco-Schools practice appears to be grounded in and oriented towards learning more about, and appreciating trees and their value. Processes of growing seedlings and small tree nurseries appear to have wider value to the community as they are a source of entrepreneurship. From this data it was not clear how decisions were made about what trees to plant or how learners were involved in such decision making processes, but it did seem that the processes were enabling learners to become empowered enough to replicate them in their home/community contexts, as reflected by Principal 1's statement.

The portfolio from school 1 of Namibia indicated that they had chosen growing vegetables, tree planting activities and the nursery as part of the Eco-School focus. These activities were selected after an audit was conducted in which the club realised the need to plant more trees in the school as an import factor in the dry areas of the Northern part of Namibia, and also because the teachers had not realised the importance of tree planting at the school, showing an instance where learner and community interests were put forward, ahead of teachers' choices and knowledge of what should be done in schools.

4.2.4.4 Guinea fowl and chickens

The Eco-Schools pack promotes action projects where schools are encouraged to contextualise activities and participate in action projects that suit its environment, thus allowing for localised decision making as to what activities and action projects schools wish to pursue. Observation and interview data showed that schools' guinea fowl and chickens have been identified as an activity to be promoted in schools, particularly in Namibian schools.

Those schools in Namibia that were involved in the Eco-Schools activities were part of a programme that supported the school feeding projects with guinea fowl and chickens, unlike in SA where vegetable gardening was favoured. Based on my observations in the Namibian schools, I could see that this programme had been given prominence at the schools even after the Support Environmental Education in Namibia (SEEN) project was over in 2005. Every school that I visited had a chicken cage with no less than 20 chickens and some guinea fowl.

Figure 8: School chickens that the Namibian schools are farming with as part of a government initiative

Teachers who were able to give a brief overview of the chicken farming in the schools explained that it was a project that started some time ago. It was a community project that started in schools under the Directorate of Environment Affairs and Tourism which rolled out the guinea fowl and chicken programme into the community and schools. This project was running concurrently with the SEEN project that also operated in the northern part of Namibia. The main idea of the project was to distribute chickens and guinea fowl to needy

community members for food security reasons. The three schools that I visited were identified to breed and raise the chicks by making a cage in which the guinea fowl and chickens where bred and cared for.

Teacher 3 explained that when the chickens started to have chicks the schools distribute some chicks to community members in order to raise the chicks. Once they are fully grown, the community members give half of them back to the school and keep the remaining guinea fowl and chickens for themselves with which to start farming as indicated above, this was an initiative of the government, as part of the food security programme to improve the livelihoods of the community in the rural areas. The teachers went on to explain that "we were taming the guinea fowl in order for the learners to respect them and take care of them", and to see them as a valuable food source. In the Namibian traditional context guinea fowl were regarded as a wild bird for a long time. With this project the schools and the communities have started rearing them with chickens as a new practice.

Teacher 1 explained that when the chickens and guinea fowls get out of their cages, then learners take the initiative to report the problem to the teachers, and they have indicated to the teachers that "… we want to fix the broken fence for the guinea fowls" because of the prominence and popularity of the project in the community. He explained further that, "it is cheaper for the school because we don't need to hire someone or somebody else from outside but we use the learners as they are volunteering to do the job themselves".

The chicken and guinea fowl rearing practices were oriented towards food security, learning and building links between the school and its community. There is some evidence that learners are proactively involved with the decision making and management of this Eco-Schools practice.

In analysing the portfolio it was clear that the school that was involved in the activity (which also had a portfolio), sees the importance of farming with the chickens and the guinea fowls because of their economic value. Besides this, the chickens are used for special occasions at schools as a delicacy, and the use of chicken meat is very much respected by community members across the northern part of the country.

4.2.4.5   Recycling projects

The Eco-Schools pack suggests that recycling projects are part of a set of practices related to the management of resources in the school. Recycling is heavily dependent on the availability of non-degradable materials, which are often simply referred to as 'solid waste' materials. The pack also suggests that materials that are used for recycling purposes can reduce a lot of waste. The pack explains further that if people don't use resources efficiently, waste is produced, which uses up a lot of landfill space. The Eco-Schools pack encourages schools to manage their waste in such a way that they separate different forms of waste, and identify those that can be reused, and also where they can reduce waste production. The pack suggests further that the school can take action to improve the local environment by recycling kitchen and garden waste, tins, papers, etc.

Figure 9: The recycling collection point for the glass, tins, plastics and cardboard bins from portfolio 4

Another popular practice that the schools engage in to fulfill the Eco-Schools requirements for the year involves the recycling of waste at the school. While the Eco-Schools report shows relatively high levels of waste management activities in participating schools, few schools in the sample for this study were involved in recycling projects.

One of the case study schools in South Africa was using a recycling project as part of a mathematic lesson, in which the teachers integrated the activities by asking learners to

categorise different types of waste into certain groups and divide it again into smaller groupings. After dividing the waste paper, tins and bottles, "the learners compressed the paper waste and produced fire bricks that learners sometimes used during winter time at the school for fire" (Teacher 5).

Learner group 3 remarked on this Eco-Schools practice, when they said that,

> We like the paper recycling project because it is probably one of our most accomplished activities we have done so far this year. As a school we recycle bottles, papers and tins and things like that by dividing it and transporting the waste to the dumping site.

Analysing the portfolios indicated that recycling was a popular Eco-Schools activity, but that there was not too much work (evidence of recycling) in practice. Of the three portfolios only Portfolio 4 explained a clear process of recycling, from the time the school started working on fund-raising to the time of buying recycling bins for the different waste materials for the school (see picture 7). The school's focus is on *reduce*, and *re-use* through *recycling* of litter waste. The committee, which consists of students, is required to frequently check the bins to see that they are always kept empty, and to make sure that the recycling practices are taking place. The committee placed posters around the school in which they informed the school community that they accept paper in the orange bin, glass in the three blue drums and tins and plastics containers in the black labelled refuse bins.

From this evidence it seems that recycling practices are used for learning, as well as environmental management in the schools. There is some evidence that learners are positively engaged in these Eco-Schools activities.

4.2.4.6 Water usage and conservation
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The Eco-Schools pack suggests that, as part of the cluster of resource use and management practices, schools need to do an audit of how much water is used at the school in the term and in the year. Schools also need to know how to save water by closing water leakages that are found in taps and pipes. The pack also recommends that the schools give access to clean water and that they work out measures as to how the school can conserve water for times when water is not available. The Eco-Schools pack recommends different approaches for using water in the community. It suggests that learners should be taught to use the toilet and

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the importance of washing hands, and brushing teeth, as well to make links with how to use the toilet so that it can help to keep the environment healthy.

From the observation and interviews that I conducted it was clear that the importance of water conservation and water usage was also an important aspect of Eco-Schools practices because most schools emphasised its scarcity and how to take care of water reservoirs and resources that are available to schools.

The National Environmental Management Act that was passed by an Act of Parliament in South Africa (RSA, 1998) and other environmental policies (e.g. the National Water Act) have influenced the content and process of education (NEEP-GET, 2005) in the SA schools, with regard to water issues. Water audits in which the schools try to measure and reduce the amount of water consumption have been promoted through the DWAF 20/20 Vision Programme, and distributed through Eco-Schools. One of the members of learner group 1 explained that there had been activities at school where they were taught how to conserve water. They also went to the river and to clean the river bank and to remove the waste that people throw in the water. Node coordinator 1 explained how scarce and precious water is considered by learners when she explained that "they bring their grey water from washing dishes to school everyday to water their plants because water is often an issue in Cape Town".

Since Namibia is the driest country south of the Sahara, water is a very scarce resource and the water supply to schools is not always reliable especially in the northern part of the country. The Ministry of Education has also raised concern about the water bills that are high in some schools although in my observations it was clear that very little is being done by both the Ministry of Education and the Department of Water Affairs in Namibia, unlike the situation in South Africa.

Principal 1 emphasised the scarcity of water when she said that,

> I have learned that Namibia is one of the driest countries and that water is a very scarce commodity and we have to learn to conserve water like in the oshana's, dams and tap water. We don't need to waste water anymore, and now we know how to use water when you are watering trees.

From my observation, I noted that schools tend to use only one tap for the whole school and during break all the learners will queue in order to drink water and in most cases they drink water with their hands. Teacher 2 explained how her school went about improving the usage

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of water when she said that "In the past learners would come and waste water so much. Everyone would come to the tap, turn it on and drink water with the hands … we asked them to use water with the cups or bottles". This helped the school to educate the learners on saving water by drinking with a cup or bottle. As a result learners started to come to Teacher 2 and report that "learner so and so is drinking water with the hands on the tap and is wasting water".

Teacher 8 explained how the school supported health promotional initiatives as well as simple hygiene in which the learners learn how to do washing of hands and how to safely use toilets. Principal 2 explained how the Eco-Schools programme has improved the learners understanding about water usage and the hygiene thereof by saying that "I have also seen an improvement in our school toilets, when the learners are using water".

Figure 10: Careful usage of water and soap for hygienic purposes and saving water

From this data it is evident that the Eco-Schools practices focusing on water are oriented towards saving water, reducing wastage and improving hygiene. There is evidence that these practices are leading to change and improvements. From this data there is no evidence how learners are involved in decision making associated with this Eco-Schools practice.

From the portfolios it was clear that both Namibian and South African schools acknowledge the importance of water as a scarce commodity, which is a topic that needs to be taught to

learners. The three South African portfolios indicated that teachers tended to make use of National Water Week in March as a start to integrate the theme into their teaching. Portfolio 2 and 4 outline a clear set of approaches in which water activities in lessons were used for developing the prior knowledge and investigative skills of the learners and being able to locate learning in practical situations into the teaching. Portfolio 4 indicated the activities that the learners did at the school during the National Water Week as well as letters and opinions that learners wrote for the week, but it did not give an indication of careful lesson planning associated with the activities.

4.2.4.7 *Researching social issues*

The Eco-Schools pack suggests that teachers who are responsible for the Eco-Schools activities should try to involve many colleagues and the broader community in environmental improvement projects that address social issues around the school. The Eco-Schools pack also suggests that teachers need to identify environmental learning opportunities in the curriculum that are related to social issues identified in the school surroundings. It further suggests that teachers should give attention to issues such as the role of clean water in the spread of cholera, the link between poor sanitation and diarrhoea, and the role of poverty in increasing people's risks of being infected with HIV/AIDS.

From my observation it is clear that environmental learning is not familiar to most of the people in the community and parents do not see the need for participating in school activities. Therefore the learners are going to the community to share insights and information with them on issues that emerged from school efforts.

The schools set activities for the learners in which they go to the community where their live and ask questions and get information on environmental issues that concern the school and the community. An example was mentioned in one of the teacher cluster meetings in South Africa in which the learners were to ask their parents: 'Where do you place dangerous equipment and materials like knives, spirits and petrol that you use for cooking and lighting?' Activities like these make parents aware of the need to take care of dangerous materials around the house. Such activities have potential to educate both learners and parents on issues that are often taken for granted so that house fires (for example) can be minimized. The subject advisor 1 also explained some of the other activities that happened at schools which also provided similar educational opportunities for parents, such as cooking food on the solar stove, and keeping chickens at the school.

Teacher 8 explained how the school used curriculum topics to merge with the environmental days in discussing issues such as Water Week in (March) in which the learners are expected to understand the role of water in ecosystems and the impact of human activities on the quality and quantity of water. She went on explain how National Arbor Week is connected to the curriculum by using compost to feed trees in the school grounds. Issues such as Global Warming Day, HIV/AIDS or TB week are similarly integrated into the curriculum. The integration of the environment into the subject curricula is discussed more fully below (see section 4.3.).

An analysis of all the four portfolios indicated that social issues are regarded mainly in terms of health and safety issues affecting the school and community, and that mostly the primary schools regard integration of this component as important in their teaching. I could not establish if the teachers were able to connect other social issues that they teach to the Eco-Schools practices or not.

As indicated in the analysis above, it is not easy to discern what role learners have in the various Eco-Schools practices through a description of practices. This makes it difficult to discern how learner centred the Eco-Schools practices really are. From the descriptions above, it was only possible to discern that these practices were oriented towards issues that are of concern to learners and local communities i.e. they had local relevance to the school community. To probe this aspect in more depth I now consider the role of learners and teachers in the Eco-Schools practices (see sections 4.3 and 4.4. below).

4.3. ACTIVE ROLES THAT LEARNERS TAKE UP IN THE ECO-SCHOOLS PRACTICES

4.3.1 Introduction

The Eco-Schools pack expects learners to take part in environmental management activities, and suggests that learners be elected into the Eco-Schools committee of the school. The pack also suggests that learners should be part of the initial planning of the environmental management at the schools. The pack further recommends that learners need to work with other stakeholders in their class and community to find out more about the problems and develop a plan of action to address issues of concern. The Eco-Schools pack expects learners to respond to real-life situations by making learning more active and meaningful. The pack

suggests that Eco-Schools practice encourages learners to become environmentally literate – in other words have a higher level of knowledge and understanding about the environment and environmental issues.

The section below considers how learners are taking an active role in Eco-Schools practices by 1) raising concerns about environmental issues around their schools and by 2) taking action on issues such as the polio campaign, paper collections and issues of global warming, and 3) working with their teachers on community issues. These were the three roles that I was able to identify relating to learners active involvements from the data generated in the seven schools.

The four portfolios that I analysed indicated that learners were acknowledged as partners in the development of the school, since in all cases, learners were elected on to the school governing board, but there was little evidence of specialised structures for environmental management that placed learners in decision making roles. The portfolios therefore did not indicate in which areas the learners participate in decision making relating to the management of the schools environment, but I was able to gain insight into this from interview data, as reported below.

4.3.2   Learners raise concerns about environmental issues in the school

The Eco-Schools pack allows and encourages schools to work on any wide variety of environmental issues, which can be investigated either at a local or global scale (or both). Most environmental issues have both a local and global dimension. The pack suggests that schools should look at environmental issues which have social, economic and political dimensions which are also controversial, and the possibilities of risks that can become problems. Possible topics that are suggested include issues such as food security, shelter, sustainable buildings, genetically modified crops etc. While the pack suggests involvement in issues, and a contextual defining of issues, it does not explain or give an indication that such issues should be *learner defined*, i.e. it does not place the responsibility for raising of issues with the learners *per se.*

In SA school 3, a learner in learner group 3 said that she liked to inform the other learners about the activities that the Eco-Schools Committee is trying to tackle. She especially liked to talk about environmental issues, especially about global warming, and she also tried to make them understand the need for recycling of papers. The learners at this school seemed to be

concerned with the rate at which the environment is being degraded and about what will happen in the future if the rate of pollution was to continue. They were also concerned about the consequences of global warming. Teacher 7 explained that it was not only learners who belong to the club that are concerned with environmental issues but also that other learners are showing concern. The awareness that the club has raised at the school was, according to this teacher, noticeable.

In school 2 in SA, learners expressed concerns about the importance of cleaning the area of the school and community in which they live. They explained that another reason why they like to clean their surroundings is to give a message to the public on how important it is to live in a hygienic and clean environment. One member of the group explained, "The reasons we are cleaning our grounds is to show people that we care about our environment and our school grounds". Another member of the group echoed the same sentiments as her friend by saying that "we are cleaning the grounds because we want to live in a clean environment because some of us are leaving the school and we want to leave a mark at the school that the school environment must be clean at all times and we must take care of the school grounds".

This data suggests that learners have a concern for the quality of the environment in which they live, as well as a concern about the consequences of environmental degradation and pollution, and that Eco-School is providing them with a means to voice and express these concerns.

From analysing the different portfolios it was clear that schools in Namibia and South Africa consider food security, poverty and unemployment serious issues to incorporate in the school activities. Again the portfolios did not provide evidence of whether these issues were raised by learners first, or by teachers. One of the schools in South Africa considered global warming important enough to focus on as a project that the school concentrated on for the year. They looked at the bigger picture of the world and the planet and gave learners activities to write about how to save our environment, and learners were encouraged to produce their own pictures of how the destruction is taking place. This indicated that the learning was primarily structured by the teachers, and did not indicate which of the activities were learner-initiated. It seems therefore that it is from the teaching and learning experiences that they gain through Eco-Schools activities, that learners are able to raise issues within the wider environment and with others in their school community.

4.3.3 Taking environmental action

The Eco-Schools pack suggests that schools should take up environmental actions in areas that affect their schools or community, the pack also suggests that schools can take actions in relations to special environmental days (e.g. water week, or arbour day etc.). The Eco-Schools pack expects teachers to participate in the environmental issues of the school by integrating the issues into their teaching and by focussing some of their lessons on local issues. The Eco-Schools pack also encourages schools to get involved in different activities that promote the well-being of the environment in which the learners live. The pack does not specify particular roles for *learners* in the action projects, beyond implying their participation in the actions.

From my observation across the schools I realised that real participation of learners in environmental action projects is extremely important from an early stage of learning because it helps them to develop an understanding of, and concern for the environment. As reported in section 4.2 above, learners are involved in various action projects. However, my observations were that learners were involved in these action projects in a responsive role, in other words they were primarily carrying out the teachers instructions. For example, learners were involved in the practices because teachers were asking them to dig holes or carry water to the plants, and as reported above, there was some evidence of learners beginning to initiate their own actions, especially when they noticed something needed doing (such as the fixing of the fences for the chickens and guinea fowl), but they always first consulted the teachers before undertaking any actions. While these activities (that are conducted under instruction) are an important learning opportunity, and they are clearly helping to involve learners in Eco-Schools practices, they could be extended through involving learners in planning, decision-making and monitoring of projects that are been executed at the schools so that learners can be more fully involved in the full scope of the activities and action projects.

The portfolios indicate that one of the major activities that the schools are engaging in is to involve learners in taking care of the environment. In all cases, this involves learners in actions which are oriented towards developing learners' values, and commitments to the environment, and to try and improve learners understanding of the environment, and to improve environmental conditions. What was not clear from the portfolios, however, is *how* learners are involved in the actions, and to what extent their involvement is self-directed. I now consider three examples of learners' involvement in action projects to probe this a little

more carefully. The three issues that involved environmental action taking are: Polio which is a concern in the northern part of Namibia during the rainy season; a paper collection competition; and a global warming project, discussed below.

4.3.3.1 Polio campaign and health issues

The Eco-Schools pack has a section on health and safety, but it does not specify what health issues schools should focus on. Observation and interview data showed that schools identified different health issues, which were influenced by other projects taking place in the education system, such as the emphasis on the polio campaign in Namibia and vegetable gardens for nutrition which are supported by the Umthathi projects.

In the Namibian schools polio became an issue of concern, after a few cases of polio infection had been reported and a national inoculation campaign was implemented across the entire Namibian population over a three-month period in 2006. The polio scare was used in schools as an occasion for schools to stress the importance of hand washing after visiting the toilets.

Although it was a national campaign programme, Principal 1 explained that "In the areas where Eco-Schools were operating, it was continuously encouraged among the primary children to cultivate a culture of washing hands every time". This exercise was seen as helping the Ministry of Health in fighting the Polio epidemic among the community. The principal acknowledged that the Eco-Schools programme helped the health officials in reaching out to most learners because the importance of hand washing was linked to the Life Science subject at her school, and the Eco-Schools programme stressed learner involvement in issues.

The portfolios that I looked at did not give any further information on the Polio activities, with the exception of school 1 of Namibia. The other Namibian schools mentioned it in collaboration with cholera as this disease normally affects schools during the flooding season. School 2 in South Africa looked at the medicinal herbs that can cure different illness such as coughs and colds (see appendix 8) without emphasising a particular action.

As shown again by this example, learners are involved in actions such as hand washing, but the drivers of these actions are the government and teachers, who wish to educate learners on these issues, and the Eco-Schools programme provides a useful framework for including

issues that are seen to be important and relevant to the well-being of learners and their communities.

4.3.3.2 Paper collection competition

The Eco-Schools pack encourages schools to become involved in competitions, as well as in different ways of promoting cleanup campaigns at the schools. The pack suggests that the learners can help in different ways to keep the school grounds tidy. The pack gives an example by stating that learners could count how many of the other learners use the bin in the playground, or how many chip packets/sweet wrappers/apple cores are found in the school grounds (i.e. monitor waste and waste management practices).

In observations and interviews, I only came across one school that was participating in a competition as a way of involving learners in developing an appreciating for the environment, and knowledge and skills to address environmental concerns. Teacher 7 of school 3 explained that the Eco-Schools club organized a paper collection competition at their school. The approach was to get learners very actively involved in the process. The learners collected papers around the school; some collected waste papers from home such as magazines and newspapers from their parents and all the papers that are around in their different classrooms. The paper collection competition was done over four days. All learners assembled in front of their classrooms where the competition was conducted by the fellow students. The Club committee members weighed the papers in front of the fellow learners who then loaded the paper into recycling bins. The class that collected the most papers won the prize for that year which created a sense of care for the school grounds more than was the case before.

