ISSUES AND CHALLENGES REGARDING THE IMPLEMENTATION OF ENVIRONMENTAL EDUCATION POLICY IN FORMAL EDUCATION IN SOUTH AFRICA

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ISSUES AND CHALLENGES REGARDING THE IMPLEMENTATION OF ENVIRONMENTAL EDUCATION POLICY IN FORMAL EDUCATION IN SOUTH AFRICA

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I declare that

ISSUES AND CHALLENGES REGARDING THE IMPLEMENTATION OF ENVIRONMENTAL EDUCATION POLICY IN FORMAL EDUCATION IN SOUTH AFRICA is my own work and that all sources that I have used or quoted have been indicated and acknowledged by means of complete references.

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SUMMARY

Issues and challenges that teachers and educator encounter in implementing school-based Environmental Education have been established, described and explored against the background of the South African education system.

In a succinct manner sources upon and from which Curriculum 2005 (C2005) is founded have been explored. Within C2005 the foundations of EE have been traced. International and national trends and developments have been illuminated and the contributions of these endeavours are eminent in school-based EE.

The methodology and research process of study does not claim to be the only one appropriate for this research question. However, the research focus has been studied through the chosen methodology as the socio-historical context demanded. The research process has been dynamic with the researcher responding to the emerging data and being guided by the research activities outlined in the research design.

The two case studies have provided the researcher with valuable data necessary for making sound judgements about issues and challenges encountered during the implementation of environmental learning in formal education structures. Although the research question has been adequately explored, the study does not claim to be exhaustive and with no limitations. It is hoped that the recommendations made in the study, based on the findings, will be valuable to teachers, educators and education policy makers involved with EE implementation in formal education.

Key terms:

environmental education; environmental learning; formal education; teachers; learners; educators; subject advisors; outcomes-based education (OBE); Curriculum 2005 (C2005);

national curriculum statement (NCS); resource materials; education and training; South Africa; professional development; education policy; case studies.

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Mago William Maila

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DEDICATED TO MY PARENTS,

JANE AND PETRUS

MNDAWE – MALANDULA – NGONYAMA

ABBREVIATIONS

ABET	Adult Basic Education
AQF	Australian Qualifications Framework
C2005	Curriculum 2005
CBOs	Community based organisations
COs	Cross field outcomes/Critical outcomes
CS (staff)	Curriculum Support staff
DACE	Department of Agriculture, Conservation and Environment
DANCED	Danish Cooperation for Environment and Development
DAS	Development Appraisal System
DoE	Department of Education
DRNCS	Draft Revised National Curriculum Statement
DWAF	Department of Water and Forestry
ECD	Early Child Development
EE	Environmental Education
EMS	Economic management sciences
FET	Further Education and Training
FM&E	Formative Monitoring and Evaluation
GET	General Education and Training
HEIs	Higher Education Institutions
HET	Higher Education and Training
HOD	Head of Department
HSS	Humanities and social sciences
INSET	In-service education and training
IUCN	International Union for the Conservation of Nature / World Conservation Union
KZN	KwaZulu-Natal

LSMs	Learning support materials
NCS	National Curriculum Statement
NEEP	National Environmental Education Project
NEEP-GET	National Environmental Education Project for General Education and Training
NEMA	National Environmental Management Act
NGOs	Non-governmental organisations
NQF	National Qualifications Framework
NSBs	National Standards Bodies
OBL	Outcomes-Based Learning
OBE	Outcomes-Based Education
PMG	Project management group
PSC	Project steering committee
RDP	Reconstruction and Development Programme
RNCS	Revised National Curriculum Statement
SACE	South African Council for Education
SAQA	South African Qualifications Authority
SAQF	South African Qualifications Framework
SGB	School Governing Bodies
SGBs	Standard Generating Bodies
SMT	School Management Team
SOP	Science Outreach Project
SOs	Specific Outcomes
TA	Technical Advisor
TAFE	Technical and Further Education
TAs	Technical advisors
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
Unisa	University of South Africa
USA	United States of America

VET	Vocational Education and Training
WWF	World Wide Fund for Nature

LIST OF TABLES

LIST OF DIAGRAMS

TABLE OF CONTENTS

CHAPTER 1

BACKGROUND TO THE STUDY

> Research is fundamentally a problem-solving activity which addresses a problem, tests a hypothesis or explains phenomena. I prefer the problem-solving formulation which relies on a series of specific questions addressed by data collected for the purpose (Anderson & Arsenault 1999:7).

1.1 CONTEXT OF THE STUDY

The Reconstruction and Development Programme (RDP) conceived by the South African government and introduced in 1994 as a policy framework guiding the social transformation of South Africa, sets out strategies for implementing development programmes aimed at all levels of government, business, non-governmental organisations (NGOs) and civil society at large and also provides directives on how these programmes are to be evaluated (South Africa 1994b:1-2). A critical principle underpinning the RDP relates to key services such as education and training and stipulates that education should be available to all people. Furthermore, it also advocates that lifelong learning should be an ideal to be pursued. To attain the objective of lifelong learning in reconstructing South African society, the RDP perceives human resource

development as its core business (South Africa 1994b: 5). Thus, the educational development of learners and the professional development of teachers are included as critical outcomes for the RDP's human resource development programme (South Africa 1994b:6).