This work on competitions was reflected in the portfolio of school 3 in South Africa. It showed that learners collected papers as part of a project to raise funds for a rainwater tank for the school. The portfolio also indicated that the organisation of the collection of papers was done by the learners themselves who were able to count and decide on which class should receive the prize. The collection of papers was used by teachers for learning activities. Learners were asked to separate the papers, and to organise them on tables and display the result as graph on the notice board for the whole school to see. In this case the action taken was both a structured learning process, as well as a participatory learner driven activity in which learners were involved in working with their peers and the teacher to address an issue by involving other learners.

4.3.3.3 Global warming

The Eco-Schools pack suggests that schools should work on environmental issues that are relevant to the pressing needs of society in the modern day. The pack expects schools to look at issues that affect the bio-physical world which is either the source of the problem or to look at other dimensions of issues which are becoming more visible, such as climate change, although the pack does not mention climate change *per se*.

From observations and interviews it was evident that the Eco-Schools programme as a whole encourages learners to get involved in environmental issues, and in coming up with some solutions. As indicated in the data described above, schools are involved in water issues, waste management issues, school greening and vegetable gardening, and live stock production to address food security issues, and in health issues. One issue of particular interest was learners' involvement with the topic of global warming, as this is currently prominent in the media following the recent inter-governmental panel on climate change (IPCC) report on the way climate is changing.

After the Club Members of school 3 had seen a film made by Al Gore called *An Inconvenient Truth*, which was presented first only to the club members and later to the rest of the school, learners were so motivated by the film that the committee members developed a slide presentation on global warming and the destruction of the planet and presented this activity to fellow learners in grades 4, 5 and 6. Teacher 7 said that "all the learners were so fascinated by their fellow learners' presentation that they just wanted to do something to help with the issue on global warming."

Because of the above-mentioned experience, Teacher 7 reported that learners came to the teachers and reminded them to switch off the electricity after school in order to reduce excessive energy use. Some learners reported to the teacher how they managed to encourage their parents to replace old bulbs with the new energy saving bulbs (florescent candescent bulbs) at their homes, with the idea of saving energy.

One of the members of learner group 3 explained the possible scenario that she thought could help reduce the burning of petrol and the effect on the atmosphere in the learner group interview. She explained,

If you are driving in cars you probably use this gas (bio-fuel) or fuel that does not affect the atmosphere you could reduce pollution. And also by using solar power, like to warm up your water to shower and use less of (water to) shower instead of spending 15 minutes in your shower you spend 5 minutes.

During an interview with node coordinator 1, she talked about learners' perspectives on the future, and she gave me an example of a better-resourced school where they are focused on what is happening with the polar bears because of global warming and the ice that is shrinking thus threatening the habitat of the bears. The learners discussed how they might change behaviour in their daily lives to reduce the effect on the bears. They noted the higher carbon omissions of using big vehicles to drive to school as one of the causes of the effect of global warming.

These three case examples of learners' involvement in environmental action show different degrees of learner participation, motivation and initiative. The examples do, however, show that participation in such activities can allow learners to take initiative and contribute to learning opportunities in the school, as shown by the Eco-Schools club members who prepared lessons on climate change for their peers. The analysis of the South African school that promoted global warming presented their work first in class to others, and then in the hall for all students, showing that activities such as this can influence the whole school, as was also shown by their work on the paper competition. The examples also show that learners' involvement can be directly in the action taking, and also in teaching other learners about action taking, thus expanding their roles in the learning process.

From analysing the different portfolios it was clear that schools in the townships in South Africa and schools in Namibia did not all see the need for discussing controversial issues like global warming in the school as part of the Eco-Schools activities, and these schools tended to favour more localised issues.

4.3.4   Learners work with teachers in the community

An analysis of the Eco-Schools pack shows that the Eco-Schools Programme expects teachers and learners to be engaged with community related processes in various ways. In the section on 'Steps to become an Eco-School', the Eco-Schools pack recommends involving teachers, school governing body members, community members and learners in the Eco-Schools working group, thus cementing the link between Eco-Schools activities and the community. This indicates that the Eco-Schools framework seeks to encourage learner and

community participation in management and decision making in relation to the Eco-Schools activities. The Eco-Schools pack further recommends the development of a school environmental policy which is made visible so that parents and the local community are aware of the school's plans, and so that they can become involved (see section 4.3 above). This indicates that the Eco-Schools framework encourages community participation in the Eco-Schools processes such as action projects.

Furthermore, the pack recommends that when environmental days are included in the curriculum, schools should find out if any of these days are also celebrated in the community. The Eco-Schools pack has a specific section that encourages schools to draw on and integrate community knowledge and skills in environmental learning activities in the school. The pack states that,

> Local people are often overlooked source of information … [and] … the school curriculum can be enriched with local stories, histories and community experiences of change and how people used the local environment in earlier times.

Furthermore, the Eco-Schools pack includes an audit sheet that can help the school to find out what links they have with community members who might be willing to help support learning activities in the school, and whether the environmental policy encourages educators and learners to conduct investigations with members of the local community. The pack also provides specific information on how local knowledge can be integrated into various Learning Areas or subjects in the curriculum. All of these aspects included in the pack indicate a strong orientation towards the community.

As already reported above, the Eco-Schools practices are often oriented towards issues that are of interest and concern to the community (e.g. the food security projects). Observations and interview data also revealed that in the Eco-Schools programme, learners worked with their teachers in the community. Learners in some schools are involved in different environmentally related activities that are organised by the schools and implemented in the community. For example, an educational effort by one of the Namibian schools (school 1) within its community involved participating in, and hosting a collective cleaning up campaign and they persuaded the local town council to get involved through providing plastic bags, collection points etc.

Principal 1 of school 1 in Namibia indicated the role that teachers involved in the Eco-Schools project play in bridging the gap that exists between the schools and the parents of the learners that are attending her school. She explained that:

> The teachers invite the parents to come to celebrate with us during environmental days, which have created a very good cooperation between the schools and parents after [they came] here and looked at what the learners were doing and the improvement and the change in the learners mind regarding the environmental issues.

In another instance of action within the community during a school HIV/AIDS week, a Namibian school (school 2) environmental club developed posters and leaflets on HIV/AIDS and Tuberculosis (TB) and with songs and drama presentations, presented these first at the school. The entire school then followed up with presentations and an awareness march for the community on these matters.

Teacher 8 explained how the learners' food garden at the school has been extended into the community by asking parents to help with the gardens. She explained that parents use the opportunity to equip themselves with gardening skills. The teacher explained that:

> Because we are coming from a low and middle income sector and many of our people needed skills training and they needed space in which to grow crops, and they were able to plant some of the crops themselves and sell these crops for their own personal benefit. I see this as an effort that the school is doing in terms of community involvement and upliftment.

The portfolios show very little work based in the community although one of the South African schools had organised activities in which the school sent learners to go and interview family or community members about various traditional issues. The portfolios therefore did not reflect learners' involvement in community activities, or how these were guided by the teaching activities in the school.

From the above discussions it would seem that the Eco-Schools framework encourages a strong relationship between school and community as one of the ways in which learner centred education is to be achieved. It also encourages learner participation in the establishment and running of the Eco-Schools programme and activities in the schools. From the data reported on above, it is evident that learners *do* participate in the Eco-Schools practices in various ways (e.g. through being involved in action projects, and through helping teachers to forge community links, and through sometimes raising issues for discussion in the

school), but there is little evidence of their *roles in decision making* about Eco-Schools practices. One example of practice has, however, illustrated that *if* learners are fully involved in the Eco-Schools activities (planning and implementation), they can potentially have a powerful teaching and learning role in the school, through peer education and through involvement of other learners in whole school activities and also in understanding global issues. As indicated in these examples, but not explicitly discussed, is the fact that the role of the teacher is also central to enabling learner centred involvement in Eco-Schools practices. This is discussed in more detail in the next section (section 4.4).

4.4 ROLES OF TEACHERS IN ECO-SCHOOLS PRACTICES

4.4.1 Introduction

Teachers take up different roles in order to make sure that the Eco-Schools programme is implemented clearly in the schools with the help of the principal. Therefore in most cases it needs an enthusiastic teacher to introduce the Eco-Schools practices at schools, who also become the coordinators of the project. In some schools that were visited it was clear that subject teachers who are teaching the carrier subjects (or subjects that lend themselves to environmental learning) play an important part in the integration of the Eco-Schools practices in the curriculum.

The Eco-Schools pack clearly expects teachers to play a role in making environmental learning in the curriculum clear and accessible. It further suggests that through the Eco-Schools programme teachers can specifically identify and clarify environmental learning opportunities in the curriculum, thus integrating Eco-Schools programme activities into the life of the school. Through other focus areas such as clubs, community activities, inclusion of local and community knowledge, and action projects, the Eco-Schools programme also expects teachers to do this work in a way that is issues-based and relevant to the community, while also contributing to whole school development. It also expects a participatory management model for Eco-Schools activities, thus expecting teachers to involve others (including other teachers, parents and learners) in setting up and managing the Eco-Schools programme in the school. Through the requirement for portfolio submission and participation in the Eco-Schools award programme, the Eco-Schools pack also requires teachers to fulfil a monitoring and administrative role, and it encourages ongoing improvement, thus also inscribing an evaluative role. In this research, I identified how these different roles were being taken up by teachers in the schools, and also some other dimensions associated with

what teachers do in the Eco-Schools Programme. Understanding what teachers do is an important aspect of establishing how the Eco-Schools Programme is enabling learner centred education.

4.4.2   The enthusiastic teacher

The Eco-Schools pack suggests that all teachers should promote environmental education activities at all times because environmental learning is an integral aspect of the new policy of environment influencing schools, and it is relevant to all subjects, hence all teachers should take it up.

From my observations in the participating schools, however, it was clear that in most cases it was an enthusiastic teacher who was championing the introduction of environmental education in the school. This enthusiastic teacher in all cases observed, was taking the lead in terms of promoting environmental issues and activities such as the Eco-Schools Programme and its associated activities. Node coordinator 1 explained how these teachers influence the school when she said that,

> It only needs one passionate person, that passionate teacher can change the face of the school. And this passionate teacher who takes on the need for environmental education is completely inspirational. What they can achieve through inspiring learners and inspiring their colleagues makes you feel that there is a future for us all.

In most of the cases observed the presence of one or more enthusiastic champion teacher was vital for moving the Eco-Schools programme forward in the school, and for gaining the school's ongoing support. From the discussions with teachers it is clear that a school may have been invited to become an Eco-School but the presence of one or more teacher who is championing the project was vital for it to be sustained, without such a person the schools might not participate easily. Interviews with the teachers also indicated that in some instances teachers do not get full recognition for their personal initiative to introduce and coordinate such a programme at the school.

Node coordinator 1 explained a situation, in which an enthusiastic teacher inspired the rest of the school when she said that,

> One teacher saw the value of Eco-Schools, and basically inspired the whole staff and her principal and another nearby principal has taken it on and the school has

completely transformed so there is an example how one teacher can make a difference to turn the face of the school around to become a positive institution of learning.

Reviews of the portfolios indicated that in most cases the portfolio had been compiled by one teacher who is in charge of the Eco-Schools activities in the schools, showing that the enthusiastic teacher seems to often carry the full responsibility for the entire programme.

4.4.3   The Eco-Schools coordinator

The Eco-Schools pack suggests that because the Eco-Schools programme is one of the many activities at a school, it needs someone to coordinate the programme. It also encourages the coordinator to involve as many colleagues as possible as well as the learners and the broader community. The Pack also suggests that the Eco-Schools coordinator at the school should be guided by the audit report that ought to be conducted at the beginning of the year. The audit can therefore provide the coordinator with direction for the Eco-Schools activities for the year. The pack also suggest that the coordinator should ensure that the Eco-Schools activities are aligned with the curriculum and that the coordinator should encourage all teachers who are teaching the same phase to plan lesson plans together and to integrate the Eco-Schools activities into the year programme of the school.

From observations during school visits I noticed that it was normally the enthusiastic teacher (mentioned above) who also became the coordinator of the Eco-Schools Programme in the school. Such a teacher becomes the link between the learners, the community and the management of the school in terms of initiating activities and programmes with regard to environmental learning. According to my observations the Eco-Schools coordinators at the schools were taking full responsibility for facilitating activities on environmental learning at the school, and during stakeholders meetings on issues regarding to Eco-Schools activities. They were also the ones who took responsibility for getting in touch with organisations that could render expertise to the school.

In the case of school 1 of Namibia, the mathematics teacher has been coordinating environmental learning activities at the school for a long time based on his personal interest in the activities. Because of his involvement in the activities his work was recognised by non-governmental organisations and the SEEN project contracted him as a member of the technical team of the project to contribute at a regional level for one year.

A remedial teacher in school 3 in SA has single handedly championed the cause of environmental issues at her school through establishing the Eco-Schools club in which learners and teachers collectively participate (as discussed in the examples of practice above). In my observation I could see how she managed to motivate not only her club members but also the entire school including her principal who praised her achievements in a short space of time after they decided to register for the Eco-Schools awards.

In school 2 in SA, a Lower Primary class teacher, who has farming skills has been the coordinator of the Eco-Schools practices for the last few years out of her own interest and enthusiasm. Although her environmental knowledge is not broad, her passion for the environment makes her an outstanding promoter of environmental issues in the school. With her experience the school managed to set up a vegetable and herbal garden which has proven to be a very successful project. The principal of school 2 in SA explains the important link that the coordinator played in introducing Eco-Schools practices at the school, when she said that,

> … We have only 2 teachers who are trained in the Eco-Schools concept. It is really a new concept. I don't have a clear view of it but I do understand it because there are people who are involved in it. Our involvement as a school and in particular, my involvement as a principal was to allow the teachers to go and attend the Eco-Schools course at Rhodes University. This happened when they showed that they were interested …

Teacher 4 explained that for instance when a meeting on Environmental Education is called other staff members at the school will "… refer it to the teacher who is responsible for Eco-Schools, because she is the one who is dealing with it". She explained further that other staff members in the school were "… not even interested". The node coordinator also explained the important role of the teachers as "… the teachers also motivate the entire community of the school, although it is a very slow process because you know that change is not a very easy with some people."

From the evidence presented here, it appears that teachers are the main initiators and coordinators of Eco-Schools activities in the Eco-Schools Programme. I did not find one school in my sample where learners were the initiators or coordinators of the Eco-Schools activities and programme. It also seems that the responsibility rests mainly with individual, motivated and/or passionate teachers and that the responsibilities are not generally distributed across the teaching body, or shared with learners.

An analysis of the portfolio showed that the coordinator of the Eco-Schools programme in a school can be any teacher who is enthusiastic about environmental learning and Eco-Schools practices, and who can inspire other teachers and learners to participate in the activities.

Portfolio analysis confirmed that it was primarily the coordinator (the enthusiastic teacher mentioned above) who completed and submitted the portfolio for the Eco-Schools award.

4.4.4 The subject teachers

The Eco-Schools pack indicates that subject teachers need to plan their learning programmes, and when doing so, should look for opportunities to relate environmental concerns in the school and community to Learning Outcomes. The pack provides examples of how other teachers have included environmental learning in lesson planning, with a booklet on 'Lesson Planning for a Healthy Environment' that also provides guidance on how to do lesson planning. The pack also suggests that teachers who are involved in the Eco-Schools activities should give special attention to how learners access and use knowledge, and how they develop skills, to ensure that some learners are not disadvantaged as a result of, for example, language use or type of activities developed. It further suggests that teachers should give attention to the quality of the information being shared with learners, and ensure that the activities allow learners to develop a high level of knowledge and skills. Embedded in the Eco-Schools programme and pack is also the development of values, although this is not explicitly stated in the pack.

Observation and interviews indicate that it is primarily the teachers who are responsible for Life Science, Agricultural Science, Life Orientation and General Science subjects that are, in most cases, given the task of coordinating environmental education activities, although as shown above, other teachers such as Lower Primary Grade teachers, or remedial teachers can also play a role. Interview data revealed that it was because they (teachers of Life Science, Agricultural Science, Life Orientation and General Science subjects) have outdoor lessons with the learner, and because these subjects lend themselves to practical work in the school grounds. These teachers were said to have a special interest in, and responsibility for the Eco-Schools activities in most schools. Based on the above mentioned argument, teacher 4 explained her role as Eco-Schools coordinator and a teacher who is responsible for subjects like Life Science and Agriculture. She explained that she normally introduces the learners to the environmental education aspects by interpreting the issues from the syllabus with her

learners. Through this, she was able to highlight some of the environmental issues at the school which were otherwise not being considered. She also prepared activities around the school in which "… they [learners, are involved in] … environmental learning that affects … school issues like renewable energy production, water management, bigger footprint on earth and hygiene in relation to the syllabus."

Teacher 2 who is also the Eco-Schools coordinator explained the role that fellow teachers take in promoting environmental aspects in their teaching as a result of participating in the Eco-Schools programme. She argued that teachers help to monitor the activities at the school by looking after the work of the learners and in understanding the processes of auditing and planning of the whole school project, and through integrating this into their teaching. As a result more teachers are getting involved in the activities. She also commended the change in her colleagues attitudes towards the programme that,

> In the past the teachers would not notice that the learners who are climbing on them are breaking the trees. Since the project came into being they notice that this is not good. E.g. when they found learners on the trees they would ask them to get off the trees, they would also tell them that when watering our trees we don't need to use a hose pipe but rather we will use the cans which reduce the amount of water that is used.

Having said these positive remarks about the teachers it is important to note that not all activities paint a rosy picture, as not all teachers are involved, nor are Eco-Schools activities firmly integrated into the curriculum in all of the schools. This is more the exception than the rule, judging from the data generated in the schools for this study. Node coordinator 2 expressed reservations and uncertainty in relation to teachers understanding of the Eco-Schools activities in general. The fact that the teachers in general found the completion of the portfolio challenging as well as their poor attendance at quarterly workshops was a call for concern in her view. She explains that there has not been a logical progression in terms of teachers' attendance at the workshops in order to fully equip teachers involved in the project. She explains that as node coordinators they do inform teachers that they don't need to come with solutions right at the beginning of activities but they need to engage in open-ended learning processes with the learners.

This discussion points to the role of the subject teacher in the process of Eco-Schools. Teacher 4's practice indicates that it is possible for teachers to use Eco-Schools activities to contextualise the curriculum. Teachers 2 indicates that it is possible for more than one teacher

in the school to be engaged with Eco-Schools related teaching processes. However, the node coordinators comments point to the need for substantive support for teachers, including at the pedagogical level to introduce open-ended learning processes into the subjects using Eco-Schools, rather than predetermined solutions by teachers at the start of the learning process.

Some of the portfolios show progression of teachers' work in integrating environmental education activities into their daily teaching. Two of the portfolios indicate how teachers are using their skills of bringing the environmental issues to the fore in their subject teaching, through including activities that encourage the taking of action on issues of concern. However, the other two portfolios that I reviewed show that some teachers do not fully understand what is expected when it comes to integrating the Eco-Schools practices into the curriculum, since they were not able to link the Eco-Schools activities to their learning programmes or curriculum activities, and the Eco-Schools activities were dealt with as 'extra curricula' activities in the school, separate from the mainstream subject teaching curricula. None of the portfolio's presented evidence on how Eco-Schools activities were being assessed as part of normal curriculum assessment practices.

4.4.5   The principal's role in promoting Eco-Schools

The Eco-Schools pack expects the principal to help with the coordination and motivation of teachers to participate in the Eco-Schools activities. It also expects the principal to be equipped with the process in order to give guidance to teachers when needed. The pack recommends that once the principal understands the practices it becomes easier for the school to integrate the Eco-Schools activities into the curriculum with the influence of the principal.

Observations in this study indicated that the influence of the principal in promoting Eco-Schools activities at the school is regarded as vital for the survival of the project. Interviews indicated that if the enthusiastic teacher is not getting support from the principal of the school he/she is unlikely to get support from fellow colleagues and as a result activities will not function satisfactorily.

In those schools where principals were taking the lead in promoting Eco-Schools practices it was noticeable that the participation of the numbers of teachers in the Eco-Schools programme increased. Principal 2 explained her role in facilitating the Eco-Schools activities and coordinating the distribution of functions among her teachers. She also explained how she uses her experience to promote the non-promotional subjects at her school and how she

involves most of the teachers in one way or another. She for example, placed the paving project under the leadership of the teacher who is the coordinator of the Eco-Schools activities since the same teacher is also responsible for the planting of the herbal and vegetable garden at the school. The principal also explained functions of another colleague who is responsible for looking after the orphan children at the school as well as the cases related to HIV/AIDS and TB, which in her words are regarded as "a social problem in the community".

Principal 3 explained her involvement in the activities and identified her willingness to support the two teachers who have been championing environmental education at her school. "As a principal I used to allow the two teachers to do interviews when they were busy doing their assignments on Eco-Schools project". She also went on to explain her role by saying that "… although the other teachers are not directly involved in the activities they normally avail their learners especially from grade 6 to work in the herbal and vegetable garden". She said this has always been done so that the teachers are given reasonable support so that the herbal and vegetable gardens are run smoothly.

Principal 1 explained the importance of her school's participation in the Eco-Schools programme by saying that,

> It encouraged us as a school to think about new ideas and new activities and to look at new areas, which we need to improve at our school. It also helps us to involve more parents and teachers unlike when we were busy before Eco-Schools project started. Currently it helped us to think on new areas and new ideas, which are innovative for the school and its community.

From the above discussion, it seems that principals play more of a facilitating role, in the sense that they support aspects of the Eco-Schools programme. In the case of Principal 1 she was apparently using the Eco-Schools activities to contribute to whole school development and learners well-being. Principal 1 valued the programme as a source of innovation. The principals' role in terms of learner centred education and Eco-Schools therefore seems to be somewhat indirect complimenting the work of the teachers in this area.

In all of the four portfolios that I reviewed showed teachers referring to the principals' support as central to the promotion of the Eco-Schools practices at schools.

4.4.6   Teachers role in registration and portfolio handling

The Eco-Schools pack suggests that schools should register annually through the node coordinator who is in charge of no more than ten schools in a specific geographical area. The node coordinator registers all the schools under her supervision to the regional node coordinator who manages a region (province). The regional node coordinator also registers all the schools in the province at the national office for award purposes.

Node coordinator 2 explained some of the functions that the Eco-Schools node coordinators, one being registrations with the national Eco-Schools programme through WESSA (the national office). She went on to explain that the teacher responsible for the Eco-Schools programme at the school should make sure that all the necessary documentation like the themes chosen for the year is completed on time as expected, and that all three lesson plans with proof of all activities are documented and clearly placed in the portfolio file that needs to be submitted for evaluation at the national level. Node coordinators also support teachers to prepare for the assessment of the portfolio and organise for materials to be used at school, and provide ongoing support to the schools, thus teachers have a role of interacting with the node coordinators around the administration of the programme and submission of the portfolios.

The school coordinators attend the Eco-Schools flag ceremony for the region. Principal 3 explained how some teachers of her school attended a ceremony and said that, "Last year if I can remember very well, my teachers went to Butterworth and they received some awards there for the school's participation". This occasion happens at the end of the year where WESSA awards certificates of recognition and flags for the work done in the year, if the school has fulfilled its obligations of working on three themes for the year (see section 2.4.7.), are presented.

Teacher 6 of South Africa stated that,

> As a coordinator of the Eco-Schools together with my colleagues and learners I was responsible for carrying out the environmental audit at the school in order to identify the possible changes that we want to see happening at the school. Then after that, I had to plan activities that need to be carried out as the facilitator.

She went on to elaborate that she needed to put all the plans and activities on paper in order to have evidence of activities that she has been doing at the school in her Eco-Schools portfolio as part of her plan of action.

As mentioned earlier, the portfolio is the document that needs to be handed in at the end of the year which is used as evidence of activities that happened at the schools. All the four portfolios that I analysed indicate that they all received and completed the green forms which the schools need to follow in order to complete the process of completing their portfolio, and for receiving the Eco-Schools awards. Three of the portfolios indicated that the schools had been part of the programme for the last three years.

4.4.7   Organizing an Eco-Schools event

The Eco-Schools pack suggests that in order to organise an Eco-Schools event one needs to first do a whole school audit and a specific theme audit to indicate the areas in which the environmental management improvements are needed in the school. The committee should also plan events based on the school environmental policy or Eco-Code and must help the school to improve in some respect. The pack gives an example of a theme such as *Resource Use* where it explains that doing the water audit will show if the school is using too much water in a short period of time. This can then help the school to decide to undertake a project to reduce water use at the school. The audit could also show that the school does not have enough water and the improvement project could therefore be to harvest rainwater. This shows that the Eco-Schools pack encourages careful planning of Eco-Schools activities and events.

The SEEN documents indicate how school-community meetings are used to improve the area. These meetings were used to get communities involved in identifying and exploring environmental issues and risk in their areas. These meetings were 'awareness raising meetings' between schools and communities where they together could explore how the local area could be become a better place in which to live, learn and work. The SEEN documents suggest that awareness events should be joint meetings between teachers, community members and learners, although experiences in the SEEN project also showed that learners may be intimidated by the presence of adults and that they might work better in a group of their own.

One of the Eco-Schools activities organised by an Eco-Schools coordinator in school explains the active organisational role that she took up, when facilitating group activities with the Eco-Schools club members. She approached someone to advise them (i.e. the Eco-Schools Club) on the sort of trees that would be most appropriate and then arranged for the holes to be dug

and informed other teachers (staff) about the event that would take place the next day at the school. She also informed the music teacher and requested her to prepare songs or music, which would be appropriate during the tree planting ceremony. As the teacher responsible, she interpreted her role to include researching the information that she and the club members needed, in this case finding out about the particular trees that they were to plant. According to her she undertook the research with the environmental club members mostly and the club committee members were to present the findings to the other learners "I just helped with the research and then I stand back and leave it in the hands of the club members". She indicated that through such an exercise learners become independent thinkers, are also creative and able to do things on their own.

The portfolios also showed evidence of teachers taking up organisational roles in relation to Eco-School events, and that it was mostly the enthusiastic teacher or Eco-Schools coordinator that played this role in the school. The portfolios also showed a disjuncture between including environmental activities in the curriculum, and planning for environmental days, as the celebration of environmental days were not always included in the lesson plans, only in two of the four portfolios.

4.4.8   Support for cross-curricular teaching

The Eco-Schools pack supports the South African National Curriculum Statement in which it suggests that all subject teachers who are teaching a particular phase should develop a learning programme for the whole phase for the following year to ensure progression from grade to grade within the phase. This planning work (i.e. to plan a year's activities in advance) is equally relevant to the Namibian context, although the same curriculum is not being used. The pack suggests that the subject teacher should complete a set of learning, teaching and assessment activities for a particular class, which can consist of a single activity or several activities spread over a few days or number of weeks. The pack further recommends that the lesson plan should be compiled by each individual teacher in the particular phase. The lesson plans are developed to explore the needs identified in the learning programme and the Eco-Schools toolkit suggests learning actions that would help achieve this (see appendix 7 and 8). Through such an exercise the Eco-Schools programme does not necessarily expect teachers to do a lot of extra work, but rather to integrate the environmental learning activities into the curriculum, across different subjects.

It is a known policy requirement for all South African and Namibian schools that environmental health and environmental care is a cross-curricular issue that should be integrated into all subjects or Learning Areas. Within the Eco-Schools programme there are a number of possible Eco-Schools practices and activities, as outlined in the discussions above. Besides this, the Eco-Schools programme has the additional goal of encouraging and enabling the integration of environmental topics into lessons, as discussed above. To further support this, model lessons are provided for each school subject on the main Eco-Schools themes, e.g. water, school grounds etc. With this level of support, one would expect Eco-Schools teachers to be willing to include environmental themes into their lesson plans, because of the supportive climate and culture favoring environmental concerns.

At most of the upper primary schools I observed, especially in the Namibian schools, teachers who do not teach science subjects are not interested in integrating environmental issues into their subject teaching. The support for integrating environmental issues into subjects seemed stronger at the lower primary level. The resistance to this integration had varying causes and elements. In one school the resistance seemed to be largely a question of poor timing and inadequate understanding of the goals of Eco-Schools and once these items were addressed, support for integration emerged; as explained by teacher 7:

> At the beginning of the year I think the other teachers were more concerned with their own classrooms and their own learning programmes they weren't involved initially, but within this third term particularly, I have told them that for us to be recognised as an Eco-School we need to be far more integrated and our curriculum teaching should be better integrated than ever before… Since I have explained the reason to the teachers they have all started coming together to discuss and suggest things that they can do. ... I am (now) finding that more and more teachers understand and they have been very supportive now.

In another school the Eco-Schools coordinator expressed her frustration that despite all the effort she had put into the program in terms of educating the teachers to understand the Eco-Schools concepts she has still a problem with the educators who don't really like to integrate environmental education activities in their teaching, which she regards as a problem for her. She went on to explain that:

> The teachers think that when we are talking about environmental education in Eco-Schools then they think that it is something added on top of what they are already doing. Teachers don't think that environmental education is an extension or a continuation of topics and activities that they are usually doing. The teachers do not

want to recognise that current teaching policy is to integrate themes and topics into teaching which is…. expected from all teachers.

In a third example, the Eco-Schools coordinator (teacher 1) explained that the problem lay in the subject teachers in say Science and Agriculture not recognizing the links between elements of their subject, such as water, and its environmental relevance.

The availability of model environmental lessons for different subjects in the Eco-Schools pack is intended to make just such links. This was highlighted by three of the Eco-Schools coordinators. The first emphasized how this made lesson planning easier:

> Eco-Schools is bridging a wide gap that long existed between educators and what the department of education provides. Eco-Schools is an initiative that actually provides ideas on lesson plan development and how to (create) extra curriculum activities … and make it environmental friendly activities (Teacher 8).

The second stressed how these lessons and the Eco-Schools activities helped broaden teacher understanding of environmental matters for their teaching:

> The Eco-Schools programme is so fantastic that it makes the educator's job that much easier, because it become more fruitful to work with and to have a better understanding themselves of the environment than before. The teachers can now actually impart broader knowledge to learners (Teacher 8).

The third stressed how the Eco-Schools cluster workshops were based on research by the teachers on the use of lesson plans and this was assisting teachers:

> As Eco-Schools teachers we do research on related topics from the syllabus and prepare a lesson plan based on the theme that we are teaching like the workshop that we organised at our school in which we invited Grahamstown cluster schools to come learn from our research on medicinal plants that took place on the 10 September 2007.

Portfolio 3 showed how learners were participating in, and working in the herbal and vegetable garden with pleasure but the portfolio did not indicate how teachers integrate these activities into their subject teaching. The portfolio also referred to other teachers who are doing school ground duties as separate from the teachers in the garden, and there was no clear indication of how this was linked into their subject based teaching, and the different subjects. Similarly, in portfolio 2 there was no mention of teachers working together in integrating the phase teaching, in this case the foundation phase teaching, or how the different subjects were

used for environmental learning. Portfolio 4 indicated a scenario in which the teachers of grade 6 and 7 planned their activities together. It showed that the grade 6 learners focussed on making boats from waste materials as a class, while the grade 7 learners focussed on handling data from paper recycling competition, which was seen as a progression of activities from one level to the next. There was also a clear link between these activities and the Learning Area requirements for content and progression. Portfolio 1 also showed evidence of integration of environmental learning into more than one Learning Area. From this evidence it is clear that not all teachers participating in the Eco-Schools programme are equally involved in integrating environmental learning into the different Learning Areas or subjects in the schools, showing a limited understanding and uptake of the cross-curricular intent of environmental education.

4.5 SUPPORT FOR LEARNING ENGAGEMENT IN ECO-SCHOOLS ACTIVITIES

4.5.1 Introduction

For the Eco-Schools programme to provide learner centred learning opportunities, support for learner centred learning engagements is needed. In this study I identified aspects of such support to be relevant in four areas: support from parents and the community; support from the principal; support from teachers; and external support provided to the Eco-Schools programme. I discuss each of these in more detail below.

4.5.2 Support from parents and community

The Eco-Schools pack shows that in order to create a healthy environment in schools and communities is it easier when schools and communities work together. The way that Eco-Schools is oriented towards the community was discussed earlier, but here I discuss it specifically in terms of the kind of support that parents and the community can and do provide to Eco-Schools. The Eco-Schools pack suggests that there are many different ways of involving the community in educational activities. For example, parents and community members working together in a school gardening project, and in school improvement projects. Through examples of lessons that are included in the pack, the Eco-Schools programmes also suggest that community members can support specific learning activities linked to Eco-Schools activities in the curriculum. An example is given of inviting a healthcare worker to class to talk to learners about the health risks associated with water pollution. The Eco-

Schools pack, through these examples (which have been drawn from previous teachers' work) shows that teachers are drawing on the community to strengthen and extend learning, and how cooperative supportive learning relationships can be built between schools and communities. The pack suggests that environmental issues and risks are often context-specific because they affect the lives of the learners as well as community members, as discussed in section 4.3 above. The pack suggests further that it is often difficult for learners to resolve or address environmental issues in their communities, and they may need the help of key members of the community. The Eco-Schools pack and the NEEP-GET Lesson Planning Booklet called 'Lesson Planning for a Healthy Environment' (which is included in the pack), suggests teachers asking learners to present their work to community members is another strategy for fostering better community links, and for gaining community support for Eco-Schools activities.

According to a number of people consulted in this study community involvement and support is vital for a flourishing Eco-Schools programme. For example two respondents mentioned that before the introduction of the Eco-Schools programme and involvement of parents and the community in the school, the school was vandalized during the vacations. After the Eco-Schools programme was started and most especially after the local parents and community became actively engaged in the school then the vandalism stopped or was reduced, as indicated below:

> On the side of the parents, I think their community has been very helpful because throughout the whole project or process until now we have not experienced any vandalism since the project started… It seems to me that the community understands the value of the project and the activities that happened at the school in a way it creates sense of ownership. We are lucky to be in a supportive community but then obviously there are schools which might not have or are not Eco-Schools but I also think in a way that the involvement of the community in the Eco-Schools helped a lot to build a sense of ownership. Vandalism has been minimized because people know that this is our thing that belongs to our community and why should we come and break it down (Teacher 1).

Other reasons given by respondents for community support included: Their support in protecting vegetable gardens or watering the garden during holidays may be required; and community members can provide traditional knowledge and information about the environment and members of the community should be consulted and must help decide about project activities in the school (teacher 1).

The role of parents in supporting their children in learning about environmental issues was also identified as a reason for gaining community support. The study revealed that some of the schools were drawing on community knowledge in this way as some teachers were sending the children to interview (research) parents and family on traditional practices.

One principal (Principal 2) described other forms of direct help being provided by some parents with the children's school work:

> Parents are mostly helping the children in collecting information and also helping the children to write their research and get information from the Internet. They also help by paying for photostats and the papers to get information for their assignments.

But strong support from the communities was not present in all the schools. Thus for example Teacher 2 said that,

> We did not receive support from the community. Every time we invited the parents there were only three people who attended the activities. With the community I would say we did not have so much support, I could not really recognize the community's support in the activities… I am trying to say that the community that we are involved with is not really interested in supporting the school efforts.

Teacher 2 speculated as to possible explanations for this lack of support.

> Well I would say maybe they don't understand the whole thing, it could be that they don't really acknowledge the school efforts regarding its development… Because most of the time you would notice this thing [the negativity] in parents' meetings because some will suggest that we do something [as a school, but] it is only the minority that will support [the initiative] otherwise the majority or the rest of them would be against the suggestion and criticize it and so on.

Others (teacher 5) also said they do not have the support of the community:

> We don't have the support or the involvement of the side of the community around. The community does not support us very well but there are three mothers who work in the soup kitchen and one of them usually supports us when she sees some weeds in the garden she remove it but there is in general no support from the parents.

A lack of support from the community also affects the learner centred potential of the Eco-Schools programme, as it minimizes possibilities to make more relevant links to community issues and learner's home environments.

Portfolio 1 from a Namibian school indicates that the school activities were supported by community involvement which had driven the projects forward, which the only case where this happened from the schools sampled in this study. In portfolio 3 from a school in South Africa, the teachers involved indicate that community members are not really participating in the school activities they only buy vegetables when the school sells them to the public for fund-raising. Both portfolio 2 and 4 also indicate that community participation is not very good in most cases.

4.5.3. **Support from the Principal**

The Eco-Schools pack suggests that the school principal should be involved in coordinating and helping teachers with curriculum planning within the various learning areas. In addition, the principal should help with the planning and teaching of lessons by identifying opportunities for environmental improvement of the school. The pack also states that schools are a place where learners spend a large part of their day; therefore many schools are in desperate need of school improvements to make the environment healthier, and more conducive for learning. The pack further suggests that if the principal and the management take positive action for a healthy environment it will enable learners to develop a sense of ownership and pride in their school, and it will enhance their learning.

All the teachers interviewed reported that they received support from their principals for the Eco-Schools activities at the schools. They also gave concrete examples of the different forms this support took. Some of the principals also describe the support they have been giving the program. The following two quotes (teacher 5 and 7) characterise the statements about the support they are getting from their principals, as reflected by the Eco-Schools teacher coordinators interviewed:

> The Principal supports us more and the teachers who are teaching grade 4 and 5 are also supporting us with their learners. They also support us with hands-on work in the garden. The principal supports us a lot, if we don't have enough tools in the garden she just buy the tools for us, for example when we need seed we go to her [the principal] and she just buys the seed for us (teacher 5).

> The principal became very, very supportive and he has been my most supportive colleague. He has really spoken out for me and has helped things to come together. We celebrated World Water Day with T-shirts and he really worked hard with the organisation and the awareness of those events (teacher 7).

The principals that I interviewed were also all aware of the need of their support for the Eco-Schools program and the teachers that are coordinating the Eco-Schools activities in the school, as shown by these quotes from their interviews:

> My role at this stage is to support them in whatever endeavour they have, if they want us to attend their demonstration lessons, I will organise the teachers for that. If they want all teachers to attend in order to do a demonstration or if they want to do interviews we allow them to do interviews. If they want to use learners from other teachers we allow them to do that so that they learn what they are doing fully with our support. Our involvement as a school and in particular, my involvement as a principal, was to allow the teachers to go and attend the Eco-Schools course at Rhodes University.

Principal 2 explained the role she played in supporting her teachers when she states that,

> I did a workshop with my teachers so that they can do their own work and develop their own ideas when doing activities. We are all working for the environmental learning and the Eco-Schools activities and I am also involved in all those programs as the head of the school.

From these two interviews, it seems that the principals play different roles in terms of supporting the learning engagements in the Eco-Schools programmes. These include making decisions that enable the programme's activities, by supporting teachers to develop professionally so that they are more able to support learning and by contributing directly to the activities and the learning engagements themselves.

The Portfolio's also showed that the schools got support from the principal in order to implement the Eco-Schools activities at their respective schools.

4.5.4   Support from teachers

The Eco-Schools pack suggest further that, in order for environmental learning to take place effectively in the school it is important for teachers to develop team work in the phase and collaborate with one another on theme teaching, thus to support each other to improve teaching and learning engagements. The pack suggests that teachers should collectively identify environmental learning opportunities in the curriculum that relate to the school's environmental priorities, and that they can work together to implement lesson plans that are related to the school priorities.

The Eco-Schools coordinators that I interviewed reported that they received support from fellow teachers during the implementation of activities at their respective schools. They gave clear examples of the different levels of support that they are receiving from other teachers. For example, teacher 4 indicated that:

> The teachers are the ones who are helping in the gardens. Especially those one who are involved with the Life Orientation teaching as well as the Agricultural teachers they also help with the garden.

But not all Eco-Schools coordinators receive good support from other teachers at their schools, as shown by the quotes below:

> I would not say that the whole school is on board because some of the teachers are not yet on board and not all the learners are on board. It is just very few people who are involved (teacher 5).

> I would say that I only have 3 people (teachers) who were willing to support the activities. The rest of the staff will pull out and say this is your environmental education work. They don't really show some interest, but these three were really supportive (teacher 2).

There was not a lot of evidence of team-based teaching, or of collective planning in the interviews or observations, an issue which is also discussed above, and which may also be related to the problem of a poor understanding of the cross curricular nature of environmental learning, and the curriculum-related expectations of the Eco-Schools programme, as discussed in section 4.4.8 above.

As indicated in the previous sections, most Eco-Schools work is left to the enthusiastic teacher, or the Eco-Schools coordinator, but there is some evidence of other teachers becoming involved, thus enhancing the possibilities of teacher-to-teacher support. This was also evident in the portfolios as discussed above.

4.5.5   External support for Eco-Schools activities

The Eco-Schools pack suggests that many environmental organisations are available especially in South Africa to support schools with information, resources, professional development opportunities and advice. The pack further suggests that such organisations can help all members of the school community to develop higher levels of environmental skills and knowledge. The Eco-Schools pack recommends that apart from the environmental

organisations available as a source of information the schools are encouraged to keep strong links with the members of the community because they often have valuable knowledge and skills to share with learners on a wide range of topics, and teachers should try to find ways of allowing learners to benefit from this rich resource as an external support (as discussed above).

The external support beyond the immediate community has varied from school to school and it depends on the type of projects that the particular school is involved in. A number of different organisations with specific expertise have also contributed to Eco-Schools activities.

Teacher 1 in Namibia explained how they struggled to understand how to integrate environmental learning into the teaching until their received support from the technical advisors of the SEEN project in Namibia.

> What we did not understand was the integration of environmental learning in the classroom … that was lacking …. we got support from the SEEN technical advisors and then we started with this project and continued for 1 year from 2004 to 2005 in the SEEN project.

The Umthathi Training Project in South Africa has been instrumental in helping develop many of the school vegetable gardens in the Makana District in terms of providing financial and technical support. The staff members of this project have given training to the stakeholders in the schools as well as seedlings and equipment. Teachers 5 and 4 gave account of the support that they received from the Umthathi Training Project which was most valued in most cases.