The views on the role, status and purpose of education in general and environmental education (EE) in particular are contained in the interim Constitution of South Africa (South Africa1994a) and the Constitution of South Africa (South Africa1996a). The chapter dealing with the Bill of Rights enshrines the right of every citizen to

(a) *a basic education, including adult basic education, and*
(b) *further education, which the state, through reasonable measures, must make progressively available and accessible* (South Africa 1996a:14).

and the right of every citizen to

(a) *an environment that is not harmful to their health or well-being, and*

(b) *have the environment protected for the benefit of present and future generations, through reasonable legislative and other measures that -*
(i) *prevent pollution and ecological degradation;*
(ii) *promote conservation; and*
(iii) *secure ecologically sustainable development and use of natural safe resources while promoting justifiable economic and social development* (South Africa 1996a: 11).

These rights were referred to in the White Paper on Education and Training (South Africa 1995b) which also drew its guiding values and principles from the RDP and the draft Constitution of 1993. By identifying six requirements in relation to the provision of education, the Department of Education (DoE) hoped to facilitate the attainment of its vision, namely that education and training should:

- **G** be just and equitable,
- **G** be open and accessible,
- **G** re-address past inequalities,
- **G** improve quality delivery (sic),
- **G** encourage independent and critical thought,
- **G** celebrate the diversity of culture, language and religious traditions

(South Africa 1995b:19; South Africa 1996c:20).

These guiding values and principles, together with the identified key areas of change, namely quality teaching and learning, school effectiveness and teacher professional development (South Africa 1995b:49-

50) are fundamental to the process of transforming the education system after the first democratic elections of 1994. Such pivotal principles for change were to be embodied in all education policies being developed and implemented subsequent to the political transition.

Furthermore, in the White Paper on Education and Training (South Africa 1995b:22) EE is unequivocally perceived as a means of promoting a better quality of life for all people and should be integrated in all levels of the South African education and training system. It states that:

> *Environmental Education, involving an interdisciplinary, integrated and active approach to learning, must be a vital element of all levels and programmes of the education and training system, in order to create environmentally literate and active citizens and ensure that all South Africans, present and future, enjoy a decent quality of life through the sustainable use of resources* (South Africa 1995b:22).

The National Environmental Management Act (NEMA) (South Africa 1999b) also reiterates the need for and provision of an orientation to engage all sectors of South African society in EE processes, awareness raising campaigns on critical environmental issues and EE *about, in and for* learning and the sharing of knowledge and experience.

An understanding of the implications of current educational policy, that is, policy statements on the environment and education that enable educators and environmental educators to work in and develop environmental learning programmes that benefit the environment (Loubser 2000: 123; Maila 2001: 26), is critical for this research inquiry since policy guides the outcomes of education. One such guideline is the National Qualifications Framework (NQF) which, in the post 1994 education dispensation, is the driving force central to education transformation. The NQF is an open-ended qualifications framework, organised by 12 fields of learning. It allows for and demands the development of new qualifications, and the re-development of existing qualifications within the framework of transformation (Janse van Rensburg & Lotz 2001: 11).

The White Paper on Education (South Africa 1995b: 15) also attests to the fact that the NQF is a blue print for career paths in South Africa. It seeks to establish a just and equitable education and training system which is not only relevant, but also provides high quality education and is accessible to all learners. It aims to create a new system of qualifications for education and training in South Africa based on the outcomes-based approach to education. Besides stipulating the envisaged outcomes which must be achieved, the

NQF provides an integrated national education qualifications framework based on common norms and standards for learning achievements (South Africa 1996b).

The NQF Norms and Standards document (South Africa1995c) stipulates twelve critical cross field outcomes (COs) to guide all learning and programme development for the General Education and Training (GET) band (grades 1 – 9) and other levels of learning. It also stipulates competences which should be acquired in order to achieve the critical outcomes.

Three of the twelve COs mentioned in Curriculum 2005 (C2005) (South Africa 1996b:18) that contain reference to the environment are indicated below:

- **G** CO 2. Participating as responsible citizens in the life of local, and global communities.
- **G** CO 6. Use science and technology effectively and critically by showing responsibility toward the environment and the health of others.
- **G** CO 7. Demonstrate an understanding of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation (South Africa 1996b).

The purpose of these COs is to encompass opportunities to solve or respond appropriately to identified environmental issues.

Though these COs are mentioned in this chapter the NQF, C2005 and OBE will be broadly discussed in Chapter 2 as will the necessity of training teachers and educators to facilitate and teach according to stipulated principles of education and training. Because the Department of Education is unable to deal single-handedly with the re-training of teachers and educators to be able to teach according to the requirements of the new education dispensation, it requested NGOs and institutions of higher learning to collaborate in order to realise the stipulated values and principles. Projects aimed at providing in-service education and training (INSET) opportunities to support the incorporation of environment as provided for in C2005 include the Learning for Sustainability Project (an NGO project sponsored by the Danish Cooperation for Environment and Development (DANCED) – located within the Danish Ministry of Environment and Energy); the Science Outreach Project (SOP) initiated and managed by the Faculty of Education at the University of South Africa (Unisa) and the National Environmental Education Project of the General Education and Training (NEEP-GET) band directed by the Minister of Education's Office. These projects are aimed at the inclusion of environmental policy articulated and realised as environmental learning in formal education as provided for in the policy mentioned previously (see 1.7.1.4 & 1.7.2.1).