> In the olden days we used to use kraal manure but now it is different at the school…. [Fertilizer] is taken from Umthathi Training Project. In the past we did not have a fence around the garden and animals used to enter the schoolyard and start eating the plants. So we applied to the Umthathi Training Project so that they can get involved in our school garden. They give us plants, fencing and tools for the garden so that we can do more in the garden (teacher 5).

> We are working together with the Umthathi Training Project at our schools because they are the ones who started with our school vegetable garden. They provided seedlings for us and they gave us some training and equipment for the garden (teacher 4).

The Eco-Schools coordinators acknowledge that a greater level of involvement by the Department of Education would speed up the integration of environmental education by ensuring the involvement of all teachers in the school. They also encourage the Department of Education to authorize Eco-Schools practice as an official Department of Education programme or project:

> What I can say is that I think the Department of Education can do more in terms of integrating environmental education in the schools and highlight it to the schools that it should be part and parcel of our teaching…. I think the department should have played a major role in terms of ensuring all teachers are brought on board in environmental issues and Eco-Schools. It is not easy to be an Eco-School if it is only 1 or 2 teachers who are involved in the work because the impact will not be as great as when all educators are involved. That is a why I said in the beginning, if something comes from the Department of Education all teachers take note about it (teacher 4).

As mentioned a few times in the sections above, teachers in the Eco-Schools programme are also benefitting from the Eco-Schools professional development programmes offered by Rhodes University as they get materials, learn how to develop lesson plans, and also learn about active learning from this source.

The portfolios in particular provided good evidence of the support schools were getting from outside organizations such as the Department of Water Affairs and Forestry (learning support materials and teaching activities), and from ESKOM (brochures on energy use and sustainability) were two examples. These indicate that outside organizations provide useful learning support materials to strengthen the learning engagements. The portfolios also provided evidence that teachers were inviting experts to talk to the learners about topics, as in one case where a recycling expert was invited to the school to talk about recycling and waste disposal activities.

From this data it seems clear that Eco-Schools benefit from different kinds of external support, specifically practical support for schools to implement Eco-Schools projects (such as gardens) and conceptual and technical support for teachers. Learning support materials and expertise were two other areas of support that were provided for learning engagements by external organizations.

I now turn to a discussion on the different learning interactions that were taking place as a result of the Eco-Schools framework, as this discussion provides insight into the actual

learning engagements that result from the Eco-Schools practices, the teachers' roles, active participation of learners, and the support for learning discussed above.

4.6 WHAT LEARNING INTERACTIONS ARE TAKING PLACE?

4.6.1 Introduction

From the discussions with teachers active participation is seen as an important priority in achieving the objectives of Eco-Schools. Teachers were therefore designing activities so that learners could be involved in doing something inside or outside of class. Most of the actions that took place (as reported and observed in the sample schools) included social interactions (through group activities) and individual contributions to activities. Through this method of active learning there were opportunities for four types of learning interactions identified in this study: 1) peer-to-peer interaction, 2) learner and teacher interaction; and 3) learner and environmental interactions. Through emphasis on community involvement a learning interactions were also evident between 4) learner, environment and community (sometimes also involving teachers). This section draws on data already reported on above, to synthesise the different learning interactions that were visible in the school observations and portfolio's.

4.6.2 Peer-to-peer learning interactions

As indicated in section 4.2, learners were actively engaged in various Eco-Schools practices. Learners were given group-based tasks which allowed them to work together and to learn from each other, as in the school gardening activities, and in the club activities reported on above.

As shown in school 3, learners were also involved in teaching other learners in the school about their Eco-School practices (e.g. waste management and climate change).

From this data it is evident that the Eco-Schools framework allows for peer to peer learning interactions.

4.6.3 Learner and teacher interactions

As described in section 4.3 and 4.4, Eco-Schools coordinators and teachers tend to play a strong role in defining what the Eco-Schools activities are, and how these activities are

structured and how they are to be linked into the curriculum (or not). This data indicated that most often, learning interactions in the Eco-Schools programmes in the schools were teacher-learner interactions, where learners followed instructions and directions given by teachers in relation to issues that were of relevance to the school and its community.

There was, however, also evidence that learners initiated some of the learner-teacher interactions, particularly when learners reported to teachers about the status of the Eco-Schools activities, or when something needed doing or improving (e.g. when the fences needed repairing in the livestock project) as reported in section 4.2. It was also reported in section 4.2, 4.3 and 4.4 that few other activities in the Eco-Schools programme seem to be *learner-initiated.*

4.6.4   Learner and environment interactions

Data on the Eco-Schools practices in section 4.2 indicates that the Eco-Schools framework allows for many different learner-environment learning interactions where learners are actively engaged with real world projects such as vegetable and herb gardening, livestock rearing, tree planting, waste management, bird feeding and monitoring etc. These learning interactions often involve learners in activities outside the classrooms, which was also the explanation given as to why only some teachers are getting involved in the Eco-Schools programme. However, not all Eco-Schools activities involve direct engagement in the 'outdoors', as shown by the climate change project in school 3, where learners were engaged in local and global environment interactions.

4.6.5   Learner, environment and community interactions

As reported in section 4.3 and 4.5, Eco-Schools has a strong emphasis on community relevance and community involvement. Through the Eco-Schools programme, learners are able to interact with communities and teachers to organise and plan for the Eco-Schools activities. They are also encouraged to share knowledge with community members through making presentations of their work, and there was some evidence that schools were doing this (see section 4.2). Learners are also, however, encouraged to draw on and make use of community knowledge in extending their own experience and knowledge of their environments. As shown in section 4.2 and 4.4 this kind of learner, community, and environment interaction is taking place in the Eco-Schools programmes of some of the

schools. However, as was the case with the learner-teacher interactions, not much of this is *learner initiated,* but these learning interactions with the community are also teacher initiated.

4.7 RESULTS OF ECO-SCHOOLS ACTIVITIES

4.7.1 Introduction

Evidence shows that the Eco-Schools project has positive results on the children's education in different facets of childhood life. From my observation, I could see how learners become excited whenever they were involved in especially outdoor activities, in which they experience a relaxed atmosphere. There are different outcomes of results that contribute to a positive self-esteem in the children especially when they are made aware of the responsibility and power that they have in making the world a better place for all inhabitants. I report next on the awareness, understanding and general behavioural changes that the teachers and learners have shown in their involvement in the Eco-Schools activities, which are been explained by the people involved.

4.7.2 Positive learning environments, values and school improvements

The Eco-Schools pack suggests that active participation of learners in the Eco-Schools programme can develop knowledge, skills and values that are useful for managing home and school environments better, and that this will enable learners to develop the positive orientation necessary for managing their lives and business activities responsibly and effectively in future.

As shown in the data-based discussions in sections 4.2-4.5 above, the Eco-Schools programme and the teachers and principals involved are playing a role in encouraging the young by being exemplary in their deeds and actions, through encouraging ethics of care and concern for the environment in which they live. This was evident in the Eco-Schools that I visited, when you see how enthusiastic and positive the teachers are with regard to the Eco-Schools activities (see section 4.4.). From my observation, I could see that when the teachers are interested and appreciate the learners' contributions to environmental activities the learners in return becomes excited and want to take on the activities. This section reports on how Eco-Schools activities inspire young children as well as teachers to take on new actions or behaviours, and through this develop positive learning environments, values and school improvements.

Node coordinator 1 explained how the learners have transformed barren land into beautiful and attractive school areas and how the outdoor activities and learning has contributed to good environmental areas within their communities.

> …. Incredible transformation (has taken place) here in Cape Town where [there were] very, very sandy soils where the schools were like deserts and [where they have been] transformed into a green learning and outdoor learning environment and you can see that on the physical level there is definitive evidence that this happened through the Eco-Schools programme.

Teacher 8 also gave an account of how the Eco-Schools programme has changed the perceptions of the community in which they appreciate the efforts that are done at school in having such a clean and green school where their children are learning.

> It has been a fantastic changeover; a great mind set *change* and attitude change… that involved not only learners or educators but also the community as such, because prior to being an Eco-School we had a massive litter problem, barren land, and wasteland. And now the parents actually remarked that it is such a wonderful feeling to walk into a clean and green school and they feel proud to send their children to what is now called an Eco-School and we are proudly flying our Eco-Schools green flag.

Teacher 8 gave her view of how she believed the Eco-Schools programme helped change the lives of some unruly learners into positive behaviours which were appreciated by the community. She said that:

> I have been working with a group of unruly learners and after 12 months, parents acknowledged a change in the learners' behaviour towards environment. Learners have become more determined and [are now] spending their time actually doing positive projects in and around the school. The school has imparted skills to learners because they have started their own gardens at home and [they are] doing clean up activities at home by themselves. Eco-Schools have made tremendous inroads with respect to skill development in the children and community. It has been a great change in attitude, mindset and not only in children or educators alone but also in the community in general.

Gardens have been one of the major success stories that have come out of the activities at the schools that I observed. Principal 3 explained how the learners have extended the garden project outside the school into the community in which learners have started their own gardens at their homes, and this has also encouraged their neighbours to become involved.

Mrs. X told me that some of the learners have started gardens at home and I suggested to her (Mrs. X) that we must arrange a visit to the children's homes to see what they are doing and to appreciate and acknowledge what they are doing. I am still waiting for her to make an arrangement, so that at least 2 or 3 teachers can go there and pay a visit to their home and acknowledge the work done by the kids (Principal 3).

Teacher 8 explained how the school gardens have developed skills not only in learners but community members who have imparted these skills in becoming entrepreneurial in their own way. She talked about how

> … Learners have become active in gardening and they speak about how they now started their own gardens at home, now their neighbours are now curious how they got gardens and it spread (teacher 8).

> … Because we did not just invite our learners to participate in gardening but we extended this to the community and now parents jumped at this chance. Because we are coming from a low and middle income sector and many of them needed skills training and they needed space in which to grow vegetables and when they were able to plant some of the crops and sell the crops that they could use for their own personal benefit (teacher 8).

Teacher 4 elaborates on the positive values and ethos that learners are gaining in their daily activities in which they start developing ownership of the school and the general environment in which they live:

> That sense of not just accepting your school if it is not a healthy learning environment, not accepting for what it is but to seeing that your action can make a *positive change* so that it ties to the learners self-esteem and can be positive about their school and if it is not what they want they can make it better. The learners feel the ownership of the entire environment and they also started to respect the environment. And unlike in the past when they showed no respect for the environment, nowadays they feel more *responsible* to the environment.

Teacher 4 explained how she had noticed the change in the learners that she has been working with in terms of reminding her of the lights and the water leakages in the toilets and over time she has noticed that her class has become cleaner due to the positive approach that the learners had towards the environment.

> Amongst the ones whom I have been working with, I have seen a *difference*; for instance, now they don't leave the light on in the class. They even remind me sometimes when I forget if it is break-time they tell me you must switch off your lights. 'Before you leave your class you cannot leave lights like that if there is nobody

in the room.' Even items of papers in my class [are no longer scattered around] because now … they know they can't drop papers on the floor. We got a bin where they can drop litter and they even tell me when there are leaky taps in the toilets even around the school. So they are more aware of these activities and are involved (teacher 4).

Teacher 2 explained how the environmental learning that took place at her school has helped learners to love their environment and that they now go to the extent of not drinking water with their hands but with cups or empty bottles that the school provided for them:

As I mentioned earlier on that we did water saving system and learners really have developed the love for the environment, especially when it comes to the water saving. In the past learners would come and waste water so much. Everyone would come to the tap, turn it on and drink water with the hands as such. When we have asked them to use water with the cups or bottles we even gave them some bottles free of charge. I had to collect some from town. They will even come to me and report that so and so is drinking water with hands on the tap and is wasting water.

This section has described how Eco-Schools results have made a difference to the quality of learning environment (the clean and green school) which is appreciated by learners and parents alike. It has also resulted in increased learner participation in, and commitment to environmental issues in the cases reported on here, and more activation and commitment to the school. It has also shown that parents and learners both seem to have an interest in benefits and results of the activities. The scope and context of these results was not determined by this study.

4.7.3   Awareness

The Eco-Schools pack suggests that teachers should create awareness amongst the learners about environmental issues through the Eco-Schools programme, so that they will know what is good for the environment and what can damage the environment easily.

From my observation of schools in the northern part of Namibia, it seems to be important for learners to learn more about conserving water like in the Oshana, because water can overflow in what is called *Efundja* or dongas during rainy season and it can also become scarce during the year. As a result the learners appreciate the little clean water that is available at the schools. This awareness of the importance of water has been emphasised in the Eco-Schools programme, both in terms of educating learners, but also in terms of educating the community. However, it is not only awareness of water scarcity that is necessary, but as

shown by the Eco-Schools data reported above, the schools can also teach new ideas on how to conserve water, for example about fixing leaking taps, stopping running water in the toilet and how to water trees sparingly.

> They are also [now] quite aware about leakage of taps and when they see someone wasting water they will alert you about it. Learners will even come to report that learner so and learner so is drinking water with the hands on the tap and is wasting water (Principal 1).

Node coordinator 1 pointed to the degree of ownership that the learners in the clubs take up in wanting to inform the others as well as their parents on the importance of conserving the natural habitat as a result of participation in the Eco-Schools clubs. She also underlined the effect membership has on their self-esteem. She said:

> When young children join the Eco-Schools club, they have that sense of belonging. I know that Eco-Schools clubs do positive things at the school and maybe children all wear green caps and so they have the benefits of self-esteem because they are part of the group that are making a difference.

Another example of increased awareness is in the area of littering. Littering was identified by all the sites that I visited as one of the most important aspects that the schools have identified as the immediate environmental health problem at the school that needs their attention. Teacher 5 explained how the learners have become aware of this issue:

> They also know that the school must be clean ……they *know* that there must not be papers around the school and no dumping. The school is surrounded by squatter camps and we used to have problems of dumping around the school. So the learners are quite aware about these environmental issues.

But one teacher (teacher 4) was not as positive about the degree of environmental awareness that the learners had.

> I have learned that people are not aware, especially the learners that we teach about environmental learning or issues and the risk around it. In fact they see the issues but they don't think that there is anything that they can do as individuals about the risk.

Evidence from the portfolio indicates that schools that are involved in the Eco-Schools project developed enough activities that helped learners to become aware of issues and problems that are significant in their local environments. What was not as evident was

awareness of wider environmental concerns such as climate change, which was only included in one of the programmes that I sampled.

4.7.4   Understanding and skills

The Eco-Schools programme also leads to improved understanding and skills in various areas, including how to manage and run a programme such as Eco-Schools. Teacher 4 shows how the Eco-Schools project encourages the teachers to include learners in the preparations and initial planning stages in order for them to feel part of the ultimate product. She explained how they planned the activities together with the learners, as shown below:

> When we started with the Eco-Schools project we draw up together with the learners an Environmental Policy for the school where we were looking at things like how will we look at environmental issues around our school and how will we incorporate environmental days in our school calendar. So, some of it we have incorporated in our school activities. Some of the activities e.g. School Arbour Day that we had last year, were incorporated into the school activities but we have not taken a huge step in terms of looking at environmental issues and the whole school approach.

One of the schools in Grahamstown West has really shown how its learners develop an understanding through what they are doing at school on global warming, and how they developed skills to share their knowledge with others through peer teaching practices. They invited professional speakers to address them on the important topic at certain times of the year. Teacher 7 explained that the issue on global warming has meant a lot to the learners but also explained how the learners' understanding was shown by their subsequent actions or remarks, in which she said:

> I have noticed that children had really enjoyed the presentation that we have done on the various days throughout the year when we have actually taught them about the Global Warming… and they had really *been concerned.* A lot of children who are not members of the Environmental club came and reported to us that they think we (teachers) have to switch the lights off in the school when we are going home. We must make sure that all the computers are turned off so that we are not wasting energy. Some of them have come and said they have been replacing the old bulbs and are using new energy saving bulbs at home. There is a slight increased awareness of litter and picking up litter but in general they are more knowledgeable about Global Warming and about their environment and things we can do to make the environment better.

As discussed in the section on Eco-Schools practices (section 4.2) and the section on the active roles that learners take up (section 4.3), learners are developing a range of other skills through participation in the Eco-Schools activities, including working in groups, communications and interactions with community members, planning, physical activities such as planting and caring for plants and animals, and making active contributions to whole school improvement. As discussed in sections 4.4 and 4.5, these skills could probably have been enhanced if further *understanding* of the topics could have been included in the various subjects or Learning Areas or disciplines, so that learners could develop multi-disciplinary understandings of the issues that they are addressing, and not just practical skills to address issues.

4.8   CONCLUDING SUMMARY

This chapter has provided a detailed overview of the Eco-Schools framework and its expectations as articulated in the Eco-Schools pack. It has also reported on the actual practices that are taking place in the Eco-Schools that were included in this study. It also reported on how the learners are involved in the Eco-Schools practices, and what role teachers take up in the Eco-Schools programme, and how they are supported by parents, community members, other organizations and principals, as well as other teachers. The chapter also raised issues associated with integration of Eco-Schools into the curriculum practices of the teachers, and indicated how node coordinators contribute to the programme. A key finding reported on in this chapter is the Eco-Schools framework's emphasis on community involvement and relevant environmental issues that need to be co-defined through auditing processes and through participatory decision making at the start of the programme. The data reported on in this chapter also showed that in all of the schools involved in the study, most of the Eco-Schools activities are primarily teacher directed and teacher supported, although various opportunities are created for active learner participation, but few activities are *learner initiated.*

The chapter also shows that one cannot expect a uniform modus of operandi within a broad programme like Eco-Schools because it is essentially a voluntary project within the school set up, and the interest and issues that are identified varied in the schools. This was also partly due to the different environmental conditions in which the schools are located. The chapter also showed that there are many factors associated with the Eco-Schools programme and its framework that either positively or negatively influences possibilities for learner centred education. These are discussed in the next chapter in more depth.

CHAPTER 5

DISCUSSION OF FINDINGS, RECOMMENDATIONS AND SUMMARY OF THE STUDY

The challenges of sustainability are too great, and implications for children and future generations, too severe for environmental educators to be timid about changing their own theories and practices (Fien, 2003: 3).

5.1 INTRODUCTION

The chapter draws on the data reported in Chapter 4 and the contextual and theoretical perspectives presented in Chapter 2, to discuss the findings in Chapter 4 in more depth. As with all chapters, the analysis in this chapter is also guided by the research question. 'How can the Eco-School framework enhance learner centred education?' To address this question, I reflect on the way in which learner centred education is practiced in the Eco-Schools programme, which reflects teachers and principals understanding of learner centred education in the Eco-Schools context.

In Chapter 3, I reported that a series of *analytic memos* were constructed from the data analysis and used as a guide to frame discussions in Chapter 4. The analysis and discussion of this chapter are guided by these *Analytic Statements*, each of which is discussed in detail with supporting evidence from the data, and reference to other research and theoretical perspectives, to deepen the discussion. The analytical statements therefore also present key findings of the study, which build on and interpret the findings presented in Chapter 4. They are used to guide the framing of this chapter:

- **Analytical Statement 1:** Eco-Schools practices contextualise learning at the school and community interface.

- **Analytical Statement 2**: The Eco-Schools framework encourages learners to acquire a range of valuable new skills and to take an active role in which they are empowered to contribute to a better environment, but it currently only benefits a few learners.

- **Analytical Statement 3**: The Eco-Schools framework and practices encourage positive values and ethos (such as care, empowerment, participation, and active learning) that also enhance learner centred education, but this requires involvement of principal and all teachers.

- **Analytical Statement 4:** The Eco-Schools framework encourages and motivates teachers to integrate more learner centred activities into their teaching, but this involves participation and support of the principal and other stakeholders in the school.

- **Analytical Statement 5**: The Eco-Schools practice is consistent with, and reinforces the reform policy and philosophy that underpinned South African and Namibian education reform, which is based on learner centred education.

I now discuss the findings in more depth using these analytical statements. I propose a key recommendation arising from each of the analytical statement discussions in this chapter, thus also presenting the key recommendations coming from this study.

The discussion of the analytical statements is followed by a brief summary of the study, and reflections on the research and its limitations, together with recommendations for further research, thus concluding the study.

5.2 DISCUSSION OF THE ANALYTICAL STATEMENTS AND RECOMMENDATIONS

5.2.1 Analytical statement 1

Eco-Schools practices contextualise learning at the school and community interface.

As indicated in Chapter 4, the Eco-Schools framework encourages the contextualization of learning in different ways. It promotes local environmental activities and practices that contribute to school and community environmental improvement, it encourages the involvement of communities in the planning of Eco-Schools activities, and it promotes a relationship between the community through encouraging schools to draw on, and share information and expertise with communities on local issues, in order to improve learning associated with the activities that are taking place in schools. The evidence of the way that the Eco-Schools encourages contextualization of learning was reported on in Chapter 4, mainly in

the descriptions of the Eco-Schools practices (see section 4.2), which included making school gardens, taking care of school grounds, tree planting, caring for livestock, managing resources in the school etc. The significance of this to learner centred education is noted by Van Harmelen, who argues that the interaction that takes place between the community and the learners shapes the socio-cultural and material environment through which learners internalise their experience and actively construct knowledge and understanding, thereby changing the community and the environment (van Harmelen, 1998).

In the context of the school gardening Eco-Schools practices, the interaction between the community and the learners created school gardens which allowed learners to develop experiences of, and construct knowledge of gardening practices. As a result the school environment was changed (there were new school gardens), and the learners and community could interact with each other on the issues of school food gardening. While there was some evidence of the school community interaction and associated learning processes in the Eco-Schools practices such as school gardens and live stock farming, not all Eco-Schools practices gave rise to school community interactions and learning in this way. The data also showed that the Eco-Schools pack suggests other kinds of practices that can strengthen school community relationships and the contextualization of learning, but these were not utilised fully by the schools, as shown in the observations and interview data. From a leaner centred perspective then, these opportunities for learning could be extended if teachers and learners and community members were to understand how such community school relationships can support learning.

In most cases local communities have a vast wealth of relevant knowledge and skills and as shown in this research, they can be invited as resource persons to schools and can help teachers and students learn about the local environment. The Eco-Schools practices and the learner-community-environment learning interactions acknowledge the contributions that are made by all stakeholders in the community towards contextualizing learning experiences in the local environment. As reported in Chapter 4, this was very popular amongst Eco-Schools in township and rural areas, since all the schools (except the one focusing on global warming) interpreted contextualization of learning in local activities and localized practices in the school grounds and immediate surroundings. In this context the school can be used as a learning resource to draw on natural resources for providing a local context for learning. Vandenbosch (n.d.: 2) explained that "natural resource management practices which can be used as media for contextualisation enable learners to cope more effectively with general subject matter while contributing to the skills formation process at the same time". His work

therefore underscores the value of contextualizing learning for the learning process. As such, the Eco-Schools framework provides a contextualising mechanism for strengthening the use of context in the learning process. As reported in Chapter 4, Principal 1 explained how learner's participation in Eco-Schools activities helped develops their skills for life. She particularly commented on the value of developing skills for gardening (food production) and care of the local environment, as she saw these as important skills for future parents.

Further evidence was available in this study on how Eco-Schools clubs promote the skills of teamwork since the learners, teachers and parents work together on activities, which developed the value of belonging. According to subject advisor from Namibia, this working together develops discipline in which partners respect each other's contributions to the broader spectrum.
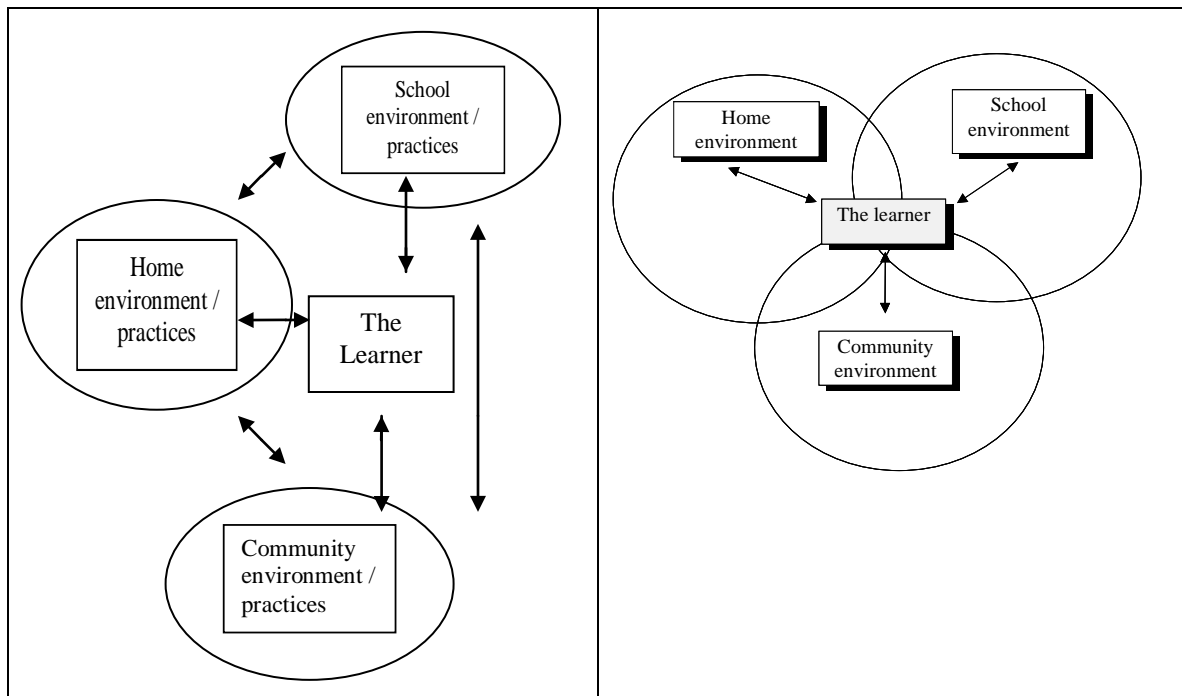
Figure 11: Linkages between school, home and community learning environments.
(Left: weakly linked; right: strongly linked). Adapted from Taylor and Mulhall (2001: 138)

The diagram above shows an ideal situation where the linkages between learning environments that influence learners and learning are strengthened and the interfaces between them are maximized, leading to more effective learning (Taylor and Mulhall, 2001).

Teachers, parents and their children and the community in general have a role to play in strengthening the linkages above in sharing information on issues of common interest about their own environment. As reported in Chapter 4, the Eco-Schools framework allows for such relationships to develop, and hence to influence the learning process, making learning more learner centred in the sense that it 'connects' the different learning environments of learners, and is also related to their life experiences through contextualisation.

Studies on learning environments by Taylor and Mulhall indicate that parents learn from their school-going children, and vice versa, and more so if the learning environments of the home, the school and the community are strong. They contend that these three learning environments are often rather weakly linked and the experiences gained in each, although individually of great value, are seldom drawn together and integrated in the learning process.

As shown in this study Eco-Schools practices, provide a framework that can bring the home, school and community environment closer together, and in doing this provide for a broad based concept of learner centred education, which values and takes account of the learners home and community environment. As indicated in the diagram above, the study undertaken by Vandenbosch (n.d.) shows that the three key learning environments for school-going children are the school, the home and the wider community, which helped to mould them into a full member of the particular community from which the child comes. As shown by Vandenbosch (ibid) and in Chapter 4, schools that are influenced by the Eco-Schools framework, where Eco-Schools practices are used in the contextualising of learning, learners can develop experiences of ecological and natural resources activities directly. They do this through being engaged in practices, and by observing events that unfold in their community. Such learner-environment learning interactions that also involve the community (i.e. learner-environment-community learning interactions) in which learners as well as young teachers learn from elderly people is often referred to as *inter-generational learning*, which has been said to be significant in preserving cultural and indigenous knowledge (ibid.). Eco-Schools practices can therefore function as experimental grounds for sustainable development in terms of improving both modern and local knowledge in learner-environment-community learning interactions and in Eco-Schools practices that contextualize learning. Principal 3 commented on the way that the Eco-Schools framework and practices allows learners to develop experience of inter-generational learning through observing parents gardening with different vegetables, they in turn teach other and sometimes teachers too (Principal 3).

Vandenbosch (n.d.) indicated that the Eco-Schools practices are not only educating learners on benefits of technologies and tools that they are using around the schools, but they are also encouraged to relate what is being taught to their home and community context and experiences. Such teaching and learning, he argues, enhances the quality and relevance of education in a given context. The study shows that the Eco-Schools framework has provided schools with a practical learning guide for learners to 'get involved' and to apply what they have learned in the classroom in actual field activities while sharing it with their families and communities. The concept Education for Sustainable Development, and the ESD approach to Eco-Schools (see section 2.7.2) is promoting a new role for schools, which sees a reciprocal relationship developing, in which schools learn from the community and the community learns from the schools (ENSI, 2004).

Young children grow up and experience life through interactions with the environment and through learning life skills and as a result they become experienced and able to cope with different aspects of life. Rogoff (1995) and other situated learning theorists (such as Daniels, 2001) working in a post-Vygotskian tradition explain how learners learn through participation in practices. This builds on earlier Piagetian and Vygotskian theories which proposed that activities were the basis of children's learning and the development of thinking (see section 2.6.3). As shown in section 4.2, Eco-Schools practices support learning in context through a range of Eco-Schools practices such as gardening, water conservation activities, waste management, clubs etc. This allows for diverse forms of participation in different practices and involves learning interactions between learners and learners, learners, teachers and the environment, learners and the environment, and learners, teachers, the environment and communities (see section 4.6).

Learning is, however, not only limited to local context, but also includes exploration of the wider environment (NEEP-GET, 2005), as shown by the Eco-Schools activities associated with climate change in this study (see section 4.3.2.3.), although this study also pointed out that few of the schools were taking up this option of thinking about context and learning. However, because Eco-Schools is not systemically integrated into the curriculum by all teachers, the possibilities for contextualising learning offered by Eco-Schools were not visible in most of the subject based curriculum outcomes in the schools observed, except in the classrooms of the enthusiastic teachers (as discussed in section 4.4), indicating that while the Eco-Schools framework allows for the contextualization of learning to enhance learner centred education, it does not automatically lead to the contextualization of learning in schools, and thus to new possibilities for enhancing learner centred education in the schools.

Key recommendation: Based on the evidence presented in this study, and this discussion I propose the following key recommendation from this study:

> *I recommend that Eco-Schools practices that emerge in response to local and global issues be encouraged in schools in ways that integrate the potential for contextualising learning so that greater links are made between the school, home and community learning environments of the learners to enhance learner centred education. I also recommend that this potential benefit be extended to others in the school, not only the enthusiastic teacher and learners associated with this teacher.*

5.2.2   Analytical Statement 2

The Eco-Schools framework encourages learners to acquire a range of valuable new skills and take an active role in which they are empowered to contribute to a better environment, but it currently only benefits a few learners.

With increased threats related to climate change and global warming it is important to equip the current generation to take action to protect natural resources for the benefit of future generations as reported in Chapter 2. Education plays an influential role in developing new knowledge, skills and values, and patterns of behavior, contributing to social and environmental change. Eco-Schools is a programme that has been acknowledged by the international community for its contribution to the welfare of the environment, and for its ability to engage learners in environmental improvement and learning at a local level (see section 2.4). It encourages learners to play an active role in the life of their school as well as empowering learners to take action through changes in their own lives while contributing to the community.

As described in Chapter 4, the Eco-Schools programme creates opportunities for learners to develop skills that can help them to play an active role in becoming independent citizens as well as providing them with tools that can empower them for the rest of their lives. Examples include where learners made decisions about what issues they wanted to address in the schools, where they participated in various practices to mitigate against the environmental degradation. This was confirmed by Principal 3 who indicated that Eco-Schools provides for skills that can be used at home in terms of gardening and cleaning their home environment, since they are going to be the future parents. As indicated by teacher 5, learners were empowered through their involvement in the Eco-Schools practice where they interviewed

their parents on the usage of dangerous household equipment such as petrol, gas and any possible flammable materials that are kept around in the house. These practices develop enquiry as well as awareness skills amongst the learners which not only help them to understand the dangers of keeping the flammable material around but also how to take care of it around the house. These skills will help to minimize the house fires that are common in our communities.

As reported in section 4.3., Eco-Schools practices also allowed learners to develop an active role in becoming self-sustainable when they managed to create self-employment or create opportunities for future employment. The skills that the learners acquire during the Eco-Schools practices where they are taught how to develop gardens at schools have reportedly enabled them to for example start their own nursery, vegetable or herbal garden at their parent's houses which has, in turn, helped them to contribute food to their households. In some instances learners developed well-established gardens at the schools in order to generate funds to sustain the project. It is also reported that some of the learners who are not members of the Eco-Schools club started to buy trees from the club to plant at their homes, which benefits only a few learners, since not all of the learners in the school have the opportunity to participate in the club.

Chapter 4 (see section 4.2), also indicates that the Eco-Schools framework encourages learners to take responsibility for environmental management of the school through which they can develop an increased sense of responsibility and awareness for their surroundings (Eco-Schools UK, 2007). Evidence provided shows that learners can take up leading roles at the school and feel more responsible for the upkeep and improvement of the physical surroundings in the school, as shown for example by the waste competition at one of the schools. The responsibility that learners take up in such a situation encourages them to be active members of the community.

It was evident in the study (see Chapter 4) that when learners participate in activities that are planned together with the teachers they can make positive contributions to education especially when the learner's contribution is acknowledged and valued by other stakeholders (see sections 4.2 and 4.3). As a result learners can contribute to positive change that develops self-esteem. Learners were also shown to ask for changes to improve the learning environment in some when they reported issues to the teachers (see section 4.3). The data also revealed that learners can participate positively in issues that have a good outcome for

themselves and the school especially when it comes to things like pollution and wasting of water.

Such activities are congruent with learner centred education which promotes democratic principles and participation in the learning process (as discussed in section 2.6). As mentioned in Chapter 2, policy changes after apartheid shifted towards learner centred education in order to democratize education. As shown by the data in this study, the Eco-Schools framework provides opportunities for such processes to take root in schools, and it can support learners to become creative, independent thinkers and problem solvers, which are key intentions of the policy changes in the two countries (see sections 2.4, 2.5 and 2.6). As discussed in section 2.6, the shift towards focusing on the learners in the learning process, is also associated with constructivist and humanist theories about individual learner's differences, cognitive styles and needs, and the need to pay greater attention to these in supporting better learning (Janse van Rensburg & Lotz-Sisitka 2000: 18).

As indicated in Chapter 4, however, the Eco-Schools programme in the schools that I have observed is mostly being implemented by the enthusiastic teachers, and it is mostly only learners who are participating in the Eco-Schools clubs that have sustained opportunities to acquire such skills. As discussed in section 4.4, one of the reasons for a lack of wider participation in the Eco-Schools programme is because the Eco-Schools practices are not fully integrated into the entire school curriculum. The result is that only a few learners are benefiting from these rich learning opportunities. The Namibian Education policy proposes that *all learners* should benefit from learner centred education, and the South African education policy similarly proposes that a learner centred education approach to environmental learning should be integral to all learning areas (see section 2.5). As shown above, the Eco-Schools framework has the potential to support this policy, but if it is not integrated across the entire school it will not reach all learners in the school.

Key recommendation: Based on this discussion and on the evidence presented in this study, I make the following key recommendation from this study:

> *I recommend that Eco-Schools practices that allow learners to become empowered to participate actively in problem solving investigations that have relevance in their lives and communities, and processes that empower them to contribute to their own self development and community development be strengthened and extended in the Eco-Schools framework, since these also enhance learner centred education. I also*

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recommend that these be more strongly integrated into the curriculum so that all learners in the school can benefit.

5.2.3 Analytical Statement 3

The Eco-Schools practices encourage positive values and ethics (such as care, participation, active learning) that also enhances learner centred education.

As discussed in Chapter 4 (see section 4.7) one of the outcomes of the Eco-Schools framework is the emergence of positive values, and an ethos of care and participation in the schools. Teacher 8 for example, observed that learners who are encouraged by the positive values and ethos of the school are becoming role models in which they also become leaders not only in their schools but also in the community through the holistic approach of the Eco-Schools programme. She also noted that this programme develops different aspects such as values, skills and knowledge that can help to enhance learner centred education as a progressive education system.

Evidence from the portfolios, as discussed in section 4.2, indicated that learners also had opportunities to participate in the committee that developed the environmental education policies at their respective schools. This indicates a democratic approach that recognises the contributions of the learners to governance and management of the school, as proposed by the ESD approach to Eco-Schools. Such opportunities empower learners in decision making processes, and regard them as responsible partners in fulfilling the objectives that they made during the drafting of the school policy. Being part of the drafting of the policy makes them feel duty-bound to the implementation of the process and they are also able to question and support the efforts made by the educators in terms of honouring the outcome of the policy and they are as accountable for the policy as the other stakeholders. This indicates that the Eco-Schools framework, through an emphasis on learner participation in decision making, has the potential to enhance learner centred education, but again the benefits of this are not widely shared in the school, and are confined to a few learners. And even though such opportunities exist for learner participation, data also showed that few Eco-Schools activities were actually *learner generated*, but that the programme was largely teacher led, which also confines such potential learning opportunities. However, van Harmelen (1998) and Capel et al. (1995) also caution against misinterpreting learner centred education, and argue that the teacher still has an important role to play in enabling meaningful learning opportunities.

The evidence in the study also shows that when learners are excited about issues that have direct implication for the environment they can react positively towards its outcomes. This was evident in the case of the issue on global warming which was taken up as a serious concern by learners in school 3, because they felt the direct effect that this issue has on the environment in which they live (as reported in Chapter 4). They really showed concern for issues on climate change, which they learned from their Eco-Schools practice, and they wanted to know more and were curious to know if global warming effects have started already and how long is it going take to be mitigated by people. The learners were interested in helping to reduce its effect on societies. The learners linked the recent crisis on energy shortages in the country to global warming in which they expressed their fear for the future. As a result they approached the teachers at their school and reminded them not to leave the electrical appliances such as computers on or on standby after work and urged others to switch off the lights in rooms that are not in use in order to save energy. As shown by this example, such involvement in issues provides possibilities for learners to construct their understanding and knowledge which eventually generates the autonomy of the learner. Such an exercise implies that the learners enhance their ability to think and act independently and considerably on an informed basis. This is also a central reason for promoting learner centred education activities in the educational reforms process (NIED, 2005; RSA, 2002).

The data at hand also showed that there has been positive mind change amongst some of the learners and teachers towards the environment, and the taking care of the environment since they started to participate in the Eco-Schools activities themselves. Teacher 6 argued that since they have been involved with the learners in the Eco-Schools activities, there has been great socialisation that happened between the children and the parents in events that took place inside and outside the school grounds. Through these kinds of involvements and learning interactions (see sections 4.2, 4.6 and 4.7), the potential exists for the school to become a place were positive changes can take place and were learners make a difference as they become actively involved in learning. Many schools that follow the programme have reported an improvement in the behaviour of learners as they develop an increased sense of belonging and pride within the school. The research has shown that the link of environmental concerns to the curriculum has increased the level of pupil engagement involvement in class participation during lessons (WESSA, Eco-Schools, 2007).

As seen above it is clear that the Eco-Schools framework has the potential to enhance better learning practices in which learners can actively participate in activities that help to develop positive values, ethics and learning outcomes, which is also supported by learner centred

education. Janse van Rensburg and Lotz-Sisitka (2000) argue that all learning involves active participation in the process of meaning making. As shown above, such active participation is supported by the Eco-Schools framework and can occur when learners are motivated, involved, and where dialogue among learners and between learners and educators and the community takes place as learners address and raise issues that need to be addressed through educational exploration. As indicated in the previous sections, while Eco-Schools has the potential to enhance learner centred education in this way, this benefit is not widely shared across the school, but is confined to clubs, and to the classrooms of the enthusiastic teacher.

Key recommendation: Based on the evidence presented in this study, and this discussion, I make the following recommendation:

> *I recommend that Eco-Schools practices that develop positive values, skills and an ethic of care, democracy and participation continue to be promoted through the Eco-Schools framework, since these appear to have potential to enhance learner centred education. Such practices appear to enhance learner participation and motivation in the learning process, which is an important aspect of learner centred education. I also recommend that more opportunities be sought for learners to initiate such practices, and that teachers continue to seek out and guide learners to participate in such activities, and that the benefits of these learning opportunities be extended to others in the school through wider curriculum integration and integration into the whole schools' activities.*

5.2.4   Analytical Statement 4

The Eco-Schools framework encourages and motivates teachers to integrate more learner centred activities into their teaching, but this involves participation and support of the principal and other stakeholders in the school.

As shown in Chapter 4 the Eco-Schools framework does encourage teachers to integrate new and interesting activities into their teaching that involve learners in outdoor activities and in research and investigation activities as well as peer to peer teaching, all of which enhance learner centred education as outlined in the discussion above. However, Chapter 4 also explains that integration of the Eco-Schools practices into the teaching and learning programme of the school requires various kinds of support (see section 4.5). In particular, it was noted that it is important to have a principal who is actively involved in the activities,

since the principal's support and influence plays an important role in motivating and moving the project forward.

In order to coordinate curriculum work clearly with the practical activities that Eco-Schools promote in the school programme it needs the efforts and support of the schools management to realise that the integration process can take place, since many of the Eco-Schools practices require additional resources such as fencing and gardening tools.

As discussed in Chapter 4, the Department of Education's support is also vital, for the Eco-Schools programme to become fully accepted and integrated into the whole school's curriculum activities. As shown from the discussions above, if this does not happen then the programme's possible contribution to learner centred education is only limited to a few learners in the school.