The Learning for Sustainability Project was initiated in Mpumalanga and Gauteng provinces in 1995 and had a life span of five years. The cluster model of INSET for educators was used (see Chapter 3). The SOP presented by the Faculty of Education at Unisa is an ongoing INSET programme in Science, Mathematics, Technology and EE, initiated in 1996. The project has been active mainly in Mpumalanga, Limpopo and KwaZulu-Natal (KZN), and is dependent on donor funding. In 2001 a series of SOP workshops were initiated in the Vryheid Region of KZN, facilitated *inter alia* by the Vryheid Region of the Department of Education and Culture (Kwa-Zulu-Natal Provincial Government). The NEEP-GET initiated in 2000 was piloted in Mpumalanga, Gauteng, KZN, Western Province and the Free State between August 2000 and November 2000. In 2001, the National Department of Education issued a directive to initiate environmental learning projects in the three provinces, KZN, the Free State and North West Province. However, the NEEP-GET has now been implemented nationally. In this research the SOP INSET in Vryheid (KZN) and NEEP-GET INSET, in the Potchefstroom/Klerksdorp Region of North West province, will be used as case studies through which the implementation of EE policy in formal education will be studied.

These initiatives are focussed on engaging practising teachers in exploring and addressing some of the issues and challenges in the implementation of environmental education policy in formal education (see 4.2 & 5.2). These endeavours are also geared towards enabling and supporting teachers in the field (schools) to equip themselves with a better understanding and knowledge of the post -1994 education dispensation and the position and status of environmental learning within the new education dispensation. In the process, teachers are expected to play a vital role in the creation of a democratic society through meaningful involvement with the curriculum, that is, with a plan that defines what is taught and how it is taught, and embodies the values and principles of the broader society (South Africa 1996b:32). Issues of INSET, professional development and transformation in the NEEP-GET and the SOP context of education and training are, therefore, critical for this research inquiry (see Chapters 2, 4 & 5).

This thesis accepts the distinction between teachers and educators (see 1.7.2.3) that is often made by education researchers. Though the clarification of concepts inherent and related to the research question is discussed further on in 1.7, at this point a distinction between the two terms need to be noted.

For the purpose of this thesis, teachers are identified as classroom bound while educators are individuals who are involved in teaching and learning processes without being classroom bound (South Africa 2001: 28; South Africa 1994b: xi). Processes refer to the educator's purposive, conscious act of intervening in the life of the learner, with particularised instructions to guide and facilitate her/his independence (see 1.7.2.3).

1.2 PROBLEM FORMULATION

This research inquiry is guided by the need to explore the issues and challenges which teachers and educators encounter in their endeavours to implement EE policy in education. The research question can therefore be stated as follows:

- What are the issues and challenges that teachers and educators encounter when implementing EE policy in formal education in South Africa?

It is envisaged that this research study will provide answers to the following pertinent sub-questions of the research focus.

- What policy guides the inclusion of EE in formal education?
- What strategies inform EE INSET initiatives in formal education?
- How do human resources support EE policy implementation in formal education?
- How can resource materials support EE policy implementation in formal education?

The above mentioned sub-questions will assist in seeking relevant information that will not only inform policy-makers about some of the vital issues and challenges with which teachers and educators are faced in providing opportunities for environmental learning, but will also assist teachers and educators to have a better understanding and knowledge about improved practices and the pitfalls to avoid in the implementation of environmental learning (as articulation of EE policy) in their teaching practice.

The aims and objectives of this research will endeavour to clarify how this research problem will elucidate teachers' and educators' engagement in the quest to improve environmental teaching and learning (see Chapter 4 and 5).

1.3 THE AIMS AND OBJECTIVES OF THE STUDY

To answer the research question it is necessary to observe the process and outcomes of EE policy implementation in selected regions. The two INSET programmes chosen to support this process will be

observed and evaluated in order to be able to deduce which issues and challenges teachers and educators face in implementing EE policy.

1.3.1 The research aim

The aim of this research is:

- to identify those issues and challenges with which teachers and educators are confronted in environmental teaching and learning in formal education.

The research objectives are discussed in the ensuing paragraph to clarify the research sub-questions and contribute to a meaningful explication of the research question.

1.3.2 The research objectives

The individual research objectives are thus:

- to clarify and contextualise concepts relevant to the inquiry,
- to give an overview of national and international education policies (trends and approaches) and their relevance to EE and EE implementation in formal education in South Africa,
- to establish the contributions of EE focussed INSET programmes in achieving teachers' and educators' professional development to implement EE policy
- to determine the role and scope of human resource support in and for environmental teaching and learning in formal education,
- to establish the contributions of resource materials in supporting environmental teaching and learning in formal education,

- **G** to determine what issues and challenges teachers and educators encounter in the process of (i) EE policy implementation (ii) professional development and environmental learning capacity building, and (iii) school-based environmental learning,

- **G** to analyse critically observable interactions and relationships of teachers and educators in EE policy implementation in formal education.

Through the process of exploring the research question guided by the identified research objectives, it is hoped that worthwhile information will be gathered to provide appropriate answers to the study focus, thus contributing meaningful insights to EE policy implementation.