As discussed in the whole school approach and the ESD approach to Eco-Schools, the Eco-Schools programme is a holistic programme involving both curriculum change and school improvement. With an ESD focus it broadens to include community relations and wider issues of society. Thus, all stakeholders need to be involved in supporting Eco-Schools, if the learner centred education benefits outlined above are to be realised.

As shown in Chapter 4, Eco-Schools activities are not being fully integrated into the school curriculum framework, and are left mainly up to the enthusiastic teacher. Thus it would seem the further support and a better understanding of the learner centred education benefits of the Eco-Schools framework for different subjects is needed and this will need to be supported by principals and the Department of Education, as well as other stakeholders such as those who produce learning support materials for Eco-Schools. Currently the Eco-Schools pack seems to provide a thorough orientation to teachers, but this does not seem to be fully adopted by all the schools, and also seems to need the support of professional development programmes such as those offered by Rhodes University (described in section 4.5).

 As discussed in Chapter 4, support is required for integrating Eco-Schools activities into lesson plans, as only half of the teaching portfolio's studies in this research indicated that teachers are integrating Eco-Schools activities into their lesson planning. This disjuncture between teachers excitement and enthusiasm for the Eco-Schools programme and the evidence of full integration of the Eco-Schools programme into teaching and learning planning (as evident in the portfolio's) indicates that some teachers are excited about the

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participation in the Eco-Schools movement without really understanding the essence of what the Eco-Schools framework expects from them, particularly in terms of learner centred education and the curriculum.

The NEEP-GET project (NEEP-GET, 2005) indicated that active learning processes are more effective when integrated into the learning areas, and that this requires developing teachers knowledge of environmental issues and pedagogical issues (i.e. active learning approaches and learner centred education). The SEEN project also found that there was a need to support teachers to integrate environmental learning activities in the curriculum within a whole school understanding of the issues.

Vandenbosch (n.d.: 6) indicates that teachers "… must strive to make learner centred education interesting and relevant through the use of appropriate teaching and learning methods and through interpretation of the prescribed curriculum in relation to local context". This implies that teachers need to develop a clear link between what is taught in the classroom and what is happening in the community and environment. Therefore they need to know how to assess learners' understanding, both prior to, and during the lessons about the issue at hand.

As teachers they need to know how to help learners to increase their scope of understanding. As shown in this study very little of this kind of lesson-based assessment was taking place in the Eco-Schools activities in the schools, even where lesson plans were being used to integrate Eco-Schools practices into the curriculum. This shows that teachers require additional support to understand learner centred education forms of assessment, a finding that is echoed across the Learning for Sustainability Project, the NEEP-GET project, the Life Sciences Project, the SEEN project, and in individual research projects undertaken in Namibia (Hoabes, 2004) and South Africa (Mvula Jamela, 2007) (see section 2.5).

These projects, along with the findings from this study, indicate that for teachers to implement the Eco-Schools activities and other environmental education activities into their teaching they need to become more democratic themselves, reflexive and responsive to the ever-changing issues and risks that arise in the school community and in the field of environmental education. They need to understand how the Eco-Schools practices compliment the work that the educational policies expect from them in both Namibia and South Africa, and how environmental education can strengthen and support implementation of these policies.

Key recommendation:
Based on the evidence presented in this study, and this discussion, I make the following key recommendation:

> *I recommend that support systems to strengthen understandings of, and the practical integration of learner centred Eco-Schools activities into the school curriculum and whole school programme are developed and provided to teachers by principals, the Department of Education and by teacher educators.*

5.2.5   Analytical Statement 5

The Eco-Schools framework is consistent with and reinforces the reform policy that underpinned South African and Namibian education reform, which is based on learner centred education. .

Evidence presented in Chapter 4, and the discussions provided in sections 5.2.1 – 5.2.4 above, indicate that the Eco-Schools framework is enabling of learner centred education. The discussion of the history of environmental education in South Africa and Namibia in section 2.5 indicates that much effort has gone into finding ways of developing environmental education practice so that it enhances and is aligned with new policy developments in both countries. It is from this history of policy alignment and synergies between social constructivist learning influencing environmental education practice and the educational reform initiatives in the two countries that the Eco-Schools programme developed. However, as shown in the discussions on the Eco-School programme in other countries, the learner centred education underpinnings of the programme are not only confined to South Africa and Namibia, but reflect a wider international trend towards supporting learner centred education in democracies. From this historical and contextual review, it was possible therefore to establish the synergies between the Eco-Schools theoretical underpinnings, and the theoretical underpinnings of the educational reforms in South Africa and Namibia.

However, the data in Chapter 4 (and discussed above) also showed that *in practice* these synergies are also possible, but are not fully developed in the schools, since it is mostly enthusiastic teachers and a few learners that are involved. While the Eco-Schools programme promotes many aspects of learner centred education such as contextualisation of learning, participation of learners in the learning process and in decision making, and the development of positive learning outcomes that are meaningful to learners (as discussed above), the full

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implications of the whole school approach and the ESD approach to Eco-Schools have not been realised in the schools that I observed, despite the synergies with the educational policy frameworks in the two countries.

The research has also shown that the whole school approach and education for sustainable development which is encouraged by the Eco-Schools framework, has brought new understanding and innovations to the reform process and has the potential to strengthen current interpretations of educational policy and philosophy, since researchers such as Hoabes (2004) and Mvula Jamela (2007) and others have also shown that current interpretations of the educational policies are still not fully developed (as was also shown in the Learning for Sustainability, NEEP-GET, SEEN and Life Sciences research, see section 2.5).

The two models (whole school and ESD) (see section 2.7) raise the bar in terms of learner centred education, since they don't only focus on the cognitive development of the learner, but provide a meaningful and broader context for learning, integrating school-community issues, and social, environmental and economic dimensions of society. These models also acknowledge the importance of shaping up the administrative processes at school level to support the promotion of whole school approaches and ESD approaches that embrace diverse issues such as HIV/AIDS, poverty, and different dynamic and socio-ecological and socio-economic issues.

The Eco-Schools framework further extends learner centred education concepts to include democratisation processes that involve parents, learners and teachers in education processes and in educational management, which is not a familiar practice in South African and Namibian schools due to their authoritarian histories. It therefore requires a new sociology in the school that is supportive of and that contributes to learner centred education.

From the interviews and observations that were done in this study it was evident that this aspect of the Eco-Schools programme was acknowledged and valued by stakeholders. Such practices towards democratization of the school management and that encourage participation of parents in the schools is supported by other educational policies on school governance at school level in the two countries. The Eco-Schools programme therefore also contributes to learner centred education by considering the social participation of the learners' community members in the life of the school.

The 1995 White Paper on Education and Training (SA) emphasis the need for an interdisciplinary, integrated and active approach to environmental education, at all levels and phases of education and training. The Eco-Schools framework also supports this integrated, active learning approach, as discussed in Chapter 4 and in the analytical statements above, thus further reinforcing and supporting the reform policy of education.

As described in Chapter 2, active learning is used by the Department of Education and environmental education projects as a means of strengthening learner centred education (see discussions on the NEEP-GET, Life Sciences and SEEN projects in section 2.5). Evidence of active learning in the study is presented in Chapter 4 (section 4.2), and is the potential for the integration of these activities into multiple learning areas and subjects, although it was reported that this potential is not maximised in the Eco-Schools programme as yet.

Mvula Jamela (2007) identified key elements that embrace and reflect constructivist and learner centred theory in the Department of Education policies in South Africa (RSA, 2002). I use these to provide a short reflective summary of how the Eco-Schools framework is aligned with educational policy that is based on learner centred education:

- *Teachers should be the designers of learning programmes*: The Eco-Schools framework allows teachers to identify issues of relevance in the school community context that can be incorporated into their lesson plans and learning programmes. As discussed in section 5.2.1, this feature of the Eco-Schools framework (contextualised learning) enhances learner centred education. It was noted, however, that teachers appear to require more support for doing this work.

- *Learners should be involved in active learning approaches that promote enquiry:* As reported in section 4.2 and above, the Eco-Schools framework and practices promote learners who are critical of their environment and who are willing to consult parents and community in focussing on problem solving initiatives through team work and participatory learning processes.

- *Contextualising of learning into the community:* Both policies in South Africa and Namibia emphasise the importance of building stronger relationships with the communities in which the school is located, in order to maximize and strengthen teaching and learning. This is a key focus of the Eco-Schools framework as reported above and in Chapter 4.

- *Apply active approaches to improve the school environment towards a healthy and poverty reduction environment learning.* The Eco-Schools framework, as shown in Chapter 4 and in the discussions above, emphasises the importance of creating a healthy environment in which all learners attend school and that schooling empowers them to respond to poverty challenges, which is synergistic with the poverty reduction strategies that both the South African and Namibian government has promoted within their environmental policies, as described in Chapter 2.

Additionally, van Harmelen (2005) argues that the Eco-Schools activities acknowledge the learners interest, which the social constructivist learning theory suggests occurs through both knowing and accepting learners' prior knowledge. This is significant to learner centred education since it (the Eco-Schools framework), provides for learning and teaching which begins by providing an environment and opportunities for the learners to articulate their existing knowledge.

Vygotsky (1978) justified the importance of the socially meaningful activity as the basis for human learning (Kozulin, 2007) and that it is the integration of social with personal factors that produce learning through cognition processes that involve language use and cultural understandings which emerge from existing socio-cultural contexts and institutions (ibid). This social constructivist philosophy is an orientation on which the reform processes in both countries are based, which has informed the education in both countries. However, as indicated by Taylor and Vinjevold (1999, cited in Janse van Rensburg & Lotz-Sisitka, 2000) in the opening citation of Chapter 2, this theory of learning is one of the most difficult to implement. As indicated in this study there is a need to build teachers' understandings of the synergies between the Eco-Schools framework and learner centred tenets of educational policy reform.

Key recommendation: Based on the evidence presented in this study, and the discussion above, I therefore make the following key recommendation:

> *There is a need to strengthen teachers' knowledge of learner centred education, and how to plan for and implement it using the Eco-Schools framework. A better understanding of the synergies between the two needs to be developed.*

5.3   SUMMARY OF THE STUDY

This study set out to investigate how the Eco-Schools framework can enhance learner centred education. As indicated in Chapter 1 and 2 the Eco-Schools programme is an international framework that emerged out of an international environmental education history that aims to involve democratic participation in resolving environmental issues at a local level. The programme has been popular, and has been adapted in a number of countries, including SADC countries. In South Africa and Namibia the Eco-Schools programme has been supported by efforts to integrate environmental education into the formal education system. Both the Eco-Schools programme, and the educational reform initiatives in both countries support a learner centred approach to education, but no research has been done in either country to establish *how* the Eco-Schools framework enhances learner centred education.

Through investigating Eco-Schools practices, learners roles, teachers roles, learning interactions, support for Eco-Schools and Eco-Schools outcomes in the context of seven case study schools (3 in Namibia and 4 in South Africa) using interviews, observations and document analysis, I was able to establish what the Eco-Schools Framework expects of teachers, learners, schools and their communities, and what practices are promoted by Eco-Schools. I was also able to establish how these intentions play out in the schools. Key findings were that the Eco-Schools framework can enhance learner centred education in various ways, such as by encouraging contextualization of learning and community involvement, active learner participation, learner empowerment, and through positive values and ethics and participation in issues that schools and communities find relevant in the context of the Eco-Schools Framework.

The study also found, however, that the potential of Eco-Schools for enhancing learner centred education was not being maximized due to poor integration of the activities into the curriculum, and due to an emphasis on assigning Eco-Schools activities to the enthusiastic teacher. The result of this is that few learners are benefitting from the potential of that the Eco-Schools framework holds for enhancing learner centred education. The study also found that most of the Eco-Schools practices and activities were teacher initiated, and while there was some evidence of learners beginning to initiate activities, learner initiated processes were not a major focus, even though provision was made for learners to participate in the activities and the Eco-Schools structures.

On the whole, however, the study indicates that there is a strong synergy between the Eco-Schools framework and learner centred education intentions in the educational reform policies. These include: 1) Eco-Schools and learner centred education have common theoretical origins regarding learning (most notably social contructivist learning theory); 2) they have overlapping core pedagogies, e.g. active learning, a focus on the learner and his/her construction of knowledge, the participation of learners in the social construction of meaning; 3) The Eco-Schools framework brings values, community involvement and a whole school and ESD focus to the fore in learner centred education policy discussions, since it focuses on developing and promoting a school culture of care, community involvement, taking responsibility and action-based learning. This whole school culture approach creates a fertile environment for synergies to develop between the Eco-Schools pedagogic practices and those of learner centred education across different subjects.

Despite this, the study also found that the synergies between the Eco-Schools framework and the educational reform policies were not well understood, and such understanding can therefore be extended and enhanced. The study also found that the Eco-Schools framework adds more emphasis to certain aspects of learner centred education, most notably its emphasis on school-community links, and whole school development with a focus on the wider context of learning, as proposed by the two Eco-Schools models.

Thus, in the final analysis, a key finding of this study is that the Eco-Schools framework creates a special *climate* of learning and caring within the school and its benefits extend beyond quality environmental learning by teachers and students but also enhances and reinforces learner centred education across subjects, and in the community, building the linkages across learners different learning environments, as explained by Taylor and Mullhal (2001). While this potential exists, there appears to be much room for maximizing and extending this potential within the Eco-Schools programme in South Africa and in Namibia.

5.4   REFLECTIONS ON THE STUDY AND RECOMMENDATIONS FOR FURTHER RESEARCH

5.4.1   Lessons learned

As a teacher educator, it is my duty to help teachers in the areas where they experience difficulties. From the readings I engaged with for this study and through interviewing teachers and through observations and analysis of documents relevant to this study, I have learned that

as teacher educators we have to narrow the gap between student teachers theoretical understanding and practical understanding of learner centred approaches to teaching. I also learned that learner centred education is a broad concept that is not well understood by many teachers and needs still more attention at the professional development level, as well as better support for implementation of the reform policy at school level. I also learned, through an analysis of international Eco-School programmes that policy developments in South Africa and Namibia have an international context, and through working in the two countries, I learned that applications of such policies and programmes such as Eco-Schools are contextually and historically shaped.

5.4.2   The potential value of this study

Environmental education and learner centred education are two central components of the Namibian and South African education reform initiatives. Research into the potential to improve either has obvious value. As reported in Chapter 2, some research is taking place to consider the relationship between learner centred education policies and environmental education, but no research has, to date, been undertaken to investigate *how* the Eco-Schools framework enhances learner centred education. This is despite the rapid growth of the Eco-Schools programme where, within a 5 year period the programme in South Africa has grown from 50 schools to over 800 schools, indicating significant and rapid growth. In a programme this size, and given the significance of integrating it into the education systems of the countries for it to be sustainable and effective, such research has potential value to inform and improve the implementation of the programme.

5.4.3   Limitations of the study

The limitations of the study lie in the small number of schools that I was able to work with. The study cannot therefore claim to be representative of the wider Eco-Schools programme, or of the practices of the many other schools participating in the Eco-Schools programme. The study was, however, not intended to provide comparative data, or predictive data, or generalisable results, but rather insights into the way in which the Eco-Schools framework can enhance learner centred education. Recommendations made from the study are therefore limited to the 7 schools where the research took place, but may have wider value through a process of 'fuzzy generalisation' that Bassey (1999) referred to, which means that the recommendations can be tentatively viewed and considered in other contexts, with due regard

to the need for contextualized examination of their implications in relation to the Eco-Schools practices taking place in other schools.

As such, the study only provides insights into Eco-School practices and learner centred education links in 3 schools in Namibia which piloted the Eco-Schools framework in rural schools where there were limited resources to make the programme possible. This obviously affected and influenced the progress and effects of the Eco-Schools in the Namibian schools that were included in the study. The results and data from these three schools has value and provides important insights but the inclusion of some urban and or better resources schools in the study may well have produced a different or more comprehensive picture with additional insights. Of the 4 schools in South Africa, 3 were township schools and 1 was a well resourced private school. Similar to the Namibian situation if more and different schools were included, different insights would have been obtained.

The study therefore only provides starting points for understanding how Eco-Schools can potentially enhance learner centred education in schools, and ideally similar investigations need to be undertaken in every single school involved in the study, due to the contextual and historical differences that exist between schools. For this study, I did not choose a representative sample, but rather used convenience sampling, which also affected the outcomes and insights of the study, but since the purpose was to gain in-depth insight into the research context, this probably did not affect the study's outcomes too much, except that different insights would have been gained if a different set of schools had been selected as indicated above.

5.4.4   Tentative suggestions for further research

From the data gathered and the interpretations generated in this study, I recommend the following as aspects for further research:

- Undertaking similar research with a wider sample of schools, as indicated above.

- The findings in Chapter 4 indicate that schools are not making use of the Eco-Schools pack fully and are therefore not fully oriented to the full potential of the Eco-Schools framework. It would therefore be interesting to investigate how teachers can strengthen the use of the Eco-Schools pack in the schools, and how this will influence learner centred educational practices.

- As indicated in Chapter 4 and in the discussions above, teachers are also not fully integrating the Eco-Schools framework into the curriculum. Further research can be done on how more comprehensive integration of the Eco-Schools framework into the curriculum in a number of learning areas would enhance learner centred education in the school.

- Another finding of the study pointed to the lack of learner initiated Eco-Schools practices. Further investigations into the significance of learner initiated Eco-Schools practices in relation to learner centred education theory and policy can be undertaken.

5.5   CONCLUDING SUMMARY

This chapter provided a more in-depth interpretation of the data presented in Chapter 4 using some of the theoretical and contextual perspectives presented in Chapter 2. The chapter also made key recommendations, based on the analytical statements, associated evidence and discussions, but also noted that these recommendations can only be seen to be relevant to the schools that were involved in the study, due to contextual differences between schools, and because the study did not intend to be predictive or to offer broad-based generalisable results due to its interpretive and case study based design.

The chapter then included a reflection on the study, outlining lessons learned, the value and limitations of the study, and some recommendations for further research.

This study raises some possibilities for improving the way in which the Eco-Schools framework can enhance learner centred education. As mentioned before, the main focus of this study was to investigate how the Eco-Schools framework can enhance learner centred education. It was not an evaluative study, and therefore merely sought in-depth insight into the question. The main value of the study is therefore to provide insight into this question which has not been researched before. The insights can be taken further through additional research, and through considering the findings in relation to ongoing Eco-Schools practices.

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APPENDICES

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APPENDIX 1: REQUEST FOR ACCESS TO CONDUCT A CASE STUDY AT THE SCHOOL

Rhodes University
Department of Education
Environmental and Sustainability Unit
Grahamstown
South Africa
15 July 2007

The Principle of Olukolo Junior Secondary School
Oshikoto Region
Namibia

Re: Request for access to conduct a case study at the school

Olukonda Combine School was one of the schools that were part of the Support Environmental Education of Namibia (SEEN) project that was piloted from 2001-20005. The purpose of the project was to promote the environmental education activities in Namibian schools, but it came to an end after the donor-funding stopped.

I am a Namibian student who is studying at the Rhodes University in South Africa and is interested in the activities that SEEN project has done in particular on the Eco-Schools project.

I therefore, would like to use this opportunity to request permission from the principal to conduct interviews with some members of staff at the institution so as to collect data for my research report that I am supposed to write in order to complete my M.Ed. thesis required by the institution stated above.

My attention will focus on the following people
1. The principal
2. Teacher or Teachers
3. Two members of the community who were involved
4. A learner or learners who were involved

I would like to do this research from the 30 July -03 August 2007 at your school on your convenient time and place.

Yours sincerely,

…………………….
Rudolph Haingura

APPENDIX 2: SAMPLE INTERIEW SCHEDULE FOR LEARNERS

For the Schools in South Africa and Namibia
Eco-Schools
Interview questions for **Learners**

Background information

1. What has been your understanding of the concept Eco-Schools?
   …………………………………………………………………………………
   ………………………………………………………………………………
2. What have you learned from your involvement in Eco-Schools activities?
   …………………………………………………………………………………
   ………………………………………………………………………………
3. What do you do in contributing to the school activities when it comes to environmental education learning?...
   ....