1.4 MOTIVATION FOR AND CONTRIBUTION OF THE STUDY

After 1994 the DoE embarked on a national plan to establish a just and equitable education and training system which would be of high quality, relevant and accessible to all learners, irrespective of race, colour, gender, age, religion, ability or language (South Africa 1995a:18-19). The prime aim of these policies is to bring a principled accord on education and training which will provide a secure platform for change and development, for widening access and raising quality in the DoE's organisational structure (in terms of curricula, methods of delivery, financing and governance), human resources, facilities and teacher and learner support materials.

Policies are effective if the expected outcomes are achieved in practice. Not only should policies direct practice in teaching and learning, but they should also be guided and be informed by practice (McNiff 1997:13). Thus, educators' understanding and knowledge of teaching and learning practice are critical for realising education policy objectives. The need for research into education policy implementation and how it realises in practice is essential.

The view of policy guiding tasks that are carried out in practice is expounded by Zuber-Skerritt (1996:24-25) when (s)he states that "theory and practice are not two distinct entities, but two different and yet interdependent and complementary phases of the change process". This means that education policy and how it is implemented in schools should be researched to determine the issues and challenges teachers face in realising this task.

In South Africa, environmental learning in formal education can occur in one of two ways, namely:

- **G** in an integrated approach, that is, environment is approached as a phase organiser and therefore environmental concerns are integrated across various learning areas (South Africa 1997a),
- **G** as an integral component in the National Curriculum Statement (NCS used interchangeably with the Revised National Curriculum Statement (RNCS) in this inquiry, that is, environmental issues are taught as innate concerns in all learning areas (South Africa 2001:18).

According to LeCompte and Preissle (1993:37) educational research should not only be motivated by educational transformation concerns seeking to better classroom practice, but should also attempt to contribute to closing gaps in knowledge, expanding knowledge, generating investigation into neglected fields and facilitating the integration of emerging conceptual fields. Consequently, it is envisaged that this inquiry will contribute to the following areas of research in the following ways. It will:

- **G** fill gaps in existing theoretical knowledge about the implementation of EE policy in formal education,
- **G** provide information about issues and challenges likely to be experienced by teachers and educators in the process of EE policy implementation in schools,
- **G** capture some of the changing (dynamic) nature of education in transition and how this impacts on school-based learning,
- **G** inform policy-makers about EE implementation matters in formal education.

To make any meaningful contribution to environmental teaching and learning, it is essential that in this investigation the educators' understanding and knowledge about the implementation of EE policy in formal education and their experience in this process (see 1.2), be shared with education officials and fed into education policy evaluation processes. With environmental learning being a relatively new field in formal education (O'Donoghue 1993: 25) and enshrined in the Constitution (see 1.1), it is critical that research is conducted in order to provide appropriate information needed to inform education and training policy for environmental learning.

1.5 METHODOLOGY OF THE STUDY

In this study the term methodology refers to the philosophical assumptions, values and theories which inform and support (underpin) the way in which the research methods are used. Two aspects of this

investigation will be briefly discussed, namely, theoretical framework and methods. A detailed discussion of the methodological framework will be pursued in Chapter 3.

1.5.1 Theoretical framework

A research process entails the acknowledgement of one's unique experiences in a journey of inquiry and the acknowledgement of the experiences of others that one encounters in this journey (Lotz 1996:2). The research process is a deliberate and unhurried activity which is directional but often refines the problem or question as the research progresses (Anderson & Arsenault 1999:7). The research is conducted within the social and historical contexts of the SOP and the NEEP-GET cases. The case study method is underpinned by dynamic research designs as Chapters 4 and 5 indicate.

According to Denzin (1989:12), research enquiries in socio-historical contexts should focus on those life experiences that radically alter and shape the meanings people give to themselves and their life projects and how they construct these life experiences. A similar view is held regarding the framework of this research study. To make appropriate meanings of the interactions, experiences and processes in exploring the research question, the interpretive-interactionist approach as outlined by Denzin (1989:12), will be used.

The interpretive-interactionist process involves the researcher listening to and recording the stories people relate in groups. The stories are then supplemented by open-ended creative interviewing. Thick descriptions and interpretations are then generated out of these stories and accounts. Since interpretive theoretical approaches concern themselves with the interpretation and construction of a phenomenon in its social-historical context (Terre Blanche & Durrheim 1999:125; Denzin 1989:63; Lincoln & Guba 1985:187), this inquiry will explore experiences and meanings as contextually grounded.

Blumer (1969:4) and De Vos and Fouche (1998:80) perceive meanings as arising and constructed in processes of people's interactions in their natural settings. Thus, this investigation cannot be studied in a more appropriate theoretical framework than the interpretive-interactionist one. Interpretive interactionism and reflexivity, which allude to an action that is 'bent back' so that it affects the doer (Lotz 1996:6), will form part of the interpretive-interactionism methodology (Chapter 3).

1.5.2 Research methods

Anderson and Arsenault (1999:119) describe qualitative research as a form of inquiry that explores phenomena in their natural setting and uses multi-methods to interpret, understand, explain and ascribe

meaning to them. It was decided to employ a qualitative approach because this research method would suit the interpretive- interactionist investigative approach (chapter 3).

Qualitative research studies are essentially enabling when it comes to integrating various research designs and instruments into the inquiry. More importantly, qualitative research techniques are best suited in incorporating the interpretive, interactionistic and naturalistic orientations to research (Creswell 1994:2; Miles & Huberman 1994:6; Anderson and Arsenault 1998:119-120). Various research techniques for collecting data will be employed in this research investigation.

1.5.4 Data collection techniques

Both the researcher and the participants are vital participants in the research and contribute through various efforts to the collection of data. The following data gathering techniques will be employed.

- **G** Interviews (structured and unstructured)
- **G** Questionnaires
- **G** Observations and field notes (based on judiciously constructed observation schedules)
- **G** Workshops data
- **G** Photos (taken during workshop and school visits)
- **G** Literature review

Literature to be reviewed in regard to this research investigation will fall under two categories, namely:

G Primary sources

Primary sources to be consulted include government policies, government reports, education department policies and reports, environment department policies and reports, newspaper clippings on education policy issues and SOP and NEEP-GET documents.

G Secondary sources

The subject librarians for EE and general education in the Unisa library assisted in selecting and compiling lists of relevant secondary sources through computer searches for the inquiry. Sources on research in education, research in EE and education policy were retrieved. These sources are in the form of books, journal articles, education communiques and audio-cassettes. Several EE resources were also accessed from the NEEP-GET office in Pretoria. These include only those sources which are pertinent to the research focus.

It is important that both the primary and secondary sources are critically evaluated to ensure that they provide valid and reliable data to study the research question. Criteria used for this purpose (University of South Africa 2002: 47) are external criticism which is viewed as the process in which a person tries to establish the validity of a document, that is, determining whether it is what it purports to be; and internal criticism which is an attempt to analyse the meaning of the statements in the document and to determine their accuracy and credibility.

The scope of the thesis is explicated and demarcated in terms of field and duration.

1.6 DEMARCATION OF THE FIELD OF STUDY

The field of study will be demarcated in relation to scope, duration and organisation.

1.6.1 Research field

The field of research is represented by two survey case studies based in two different contextual settings (see 1.1). Individuals who will contribute views, experiences and information during the data gathering process will be teachers, educators, subject advisers/curriculum implementers and the researcher.

Participants of the Vryheid SOP were selected by the Education Regional Office in Vryheid, KZN. A subject advisor facilitated the project in this region. A Unisa lecturer led the workshops. Other Unisa lecturers assisted in the workshops (see Chapter 4).

The NEEP-GET project is located in the Potchefstroom Region of North West. The EE coordinator in the province was the leader of this project and one of the subject advisors in this region facilitated the project (see Chapter 5).

1.6.2 Duration of the study

The study commenced in April 2001. It was envisaged that the inquiry would be concluded by November 2003 (see 3.6). The context of the study is the period from 1994 to 2003, during which government policies, namely the RDP and the Constitution, White Paper on Education and Training, South African Schools Act,

NQF, NCS, NEMA, EE policies affecting formal education and other environment policies guiding environmental learning, were developed and implementation plans initiated (see 1.1 and Chapter 2).

1.6.3 Chapter demarcation

The envisaged chapter divisions will be as follows:

Chapter 1 deals with the **background to the study** in terms of its context, problem statement, aims and objectives, motivation for and contribution of the study, research methodology and clarification of concepts.

In Chapter 2 **education and environmental education policy in South Africa** is discussed. Chapter 3 deals with the **research methodologies and research process**.

In Chapter 4 **INSET processes aimed at advancing environmental learning in schools: the SOP case study in Vryheid –KZN** are discussed. **Processes and interactions that facilitate EE policy implementation** (environmental learning) through INSET and teacher professional development are investigated to provide answers to the research question.

Chapter 5 deals with **education processes and interactions advancing environmental learning through the NEEP as it is implemented** in Potchefstroom (North West). Processes and interactions that facilitate EE policy implementation (environmental learning) educators, and teachers' professional development through INSET, is explored.

Issues and challenges in the implementation of the Environmental Education policy as identified **through the SOP and the NEEP-GET** as case studies are explored in Chapter 6. The **recommendations and concluding comments** based on the findings are also discussed in Chapter 6.

1.7 CLARIFICATION OF CONCEPTS

Only those concepts which are either inherent or related to the topic are discussed with the intention of indicating their meaning as used in this research study.

1.7.1 Concepts inherent in the topic

1.7.1.1 Environment

O'Donoghue (2001:3-4) defines the concept environment *as:*

> *a living world made up of many environments that we experience as the surroundings in which we live. In these environments communities of humans and other living things interact to shape our surroundings in different ways.*

The environment is thus made of many interacting dimensions, namely, bio-physical, social, economic and political. This definition acknowledges the interactions that exist in the earth involving humans and other living things and the earth's physical conditions.