4. What activities was your school involved with in terms of beautification of the school grounds? ………………………………………………………………………
   …………………………………………………………………………………
5. What value did you find in these activities that happened in your school?
   …………………………………………………………………………………
                          Impact of EE/ Eco-Schools
6. How is environmental education taught in your school?
   ………………………………………………….
   …………………………………………………………………………………
7. How does EE/ES support you in understanding and sustaining your daily life?
   …………………………………………………………………………………
   …………………………………………………………………………………
8. Does EE/ES help learners to come up with new solutions or alternatives to learning, if so how? …………………………………………………………...
   …………………………………………………………………………………
9. What did the school look like and in your opinion what has EE/ES framework contributed to the value of the school? ………………………………………..
   …………………………………………………………………………………

                          General remarks
10. Any comments about how to take care of the school grounds?
    …………………………………………………………………………………
    ………………………………………………………………………………

APPENDIX 3: SAMPLE INTERVIEW SCHEDULE FOR TEACHERS

To the Schools in South Africa and Namibia
Eco-Schools
Interview questions for **Teachers**

1. What has been your understanding/ experience of working with teachers on Eco-Schools or environmental education programmes?
………………………………………………………

2. When did you start with the ES programme at your school and for how long did the programme run? ……………………………………………………………..
………………………………………………………………………………..
3. What have you learned from your involvement in Eco-Schools/ environmental education activities?
…………………………………………………………………………………
…………………………………………………………………………………

4. What has been significant about teachers undertaking ES activities?
………………………………………………………………………….…
………………………………………………………………………………

5. What activities was your school involved with in terms of the beautification of the school grounds? …………………………………………………………………
…………………………………………………………………………………

6. In what ways do ES activities relate to teachers environmental concerns?
…………………………………………………………………………………
………………………………………………………………………………

7. What value did you find in these activities that happened in your school?
…………………………………………………………………………………
………………………………………………………………………………

8. How did the local community understand the work that was done at the school in the form of working in the gardens? ………………………………………………….
………………………………………………………………………………

Impact of EE/ Eco-Schools

9. How is environmental education taught in your school?
   ………………………………………………….
10.
11. How does EE/ES support you in understanding and sustaining the learners in their daily life (Self esteem, Independent thinking, Participation)? ……………………..
   …………………………………………………………………………………

12. From your experience, does EE/ES help learners to come up with new solutions or alternatives to learning, if so how? …………………………………………………...
   …………………………………………………………………………………

13. What does the school look like and in your opinion what has EE/ES framework contributed to the value of the school? …………………………………………..
   …………………………………………………………………………………

General remarks

14. Any comments about how to take care of the school grounds?
   ……………………………………………………………………………………………
   …………………………………………………………………………………

APPENDIX 4: INTERVIEW WITH PRINCIPAL 1, NAMIBIA

Research data from the Namibian Site

Interview No 1
Principal 1

Good afternoon, I am currently at Olukolo J.P.S. where I am sitting with the principal of the school and talking about the ES activities, Thank you very much
It was very obvious especially from the learners who are members of the environmental education club who have started to buy trees from the club and also there are those who are not members of the club and the same learners buy trees for their families. I can give you names of learners who are now growing a small type of nursery at their houses and there are also and there are also planting trees at their houses. Some of this learners as I said already there are now planting trees at their houses and also getting some little income from their own project which their get from home.

Meme, at what extend was the parents involved in the ES activities at the school? We have invited the parents to come to celebrate with us during environmental days, it have created a very good cooperation between the school and parents after coming here and looking to what the learners were doing and the improvement and the change in the learners mind regarding the Environmental issues. After buying trees from our school the cooperation grow wider. Before this coming together happened there were very much vandalism like breakage from the community but after involving the community they realised that they became part of school and that there is no need for vandalising anymore since they (parents) became part of the school.

What activities were done at the school especially in the classroom in order to learn about environmental education? The integration of the Environmental issues in the lessons have played a great role e.g. in life science we have done the hand washing which was developing a culture of hand washing was used after you have visited the toiled and when the programme of Polio campaign came their understood the linkage and it was easy for them to understand it and which was easy to prevent themselves against polio. In The integration of the Environmental issues in the lessons have played a great role e.g. in life science we have done the hand washing which was developing a culture of hand washing was used after you have visited the toiled. **Thank you**

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What have you learner out of your involvement in the ES activities at your school? I have learned how to sustain and conserve nature e.g. the plants as you can see in our school grounds. There are a lot of plants young and some are still growing, we are planting more tree because now we know the importance of planting trees and I have also learned that Namibia is one of the most drier countries and that water is very scares commodity and we have to learn to conserve water like in the oshana's, dams and tape water, we don't need to waist water and now we know how to use the water when you are watering trees. We have also learned how to keep the school environment ground very clean and that's why you see our school grounds are very clean. I have also learned that the learners have grown the respect for the environment very well and the trees and using water effectively. The learners have develop independent thinking very well that's why you see as I said already that they implementing all information that their get from school and implementing it in their houses and community.

What do you want to see about ES lastly, do you want to see this project coming back and way? Of course I want to see the ES project coming back because when we are involved in projects of this type it will encourage us to think about new ideas and new activities and to look at new areas, which we need to improve at our schools. It also help us to involve more parents and teachers like when we were busy before with the ES project, like now that the project has stopped it is only the environmental education club members who are really involved in the issues like keeping the school, of cause we all keep the school clean every week but we are not really involved in when we were busy with the ES project. We really want to see the project coming back it will keep us busy and it will help us it helped us to think on new areas and new ideas which are innovative for the school and its community. Thank you very much for taking your precious time.

APPENDIX 5: INTERVIEW WITH NODE CO-ORDINATOR 1

Interview No. 16

Node Coordinator 1

Interview in Cape Town during the review workshop on the Eco-Schools programme. Rudolph Tino Haingura interviewing Mrs. Rhian Berning on the topic of using Eco-Schools as a framework to promote learner centred education in current education.

Thank you, for the opportunity having in talking to you about ES and in this interview I would love to you to give me your personal opinion and understanding of ES in general in the context of learning basically. Maybe to start I want you to tell me who you are basically and what are the ES*?* Ok, so my name is Rhian Berning I am the regional coordinator of the ES in the Western Cape and so I support the node coordinators and the schools and also schools who do node coordinators not support. I provide support role to both node coordinators schools working directly with schools and schools that not been supported by node coordinators.

Mm, Rhian what has been your experience of working with learners in the ES? Let us start with learners and with teachers? Ok, I don't work mm as close with learners as the node coordinators do (*first interruption on the door*), but my experience with working with learners, that I do is that their become excited and enjoy playing an active role in ES's. I hope that I answer your question. **And with teachers**? With teachers, I found working with teachers you are working with champions, you are working with teachers who are already passionate about environment and passionate about make positive change about their school and so they are very eager to use ES programme to continue to work with what they are doing. But with new schools and new teachers they have that feeling of ES is going to mean more work for them so once their are in the programme and wants their become excited about than it is very positive feedback from the teachers.

Ok, can you think of some examples of how ES learning compliment the development of the following skills, self-esteem of the learners? **Yes, I can think of examples, where schools are doing gardening project and especially for learners who are not so (end of the cassette) so learners who are not as good in the classroom perhaps using the outdoor classroom for learning and can see the practical benefits of what they are doing if their growing vegetables and can actually see the fruits of their labour and than their can find their self-esteem and achievement and also on the school as a whole find self-esteem,**

than their make a positive difference of their school and also with ES clubs, when children joining the ES clubs, their have that sense of belonging. I know that ES clubs do positive things at the school and maybe children all wear green caps and so their have the benefits of self-esteem because they are part of the group that are making a difference at their school.

What are your thinking or view about independent thinking? **Well, mm because a lot of ideas of using outdoor classroom, there is a lot of practical having you know having make practical solutions, I am goner use the example of the vegetable gardens again on the best place to put the vegetable garden, so mm, I would think that it would encouraging independent thinking.**

Ok and now, this other dimension of positive minded approach that comes out of the ES? **Yes, I think that it would be also be linked what I said to self-esteem that, that sense of not just accepting your school if it is not a healthy learning environment, not accepting for what it is but to seeing that your action can make a positive change so that it ties to the learners self-esteem and can be positive about their school and if it is not what they want they can make it better.**

And about the sustainable development? **Yes, that is the bigger picture, mm so, but on a smaller scale learners are able to see that, if they are not happy with the global situation and with what's happening they become very aware of things like pollution and wasting of water. Their can again make a difference at their school and that all ties to sustainable development so that there is a future for their children's children**. And for the generations to come? **Yes.**

Now, do ES help children to come up with new solutions or alternatives to learning, if so how? **Well because I think it is based on very much on active learning which is an OBE, which is an Out Come Based education in the new curriculum. Mm, I think it does give children opportunities and learners opportunities, yes to become active or become up with solutions, yes, I would say it does and also it encourages learners to do that because they are, the whole point is that their recognised what the weakness of the school are and try to come up with solutions to address this weakness and that might be again as I said that they waste to much water or use too much electricity, so their come up with solutions and create a way that can do that because their might not have a lot of resources to, to achieve those solutions.**

Now what do you think, how does ES support and sustain learners in their daily life, them being involve in the ES how does it support and sustain them in their daily life? **I think it has a knock on the fact in that, what their learn in the school, I mean seeing at schools where, if their learning the skills of saving water or vegetable gardening at their schools that their might take the skills back home and so spreading it through the community, so at a school in Michellsplain in Cape Town (CT) where the learners are very active in the gardening their speak about how their now started their own gardens at home, now their neighbours are now curios how their got gardens and it spread and also their bring their grey water from washing dishes, their bring it to school everyday to water their plants because water is often an issue in CT. So there is that transfer between the home and the school and than from their home and what their are learning past it on into the community.** It is interesting**.**

Now, how does ES learning emphasis the perspective of the future? **Yes and that the idea of sustainability as well as mm, I think because their get the sense that there are problems that need to be solved and you know and things like global warming and that it is not so much in the future anymore it is about the present and having to make decisions now that are going to influence what is going to happened in the future. Like if thinking about another school that are more resourced school where they are focussed on what is happening with the Polar bears because of global warming ice keep shrinking. The Polar bear is now drowning and relate it back to their daily life of trying to cut down on the carbon omissions by how much they use their big vehicles to drive to school, so that is another example of they are thinking about the future and what they can do now to make a difference.** What are their doing now, are their walking to school**? Yes their try to think of other alternatives maybe during car pulling so that they all get left in the same car or solutions to that nature.**

Now think of schools that you have worked with sometimes, let's say when the school started, how was the school look like for example and in your opinion what is ES contributed to change the ethos of the school? What do you think; you just imagine maybe what the school was before ES an example of the school maybe?

Yes, I just would like to make that distinction between ES's does not go into there and change the schools, the schools change their made the choice and their made the decision to change themselves. Their join ES's as voluntary and ES give them the framework to

make changes to their schools, but their are the ones that make the change so ES cannot take credit for what the schools have achieved and many schools have started with the programme and **see the value of being recognised by ES by getting the international green flag** but they do the **work themselves and incredible transformation here in CT where very, very sandy soils were you know the schools are like deserts and being transformed into green learning and outdoor learning environment** and you can see that on the physical level there are definitive out of evidence before and after pictures definitely.

Probably on a personal note what value have you learned out of your involvement with the ES programme? **I learned that one person, one passionate person, that passionate teacher can change the face of the school. And this passionate teacher who take on the need for environmental education are completely inspirational what their can achieve through inspiring learners and inspiring their colleagues, makes you feel that there is a future for us all. So that's what I have learned that I have been inspired by the passion of the teacher.** Can you give me an example of that teacher if you can remember**? I will say Westfull primary in the Michellsplain where a one teacher saw the value of, basically that is one teacher that has inspired the whole staff and her principal and another principal has taken it on and the school has completely transformed, so there is an example how one teacher can make a differences to turn the face of the school.**

Any comment that you want to make relating to ES that we did or did not discussed? **Yes, that I think the value in ES is that it respectful framework that can be used across from rural to urban to very privilege to under resource schools and that the other value is that schools are ready doing amazing things but this programme give them the recognition for things that they are doing, so by recognizing what schools are achieving the value** of what has been there or they are just recognised now? **Yes what they are already doing and their future plans if they are capable of doing but is recognising the value of what they are doing. So than the schools have the sense of they are part of the bigger family in South Africa and also in Africa and internationally, that are all working towards the same sustainable goals, for a better future for everyone** so it takes time to get the sense of a bigger family. Ok
Thank you very much; I appreciate your willingness to give me an fruitful interview, think you have such a good personality in working with you, since this is my very first interview for my research.

In between the interview we were disturbed by Daksha who was concerned with the time of leaving Tokai back to Grahamstown. I could not be able to ask all the questions that I have prepared and that I think I could be able to probe further.

This interview was done at the very last minute before we were about to travel back to Grahamstown and it was done in such a strenuous period of time. Since I was not be able to interview all people I intended I have to acknowledge Mrs. Rhian Berning who was so willing to give me my first interview for my research.

APPENDIX 6: COLOUR CODING AND CATEGORIES

Colour- 1. Red = Eco-Schools Practices

2. Yellow = What Learners do (active roles)

3. Pitch = What Teachers do (active roles)

4. Blue = Support for learners engagement in ES

5. Green = Learning Interactions

6. Grey = Results of ES practice

Categories	Sub- Categories
1. Eco-Schools practices	- Eco-Schools clubs - School activities and projects that promote ES - Auditing, Dev. of Envir. policies and - Community links - The values that one learn out of ES involvement
2. What learners do (active roles)	- Work in the school gardens - Variety of activities like drama, songs, - Working with teachers and community - Concerns raised on environmental education issues
3. What teachers do (active roles)	- Planning activities at schools in order to enhance learning - Organising with learners development of materials and preparations - Integrating environmental education activities in teaching through the lesson plan and the portfolio
4. Support for learners engagement in ES	- What do you want to see happening - Support from Principal - Support from the other stake holders - Support from parents and community
5. Learning interactions	- Between Learners and environment - Between community and teacher and learners - learner environment interactions Learners and learners
6. Results of ES activities	Learners awareness, values, skills Teachers and school improvements Community and a positive learning environment

APPENDIX 7: SAMPLE LESSON PLAN AND RESOURCES (FROM PORTFOLIO)

Social Sciences

Lesson plan: Litter and waste

Duration: 1 Week   Grade: 9

Learning Outcomes	Assessment standards
LO 1 (Geography): The learner will be able to use enquiry skills to investigate geographical and environmental concepts. **LO 2 (Geography):** The learner will be able to demonstrate geographical and environmental knowledge and understanding. **LO 3 (Geography):** The learner will be able to make informed decisions about social and environmental issues and problems.	**AS 1:** Carries out independent enquiries about aspects of the interrelationship between people, places and the environment. **AS 2:** Explain how sustainable development could impact positively on people, places and environment. **AS 4:** Makes informed decisions about various solutions to social and environmental conflicts [make choices].
Integration: 1. Natural Sciences LO 3: Science, Society and the environment. 2. Technology **LO 2:** Technological knowledge and understanding.	**As:** Applies knowledge to generate solutions, predictions. **AS:** Understands sustainable use of the earth's resources. **AS:** Recognises the impact of technological developments on the quality of people's lives and the environment and suggests strategies for reducing undesirable effects.

Linking with the previous lesson: How people depend on natural resources (Water, food, shelter and clothing)

Linking with the next lesson: Sustaining our resources

Core knowledge: Problems associated with waste, negative effects on sustainability

Activities:
    1. Teacher present introductory information regarding the different kinds of pollution (air, water and land) and

      The impact of pollution on the environment (see Resource 1 for teacher notes). Notes on land pollution

      And the disposal of waste which is highlighted as the focus on this unit.

    2. Learners brainstorm around the issues of litter in their school and community as specific and local issues.

    3. In groups of four, learners develop a questionnaire to establish the root causes of littering in their school and community. Teacher facilitates the construction of her class questionnaire based on these (Assessment Activity – see Resource 2 for rating scale).

    4. In pairs the learners used the questionnaire to interview learners across various grades. Each pair asked two different learners.

    5. In groups of 3 or 4 learners will analyse 1 question from the questionnaires (questionnaires can be cut up) and write a report.

    6. In groups of 3 or 4 learners compile a written report summarizing all the findings and make recommendations (Assessment activity- see Resource 3 for learner instructions and Rubric). Best

report can be selected to be presented at the Assembly.

    7. Teacher lists all recommendations from all reports. Each is discussed together with feasibility and significance for environmental improvement. Finally learners vote on an action to be taken.

    8. Action can be implemented by the school's environmental club.

Assessment:

 1. Interview schedule (assessing LO 1: AS1)

 2. Report (assessing LO2: AS3)

Resources:

 1. Teaching notes on "An introduction to pollution".

 2. Rating scale for questionnaire.

 3. Rubric or written report.

 4. Learners' note on "how to make your carbon footprint smaller".

Resource One
An Introduction to Pollution

Pollution is the addition to the ecosystem of something that has a detrimental effect it. One of the most important causes of pollution is the high rate of energy usage by modern, growing populations.

Different kinds of pollution that are found. In this section we will discuss:

    1. Air Pollution

    2. Water Pollution

    3. Land Pollution

<div align="center">Air Pollution</div>

Air pollution is the accumulation in the atmosphere of substances that, in sufficient concentration, endangered human health or produce other measured effects on living matter and other materials. Among the major sources of pollution are power and heat generation, the burning of solid waste, industrial processes and especially, transportation.

Examples of Air Pollution

- **Noise Pollution**

  Noise pollution or unwanted sounds that are carried by the air have irritating and detrimental effects on humans and other animals. Careful planning of streets and buildings in towns and better control over noisy vehicles may add to the control of noise pollution.

- **Tobacco Pollution**

  Tobacco smoke is one of the major forms of pollution in buildings. It is not only the smoker who is infected, but everyone who inhales the polluted air. There is a very strong connection between smoking and lung cancer. Bronchitis is common among smokers and unborn babies of mothers who smoke also suffer from the harmful effects of smoking.

- **Exhaust Gases of vehicles**

  Pollution from exhaust gases of vehicles is responsible for 60% of all air pollution and in cities it is up to 80%. There are a large variety of harmful chemicals present in these gases, with lead being one of the most dangerous.

- **Combustion of coal**

The combustion of coal without precautions can have serious consequences. If winds do not blow away the poisonous gases, they can have fatal effects and may lead to death.

- **Acid rain**

Acid rain is the term for pollution caused when sulfur and nitrogen dioxides combine with atmospheric moisture to produce highly acid rain, snow, hail or fog. The acid eats into the stone, brick and metal articles and pollutes water sources. Coal in South Africa is rich in sulphur and the power stations in the Mpumalanga Province could be responsible for acid rain over other areas of our country.

Control Measures

Although individual people can help to combat air pollution in their own immediate environment, efficient control can be best achieved by legislation. Some commonly enforced control measures include

- The establishment of more smoke-free zones;
- Control over the kinds of fuel used in the cars, aeroplanes, power stations, etc.

Water Pollution

Water pollution is the introduction into fresh or ocean waters of chemical, physical, or biological material that degrades the quality of the water and affects the organisms living in it. This process ranges from simple addition of dissolved or suspended solids to discharge of most insidious and persistent toxic pollutants (such as pesticides, heavy metals, and non-biodegradable, bio-accumulative, chemical compounds).

Examples of Water Pollution
- **Industrial effluents**

Water that has been discharge after having been used for production processes. This waste water may contain acids, alkalis, salts, poisons, oils and some cases harmful bacteria.

- **Mining and Agriculture Waste**

Mines, especially gold and coal mines are responsible for large quantities of acid water. Agriculture pesticides, fertilizers and herbicides may wash into rivers and stagnant water bodies.

- **Sewerage Disposal and Domestic Wastes**

Sewage as well as domestic and farm waste are often allowed to pollute rivers and dams.

Control Measures

The following measures can be used to stop water pollution:
- Every intelligent person should be wise and not pollute water in any way;
- By research and legislation the pollution of water bodies, even though not entirely prevented, must be effectively controlled.

Land Pollution

Land Pollution is the degradation of the earth's land surface through misuse of the soil by poor agricultural practices, mineral exploitation, industrial waste dumping, and indiscriminate disposal of urban waste. It includes visible waste and litter as well as pollution of the soil itself.

Examples of Land Pollution

Soil Pollution
Soil Pollution is mainly due to chemicals in herbicides (weed killers) and pesticides (poisons which kill insects and other invertebrate pests). Litter is waste material dumped in public places such as streets, parks, picnic areas, at bus stops and near shops.
Waste Disposal
The accumulation of waste threatens the health of people in residential areas. Waste decays, encourages household pests and turns urban areas into unsightly, dirty and unhealthy places to live in.
Control measures
The following measures can be used to control land pollution:
- Anti-litter campaign can educate people against littering;
- Organic waste can be dumped in places far from residential areas;
- Inorganic materials such as metals, glass and plastic and also paper, can be reclaimed and recycled.

Resource Two
Rating Scale for Questionnaire

Names of group members	7	6	5	4	3	2	1
Learners have a variety of questions							
Questions have been well thought out and focus on different aspects of the pollution							
Questions deal with both the school and the community							
Questions are linked to thoughts and ideas from brainstorming activity							

Resource Four

How to make your carbon footprint smaller
Recycle: Recycling half of the aluminum, glass, plastic and paper that you use will reduce your footprint by one ton (1000 kg) of CO_2 a year.
Lighten up: Replace three old-style incandescent bulbs in your home with three fluorescent bulbs to cut back 140 kg of CO_2 (and they last longer and use less electricity).
Switch off: Switch off lights, heaters and computers when you don't need them. On average cut back CO_2 emissions by a ton.
Cool Wash: If you have a washing machine, doing two loads of laundry a week in cold or warm water instead of in hot water will save 225kg of CO_2 a year (and more if you don't use a tumble dryer).
Use solar power: Using a solar water heater instead of a geyser at home will cut the CO_2 entering the atmosphere by nearly a ton (1 000kg).
Drive less: If people do 30 km less driving a week (by using bikes or car pools or walking), this will cutt back 500 kg of CO_2 a year.