The White Paper on the Environment (South Africa 1997f:1) states that environment in its broadest sense refers to:

> *the conditions and influences under which any individual or thing exists, lives or develops and it perceives these conditions and influences as including the natural environment including renewable and non-renewable natural resources; the social, political, cultural, economic, working and other environmental conditions that affect nature and the health of individuals and communities; and natural and constructed spatial surroundings, including urban and rural landscapes and places of cultural significance, ecosystems and the qualities that contribute to their value.*

The White Paper on Environmental Management Policy for South Africa (South Africa 1998b:9) defines environment as:

> *the biosphere in which people and other organisms live. It consists of: renewable and non-renewable natural resources, natural ecosystems and habitats and ecosystems, habitats and spatial surroundings modified or constructed by people, including urbanised areas, agricultural and rural landscapes, places of cultural significance and the qualities that contribute to their value.*

These two definitions are similar to the NEMA definition (South Africa 1998b, section 2) which defines the environment as:

> *the surroundings within which humans exist and that are made up of the land, water and atmosphere of the earth; micro-organisms, and the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.*

This definition is broad and progressive since it views the interrelationships between and among humans, living things and the biosphere as vital elements of the environment.

Thompson (1995:452) defines environment as:

> *(1)the physical surroundings, conditions, circumstances, etc in which a person lives, (2) the area surrounding a place, (3) (a) external conditions as affecting planet and animal life, (b) the totality of the physical conditions on the earth or a part of it, especially as affected by human activity.*

This definition seems to be deterministic and based on the notion that phenomena to a large extent determine the lives of living organisms.

For the purpose of this investigation:

> ***Environment is the surroundings within which human-beings, micro-organisms, plants and animals live in interaction with each other.***

1.7.1.2 Education

There are many definitions of the term education. Many are context related. The following explications will assist in establishing a broad and contemporary definition of education.

According to Le Roux (1998:24) education in the adult-child educative situation (e.g in formal schooling) is:

> *... the practice that an adult, consciously, purposively undertakes to intervene in the life of a non-adult to bring him[1] to not only independence, but also to purposely guide the child's humanisation on a determined course with the child co-operating in acceptance of his mentor's guidance.*

This definition acknowledges the fact that education is not practised haphazardly, but that it must be planned and that the child would benefit if he co-operated with the educator to guide him to independence. In this research the child is perceived as a human being who needs to be guided to authentic adulthood.

Hawes and Hawes (1982:73) state that:

> *Education involves any process, formal or informal, that helps develop the potentialities of human-beings, including their knowledge, capabilities, behaviour patterns and values.*

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[1] In this context the concept 'him' is not gender bound, it is neutral. Thus it refers to a child as a 'person', either male or female.

This definition of education seems to be an instrumentalist one. It concurs with the notion of perceiving education as an instrument used for change affirmed by Lotz (1996: 25); Maila (2001: 10) and Taylor (1997: 4).

Thompson (1995:431) refers to education as:

> *(1)the act or process of educating or being educated; systematic instruction, (2) a particular stage in education (further education; a classical education) and (3) development of character or mental powers.*

Critical ideas in this definition are that education is an act, that is systematic, particular and directed to the development of character or mental powers.

For the purpose of this thesis:

> ***Education is a purposive, conscious, guided, systematic act (process) in which the educator through particularised instructions accompanies the learner in a journey of developing a character or mental powers which will enable him to be independent.***

1.7.1.3 Environmental Education

There are numerous definitions of EE by various scholars (Di Chiro 1987: 43; Enabling EE 1999: 6; Fien 1993: 16; Huckle 1995: 9; Lotz 1996: 25; Maila 2001: 9; Taylor 1995: 1;) which attempt to clarify the EE discipline. The following definition will suffice for the purpose of this inquiry because it explicitly characterises the ideas encompassed in the definitions of environment and education as clarified by the researchers indicated above.

For the purpose of this thesis the aim of EE as expounded by the United Nation's Environment Programme (UNEP) (UNEP 1994: 1) is:

> *… **to aid learners in becoming environmentally knowledgeable and, above all, skilled and dedicated human beings who are willing to work, individually and collectively, toward achieving and/or maintaining a dynamic equilibrium between the quality of life and quality of the environment.***

1.7.1.4 Policy

According to Good (1973:428), policy is defined as:

> *a judgement derived from some system of values and some assessment of situational factors, operating as a general plan for guiding decisions regarding the means of attaining desired objectives.*

From this definition, policy is a judgement based on a system of values and situational factors working as a plan guiding decisions regarding the act of achieving expected outcomes. This definition is closely related to the definition of Shafritz, Koeppe and Soper (1988:357) which defines policy as:

> *a governing principle, plan, or guide for a course of action; a statement of goals that can be translated into a plan or program by specifying the objectives to be obtained*.

What is detected in this definition is that policy is a demand for a rationale, an encompassing plan or guide for action geared to realise stipulated objectives. In order to draw a conclusion on policy for this study, a third definition is vital.

Noble (cited in Fulcher 1995:209) defines policy as:

> *the product, whether written (laws, reports, regulations), stated or enacted (for example, pedagodic practice), of the outcome of political states of play in various arenas.*

This definition indicates that policy is produced in the form of law, report or regulation, and that it can be articulated.

For the purpose of this investigation:

> ***Policy refers to a regulation by an authoritative body (derived from a system of values and contextual factors) stating and guiding decisions to be taken in order to realise specified objectives and (derived from 1.7.1.1 & 1.7.1.2) is viewed as a regulation strategy or plan for realising educational objectives, and therefore, EE policy entails (derived from 1.7.1.1 & 1.7.1.2) a broad and contextually informed regulation or plan containing purposive objectives about, in and for the environment. It encompasses all of the essential elements of the environment and the broad definition of education*** (SADC 1999:26).

A clear understanding of what is meant by policy and EE policy in particular is important for this thesis. The latter articulates what government wants to achieve through active environmental learning in formal schooling. Thus, it acknowledges the intentions of government to include outcomes-based learning (OBL) about environmental issues, now that EE must be integrated in all levels and programmes of the education and training system (South Africa 1995a).

1.7.1.5 Formal education

Hawes and Hawes (1982:92) see formal education as *education in recognised educational institutions, as distinguished from what one has learned outside schools or colleges*. This definition does not explain the issue of certificates, diplomas and degrees which are supposed to be the ultimate achievements in formal education (1998a), and that courses are controlled, subsidised and legislated by the state.

The following definition expresses a different perspective on formal education. According to Thompson (1995:532), the term 'formal' denotes something used or done or held in accordance with recognised forms or rules. Thompson (1995:431) refers to education as an act or process of educating or being educated, that is, systematic instruction. Therefore, formal education according to Thompson refers to a systematic instruction or educating (being educated), taking place within the parameters of recognised rules. However, this definition is not appropriate for this research inquiry because it does not account for all aspects of education carried out or practised in a controlled and regulated environment like that of teaching and learning. Thus, the definition by Mothata (2000:66) is preferred as it clarifies formal education in a democratised education system.

Mothata (2000:66) refers to formal education as:

> *Education provided at public or independent schools, colleges, technikons, universities or other higher education institutions with a view to obtaining a degree, certificate or diploma instituted by law. This kind of education runs a planned or controlled course, is graded chronologically and takes place in education institutions subsidised by the state and provided for in legislation.*

This definition is broad and is appropriate within a contemporary perspective of formal education.

For the purpose of this investigation the definition by Mothata is adopted.

1.7.2 Concepts related to the topic

1.7.2.1 Environmental learning

According to O'Donoghue (2001:7), environmental learning refers to learning processes (course of action or the educative act) *about, in and for* the environment. This means that all elements of environment are the focus of learning in order to realise the objective of improving the quality of life for all people now and in the future. This definition sees environmental learning as learning processes in the environment. It does not conclusively indicate that the environmental educative act is realised in classroom-based learning only. Thus, the possibilities of environmental learning facilitated in other situations besides the classroom are included.

O'Donoghue (1993:26; 2001:6) explains environmental learning as encounter (touch), dialogue (talk) and reflection (think) involving experiences of information about (finding out about), enquiries in (investigations in) and action for (doing things for) better environmental management and lifestyle choices.

For the purpose of this thesis, the explanation by O'Donoghue (1993) of environmental learning will be used.

In this thesis EE and environmental learning are used interchangeably.

1.7.2.2 In-service education and training

The term INSET is defined differently by different educationists.

According to Hawes and Hawes (1982:18), in-service education and training (in other words INSET) refers to:

> *instructional programs to provide for continued professional development of educators during their working years in contrast to pre-service education. In-service programmes are usually part-time offerings that carry special professional credits recognised by salary increases. Also called in-service training.*

Black and Hanley (1995:79) state that INSET is:

> *… concerned with the development of teachers' professional and academic skills. It can involve relatively short-term activities drawing together the whole staff of a school, for example activities organised as part of school closure days, ... and it can involve individual attendance at various kinds of externally arranged courses and conferences. These may be short, one-day events or longer courses such as those organised by and usually held in institutions of higher education. Longer in-service courses normally require part-time evening attendance, usually for one evening a week, over a term, a year, or longer depending on the award associated with a course of study. Teachers commonly enrol on courses at certificate, diploma and master's level.*

Mothata (2000:85) defines INSET as:

> *... a form of practical training, short courses or longer formalised programmes like Further Diplomas in Education, aimed at upgrading the skills and qualifications, and sometimes salaries, of unqualified or underqualified educators...new policy directions tend to reconceptualise INSET as the ongoing professional development of teaching practitioners (that is teachers and educators).*

The three statements have similarities and differences and provide insight into INSET clarification and use in the contextually delineated settings.

For the purpose of this investigation, INSET:

> ***Involves on-going professional development (in academic institutions) or ad-hoc academic programmes (in non-institutional institutions like NGOs) aimed at improving the skills of teachers and educators. Teachers and educators can participate in short courses over a short period of time or in long-term courses over a longer period of time.***

1.7.2.3 Teacher versus educator (professional development)

It is necessary for the purpose of this investigation to distinguish between teacher professional development and educator professional development rather than perceiving them as synonymous.

Thompson (1995:1429) defines teacher as a person who teaches, especially in a classroom and the Collins English Dictionary (1986:487) defines educator as a person who educates, a teacher. It is therefore clear that, according to the Collins English Dictionary, the two terms can be used interchangeably.

The term educator and teacher are seen as having similar and yet different meanings by Mothata (2000:59), namely an educator is:

> *... any person who teaches, educates or trains other persons at an education institution or assists in rendering education services or education auxiliary or support services provided by or in an education department.*

Therefore the term educator is used interchangeably with the term teacher which means a person who actually teaches at a classroom or site level. The term 'educator' also refers to those educators who may not be directly teaching in classrooms but who holds office at a higher level, for example subject advisers, curriculum implementers or circuit managers.