Tune up: Using clean oil and keeping car tyres correctly inflated reduced 450 kg of CO2 a year.
Drive Smart: The new hybrid cars (that switch from petrol to battery) reduce CO2 emissions by 1 200kg (1,2 tons) a year.

APPENDIX 8: SAMPLE LESSON PLAN FOR ECO-SCHOOLS (USED IN SESSION)

LIFE ORIENTATION

LESSON PLAN: MEDICINAL HERBS

Duration: Four weeks   Grade: 6

Learning outcomes: **LO1**: Health Promotion: The learner will be able to make informed decision regarding personal and environmental health	**Assessment standard: We will know this when the learner:** **AS 2**: Participates in a problem-solving activity to address an environmental health issue to formulate environmentally sound choices and/ or actions. **AS 3:** Explain causes of communicable diseases and available cures, and evaluates prevention strategies, in relation to community norms and personal values
Integration: History **LO1:** The learner will be able to demonstrate historical knowledge and understanding.	AS 2: Selects and records relevant information for specific purposes from a variety of sources (e.g. oral, ...)
Linking with the previous lesson: Different plants in our school and home gardens	Linking with the next lesson: None

Core Knowledge: Medicinal plant herbs
Activities: 1. Learners interview knowledgeable parents and community members about the uses of medicinal plants in their community. Information is recorded on table (see resource 1).   2. Learners make their own medicines at school (see resource 2 for recipes).   3. In groups of four learners make a booklet on medicinal plants for sale to parents.   4. Booklet and cough mixture is sold to raise funds for an outing to Kwandwe game reserves.
Assessment: 1. Teacher assessment. Interview sheet. Assessing AS3   2. Booklet. Group assessment. Tool: rubric (see resource 3)
Resource: 1. Resource 1: Interview sheet: Medicinal herb plant use   2. Resource 2: Medicinal recipes using herbs   3. Resource 3: Assessment rubric for the booklet
Teacher reflection:

Resource 1: Interview sheet: Medicinal herbs and plant use

Name of interviewer: …………..   Name of interviewee: ………

Before modern medicine, we used many different herbs to keep ourselves healthy. Please can you complete the table below with information about your family's use of herbs now and in the past:

Name of herb	What parts are used? Leaves, roots, stems, flowers, etc.	What was it used for?	How was it prepared?	Where was it found and can you still find it?	When is it a good time to harvest it?

Do you still use these medicines today? If not why not?

Resource 2: Herbal Remedies

1. Onion

Disease or ailment	Preparation method	
	Ingredients	*Preparation and Dosage*
Cough	Onion Brown sugar	Cut onion into thin slices. Put it on dish with lid. Pour brown sugar on it and leave it for eight hours and more, until the sugar dissolved in the onion juice, Take two teaspoon daily

2. Plantain

Disease or ailment	Preparation methods	
	Ingredients	*Preparation and Dosage*
Cleaning of womb	Bunch of plantain ½ cup water	Cut plantain into pieces. Boil water. Leave for an hour Drink 3 x a day

3. Rosemary

Disease or ailment	Preparation methods	
Dandruff	*Ingredients*	*Preparation and Dosage*
	Rosemary	Boil half cup of rosemary

		And wash your hair.

Sour fig: Igcukuma

Disease or ailment	Preparation methods	
	Ingredients	*Preparation and Dosage*
	Leaves, vinegar, warm water	

Preparation of sour fig
Chop leaves finely and half fill a cup. Fill the other half of the cup with vinegar. If you cannot obtain vinegar then use boiling water. Let it stand for few hours. Pour liquid into another cup. Discard the chopped leaves. Fill the cup with warm water and wash the inside of the vagina with the liquid repeat every 8 hours.

Infection in the mouth: use the teaspoon of the liquid to rinse your mouth every few hours. It is not harmful.

The fruit is high in vitamin C and it is sour to taste.
Chew one or two leaves to relieve sore throat
Other use: Rub sap from inside the leaves on insect bites and skin irritations

Cabbage

Disease or ailment	Preparation methods	
	Ingredients	*Preparation and Dosage*

Making
Cabbage water works very well to settle an acid stomach.
Crush one cabbage leave it and pour boiling water over it.
Allow to stand for about ten minutes, and then drink.
For painful breast: the leaves are placed over the breast for a while.

Honey and cinnamon

Disease or ailment	Preparation methods	
	Ingredients	*Preparation and Dosage*

Disease	**Method**
Cold	Take one teaspoon of honey with lukewarm water and ¼ teaspoon cinnamon powder daily for five days. Uses: For chronic cough cold and clear sinus.
Bad breathe	First thing in the morning gargle with one teaspoon of honey and cinnamon powder mixed with hot water. Breath stays fresh throughout the day.

Mint	Kills fats in stews. Put leaves in a cup and fill with boiling water. Strain and drink after few minutes. Reduce high blood pressure. Increase low pressure. Reduce cholesterol.

Aloe

Disease or ailment	Preparation methods	
	Ingredients	*Preparation and Dosage*

1. Two medium size aloe leaves (about 25 cm long each) are enough for one person for a one month supply. The green skins of the leaves must be removed completely. Use only the inner part for making the juice. The inner part of the leave is quite soft like jelly. Chop it finely. Be careful not to loose the liquid.
2. Add the aloe juice to one litre of clean water in a bottle. In order to ensure that the mixture does not ferment and become bad two tablespoons of alcohol e.g. whisky or vodka is added.

Daily amount
Some people add honey because the aloe juice tastes bitter. 1/3 of a cup is taken daily. One litre should last for a month for one person.
Uses:
Skin conditions, weight loss, immune strengthening. Aloe ferox (Cape Aloe) aloe vera

Health tips - super fruits
1. Kiwi: Tiny but mighty, good source of potassium magnesium, vitamin E and fiber. Its vitamin C content is twice that of an orange.
2. Strawberry: Protective fruit. Strawberries have the highest total antioxidant power among major fruits and protect the body from cancer-causing, blood vessel clogging free radicals.
3. Guava and papaya: Top award for vitamin C. They are the clear winner for vitamin C Guava is also rich in fibers which help prevent constipation. Papaya is rich in carotene which is good for eyes.

Resource 3: Rubric 1: Assessment of medicinal herbs booklet

Criterion	1	2	3	4
Information in the booklet is accurate and clearly explained				4
Booklet is clearly structured and user-friendly			3	
Creative design and presentation		2		

APPENDIX 9A: SAMPLE SCHOOL ENVIRONMENTAL POLICY (FROM PORTFOLIO)

Olukolo Junior Secondary School (Namibia)

Eco-Schools Policy:

GOAL: Provide a framework to support school grounds, healthy environment and clubs at school.

AIM:

- Create awareness among the school community about the danger of litter and educate them to praise a clean, healthy environment.
- Help learners, teachers and parents to enhance and extend their knowledge and skills acquired through interaction with their respective community.
- Motivate the community to be responsible for their own behaviour toward the environment.
- Create an opportunity for learners to become members of various school clubs.

MISSION STATEMENT: We, Olukolo community will strive to cultivate a clean, healthy, enriching, happy and sustainable environment for all.

POLICY GUIDELINES:

- Improve hygiene and sanitation at school,
- Strengthen waste management,
- Improve the garden to incorporate a variety of environmental learning
- Improve the school ground to be used as a learning resource**.**

ACTION PLAN ANDIMPLEMENTATION

Action proposed	Responsible person
Establish a hand soap washing system	**Martin and learners**
Introduce paper recycling project	**Martin, Katrina and learners**
Repair the garden and maintain the fish pond	**Martin and learners**
Plant many trees and produce more seedlings in the nursery and growing more vegetables	**Martin, Lameg, Ester, Martha and learners**
Integrate environmental learning in the curriculum	

APPENDIX 9B: SAMPLE SCHOOL ENVIRONMENTAL POLICY (FROM PORTFOLIO)

Kingswood Junior School (South Africa)
School Environmental Policy:

A formal policy has been drawn up by the Kingswood College Council and this is in various stages of implementation through the College. It lacks, however, sustained focus and implementation and, in some sectors, even lack of awareness as to its existence.

The environment committee, in discussion, drew up the following environment policy for the Junior School.

- To use our school resources such as water, paper and electricity in a responsible way. We will turn off lights and computers when we leave the school and we will not waste water by leaving taps running. We will report broken taps and toilets,
- To put in place a waste management programme by reducing our waste and recycling as much as possible,
- To plant indigenous trees that provide shade and attract birds and that will help to protect the ozone layer, and
- To have a school environment that is clean and tidy and shows that we have respect for it.

APPENDIX 10: OBSERVATION SCHEDULE

OBSERVATION SCHEDULE: The Eco-Schools activities

learning interactions (what is happening between learners and learners, learners and teachers, learners and community members?)	
Eco-Schools *practices (what is being done?)*	
active roles learners (what are the learners expected to do? What are they doing? How are their roles differentiated?)	
role of teachers (what are the teachers doing? What planning have they done? How are they teaching? What materials are they using and how are the materials being used?	
Other factors Anything else that is affecting the learning processes	

Sample of the analytical memo

ES club

Different ES related activities

School grounds

Researching social issues

Environmental school policy

Analytical Memo 1: Eco-Schools Practice

Namibian school 1	Learners plant and sell trees to community, plant vegetables gardens, start nursery at school and home. Participate in tree planting of the community helped with cooperation against vandalism cause ownership developed. Keep the school clean every week. Learners who are involved in ES club perform better. Support from all stakeholders. Nursery and vegetable gardens, planting seedlings, EL is not familiar with most people in environmental education clubs. WE hosted a big cleaning campaign and HIV/AIDS and TB campaign and awareness took place. Draw posters,leaflets, songs and drama very interesting. The growth of environmental education awareness in my exercise. Learners who are involved in the ES club, the time has come to start conserve our water, to clean the river banks as a project, pick up litter from the streets as a school, to develop awareness to care for water and not to litter around and do recycling and learn how to plant trees and vegetables. To keep our environment clean. Vegetable gardens are the most important programme at our school. Visit the dumping site as a project.	P 1 T 1 LG 1
Namibian school 2	Projects: start with ES club, tree planting, seedlings and actual planting, aquaculture, water saving, litter management. Awareness of saving electric energy, water usage by hand washing when the tape is running and wasting too much water. Consequences involving in environmental education at school	T 2
Namibian school 3	Care for the environment, raising awareness on environmental issues, learners very excitement about the ES activities. To make school grounds green and make the environment around the school beautiful. Planting different plants and trees in the school grounds and in community areas. Taking care of the pigs and guinea fowl and consider them as part of our environment. Educate and make the community environmentally aware.	T 3
SA School 1	The cleaning of the school, herbal and vegetable garden activities, planting a lot of medicinal plants. ES club that is established, to create environmental awareness in order to prevent nature from being damaged. Learners are creating awareness by telling their own parents about taking care of water pollution and waste and recycling of waste.	P 2

	Discussing issues about diseases such as HIV/AIDS and TB as dangerous in the community. In the past we did not have fence around the school but with ES we learned to solve our own problems and as a result we were able to generate funds to buy our own fence for the school. We develop skills as how to focus on one problem at a time before moving to another unlike in the past. Sharing of responsibility of the school with other teachers in terms of activities and not to decide alone on all issues. Our school vegetable garden is one project. Positive change in taking care of the resources such as wants to keep light of in order not to waste electricity. Keeping the school clean and pick up papers in and around the class and school. They even report to me if there is a leakage of water in the toilets or running taps. Learners are more aware and more involved than ever before. Most of the learners and some of the teachers arestarting to develop positive values and ethos towards school property. Together with the learners we developed Environmental Policy in which we were auditing environmental issues around the school. We also looked at how we will use the environmental days in our school calendar e.g. Arbor day was a great event last year for the school. Currently I am more aware and more sensitive about environmental issues than ever before.	T 4	
SA School 2	ES members want to change every thing to become ES club and to the committee issues. Last year they received some awards for their participation in the ES activities. Herbal (medicinal) and vegetable garden is the main project with the cleaning of the school grounds. It gives the lrns the necessary skills that are needed at the end of their childhood and schooling. These skills can be used at home in terms of gardening, cleaning their home environment, since there are going to be parents tomorrow. Their need to know how to get some food by planting in the garden for their future children. The skills they learn today will be with them for ever. Some learners have started gardens at home. In the olden days we used kraal manure but this days we use manure from the Umthathi Training project. In the past we did not have fence around our garden and animals used to eat our vegetables but today we have with the help of the Umthathi Training project fenced our area. We used our ES books to do our planning for the lessons. In the past we were not used to do research but ES is promoting research and action plan. Some learners were trained for water campaign and how to water plant without wasting. There has been great positive mind change of the learners and teachers towards the environment and the taking care of the environment since then. There has been socialisation with the children and the parents inside and outside the school grounds. We started developing entrepreneurial skills and it gave us research skills. We take vegetables from the gardens to the soup kitchen and cook for the learners who are coming to school without food. **Learners are more interested in the ES club and activities at the school. The learners know that there must not be papers and no dumping of waste around the school. They also know that the school must be clean and there must be no littering. We**	P 2 T 5 T 6	

Portfolio	used to have problems of dumping since squatter camps surround our school. Currently learners are aware of these environmental issues. They are also quite sure about leakage of water in the toilets and on the taps. They have developed the skill of mulching, planting of herbal and medicinal trees. Lrns developed a skill of research and can investigate social issues. They have developed a skill of communication with others and with parents better and they are free to talk about the skills they are gaining in the gardens. I am well developed as a person and as a teacher, now I have much more confidence in preparing my lesson plan. I know how to communicate with children and parents on environmental awareness and issues much better. The vegetable and medicinal garden that we plant at the school. Food from the vegetable garden is used for the soup kitchen, since the learners are been feed from our own vegetable gardens. We are planting beetroots, carrots, veggies, spinage, cabbage, letus, etc. A very practical exercise was done at the school, which was linked to the lesson plan, which took one week of teaching about healthy living practices at school for grade one learners. The audit that was done for the school and the activities that took place at the school showed how a creative and enthusiastic teacher could work with learners on a theme. I really found this lesson plan and the learning support materials very useful to teachers in a rural or urban school. The reflection that the teacher did about the three theme topics was very clear where she analysed herself and looked at areas where she could improve and where she needed support if possible.	LG 2 Port 3
SA School 3	I am involved in the environmental education club with my grd.7 lrns. Recycling, cleaning of the environment has been some of the major projects for the year. Global Warming is a much bigger issue and the different environmental days that we celebrated this year. I have learned more through the ES newsletter about environmental education issues. Children are so excited and want to do more about their environment. They are so receptive and eager to learn more about the world in which they live and really take it on and want to participate as fully as they can. I have learned a huge amount of information in this period through researching for information about environmental education issues. At later stage teachers also started to come up with things and suggest things that they want to do for environmental education at the school. As a teacher I was so amazed by the enthusiasm of the things other teachers from the others schools want to do. I think there is a real change in the attitude of the lrns and teachers towards the environmental education issues. I have noticed that the children enjoyed the presentations that we did on global warming and the ozone layer. Learners who are not in the club have also shown concern about the lights that we leave on and asked teachers to switch off the computers after school, in order not to waste energy. Some of the learners have come and mentioned that they have started to use energy saving bulbs at home. There is a slight increase in awareness in picking up of litter and they are more knowledgeable about global warming and things that we can do to make the environment better. Global warming has been something fascinating, real and terrifying. It has been proactive task for me to deal with the environmental education committee at school and see the excitement of the children in working together to respect the environment. I love, respect and appreciate nature and the environment and it horrifies me when I think that it will be destroyed. The ES process has been a very slow learning	T 7

	curve for me but the more I read and do research the better I get the bigger picture, the better I can contribute to the growth of my learners. I realised that there has been a whole movement and a body of knowledge around the ES activities in the world. I have been inspired by the Kenyan lady Wangarra Matthai for her dedication and commitment to promotion of environmental education in Africa. The fact that there is a great body of movement towards preserving the environment out there in the world. The Biggest project to us this year is the paper recycling project and collecting of litter, which will help us in receiving the ES flag. They have made bird feeder and now they are trying to make a Bird friendly area for the birds. Our parents inspired us and by the school activities. Both lrns care for the environment, since they don't know what is going to happen in the future. Like what the teachers are telling us about the ice cube, which is melting in the Antarctica, and that they want to help prevent it. If they care for the environment than they can also care for the animals. They are concerned with the environment and what will happen in the future if we carry on like this and all the pollution and global warming could destroy our planet and they want to prevent it. Teachers helped them to make labels for the bins to separate plastics, papers and bottles.	LG 3
SA School 4	Major projects of the year are: preparing school grounds for vegetable gardens for food project; resource management focussing on litter; water audit to try to reduced the amount of water consumption at the school. Gardening was, however, the main focus of the year. Community and parents jumped at the opportunity to develop skills that were needed for the school to plant and grow their own crops and sell these crops which they could use for their own personal benefits. Children become enthusiastic, full of confidence; want to explore more every day. ES gave learners more information for transformation and I have seen many good things coming out like learners becomming top leaders. It is such a holistic programme that it covers almost everything that you want to develop in the child, such as values, skills and knowledge not only for the child but also for the teachers. We were faced with a lot of rural problems and we decided that the obstacles and challenges of the rural areas would not stop us from facing environmental issues. What we have done has become a motivation for other rural schools. I have the experience of the two worlds the rural and urban schools and that problems and environmental issues are the same and that we need to work towards one goal that all of us need to become environmental literate citizens no matter how small or big you are. ES is so fantastic and it can make the teachers job so easy because it become more fruitful to work with and to have a better understanding themselves of the Environment before they can actually impart knowledge to learners. We focus on the school calendar and the curriculum days and bring to the front issues like deforestation, global warming, HIV/AIDS, TB in which we supported the school health promotional initiatives as well as simple hygiene washing hands and safe use of toilets. I have been working with a group of unruly learners and after 12 months parents acknowledge a change in the learner's behaviour towards environment. Learners have become more determined and spend their time actually doing positive projects in and around the school. The school has imparted skills to learners because they have started their own gardens at home and now clean up at home by themselves. ES has made tremendous inroads with respect to skills development in the children and community. It has been a great change in attitude, mind set and not only in children or educators alone but also in the community in general.	T 8

	Before our school had a massive litter problem, barren land wasteland and now parents remarked that it feels so nice to walk into a green and clean school. ES is bridging a wide gap that long existed between educators and what the Department of Education provides and that ES is an initiative that actually provides ideas on lesson plans development ands how to take extra curriculum activities out and make them environment friendly activities. So I think ES is a great partner, stakeholder in the education field and right now we can just give them a thumb up in terms of solidifying these friendships. ES is about planting gardens at school and at home so that you can get all the fruits and stuff from your garden. The environmental school developes environmental projects like having vegetable and food gardens. We have started activities on the special environmental education school days. ES is making us learn more and not only about history and mathematics but it teaches us about issues around our environment.	LG 4
Node Coordinator 1	ES clubs, gardening project, outdoor classroom, growing vegetables. ES do positive things at schools. Your action can make a positive change so that it ties to the learners' self-esteem and can be positive about their school and if it is not what they want they can make it better. Things like pollution and wasting of water. That all ties to sustainable development so that there is a future for their children's children. Active in the gardening they speak about how the now started their own gardens at home. Bring their gray water from washing dishes to water their plants. They join Eco-Schools voluntarily and ES give them the framework to make changes to their schools. See the value of being recognised by ES by getting the international green flag. Sandy soil schools that deserts are being transformed into green learning and outdoor learning environment. It is a respectful framework that can be used across rural and urban schools. Lrns recognise the value of what there are doing.	NC 1
Node Coordinator 2	ES clubs, Vegetable gardens, usage of the amagehu for the feeding schemes. Involving lrns you also involve the parents. Economical constrain affect the programmes plans. ES depend on the participant's commitment to succeed. How to get the community or learners' involve is a challenge	NC 2
ES reports		W S

Subject Advisors South Africa Namibia	Projects: solar stoves, seedling plants, vegetable gardens, tree planting, keep chickens, developing parking areas, benches for relaxation. Teachers involved were willing to work. Setting up of environmental education clubs, Grd.1 responsible for watering the plants, Grd.10 in the process of planting and implementing environmental education activities and take care animals in the school grounds. Developing a sense of belonging and take ownership of activities and not seeing it to belong to the school only	SS 3
	Different schools were doing different projects; tree planting, guinea fowl and give guinea fowl eggs for hatching by the communities around the school, chickens around the schools, agricultural gardens. Littering projects, to help clean the environment when it comes to community involvement. ES club contribute to the enthusiasm of the school, it develop the skills of teamwork since the learners, teachers and parents work together on activities and it developes the value of belong. It also develops discipline in which partners respect each other's contributions to the broader spectrum. The recognition of the importance of environment and awareness of it. Dealing with HIV/AIDS issues and the whole school approach is comes across as very serious.	NS 1

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