For the purpose of this thesis the terms teacher and educator will **not** be used interchangeably. Their meanings will be as follows:

> ***Teacher refers to a person who teaches in a classroom or site level, and the term educator means a person who may not be directly involved with classroom or site level teaching but who might be holding office at a higher level.***

Teacher - educator professional development refers to:

> ***institutional or non-institutional professional and academic programmes aimed at improving the curriculum development skills of teachers and educators and their personal growth and professional development in an on-going process.***

1.8

1.8 CLOSING COMMENTS

In order to study the research focus adequately and appropriately, clarification of the conceptual context for this research inquiry is crucial. The education and training policy in general and EE policy in particular, should be critically studied with the use of appropriate sub-questions, aims and objectives emanating from the research question. This poses a challenge for the researcher to explicate the concepts necessary for describing, establishing and exploring the issues and challenges likely to be encountered by teachers and educators in environmental learning in schools.

The methodology for this investigation does not claim to be the only one appropriate for exploring this research question, but as stated in this chapter, the research question and the socio-historical context under which the investigation is undertaken, will probably be better studied through the methodology expounded. Nevertheless, the research process will be open to constant evaluation and monitoring to ensure that the research problem is adequately studied and appropriate answers obtained. An overview and a conceptual framework of education and environmental learning is therefore important for this inquiry.

The following chapter explores the theoretical framework of education and EE policy implementation in formal education with an intention of mapping the present South African education system.

CHAPTER 2

EDUCATION AND ENVIRONMENTAL EDUCATION POLICY IN SOUTH AFRICA

> *The lifelong learning through a National Curriculum Framework document, which is informed by principles derived from the White Paper on Education and Training (South Africa 1995), emphasises the need for major changes in education and training in South Africa in order to normalise and transform teaching and learning. Emphasis is placed on the necessity for a shift from the traditional aims-and-objectives approach to outcomes-based education* (South Africa 1997b:1).

2.1 INTRODUCTION

Since the political transformation of the South African education system around the inception of the democratic dispensation in 1994, a number of education and training policies have been developed and implemented by the Department of Education (South Africa 1995a; South Africa 1996b; South Africa 1997a; South Africa 1997b; South Africa 2001; South Africa 2001-2002) with the view to transforming the education and training system from a historically separate and unequal one to one that is accessible and available to all learners irrespective of their race, religion and background (South Africa 1995b: 18).

For better or for worse, the Department of Education has overhauled the education system, but not without criticism. Some of the concerns have been discussed and debated by various role players, including concerns that teachers and educators were not consulted in the course of developing the outcomes-based education (OBE) approach (Jansen 1999b: 7-8). Serious criticisms are levelled against C2005 and OBE.

Some view it as an education system bound to fail (Jansen 1999b:145) or bound not to accomplish what it intends to (Taylor & Vinjevold 1999: 128). The Department of Education has also been criticised for deliberately or per chance pushing the transformation of the education system at all cost. However, other scholars have supported OBE as an appropriate education approach for a society in transition (Van der Horst & McDonald 1997: 14-22).

Whether OBE will fail or not, is still an issue to be monitored continuously and assessed in practice. Critical reflections by Malcolm in Jansen (1999:77) about the complex nature of the OBE approach to teaching and learning are an indication that teachers and educators are obligated to engage themselves critically in grasping the principles of this system of education in order to transform their practice. Perhaps what is encouraging is that C2005 has been reviewed and recommendations have been made to address shortcomings on certain aspects of the approach. In the *Report of the President's Education Initiative Research Project: Getting learning right*, certain shortcomings were revealed and recommendations made on how to eliminate them (Taylor & Vinjevold 1999: iii). The *Report of the Review Committee on Curriculum 2005* likewise exposed the curriculum structure as cumbersome and recommended that it needed to be streamlined and made user friendly within a broad outcomes-based framework and implemented within a manageable time-frame (South Africa 2000a: 21).

It seems that these proposals were heeded by the Ministry of Education, because in 2001 a *Draft Revised National Curriculum Statement* (DRNCS) was produced over a period of six months by close to 150 people who had been ministerially appointed (South Africa 2001: 1; South Africa 2002a: 2). The main objectives

of the DRNCS are to deal in clear and simple language with the curriculum requirements at various levels and phases and to embody a vision of the kind of learner required by South African society (South Africa 2001: 1).

However, these initiatives have not stopped the public, teachers and educators alike from continuing to raise concerns about the involvement and participation of teachers and educators in the transformation of the education and training system at classroom level. The appropriateness of C2005 and OBE as an education delivery system for a nation trying to free itself from apartheid education is also critical. Such an education system would disenable a section of the South African population to elevate itself to a hegemonic status (Jansen 1999: 4; Nzimande 1998: Foreword).

To understand the background of C2005 and OBE as a philosophical approach to education and EE policy, it will be helpful to study the roots of the post-1994 education system to try to establish its embeddedness in international and national orientations to education.

2.2 THE ROOTS OF THE CURRENT SOUTH AFRICAN OBE EDUCATION SYSTEM

In South Africa C2005 is seen as an instrument of social change and educational achievement by the majority of people (South Africa 2000b: 1). However, OBE and lifelong learning in formal education are new concepts in South Africa, and were seemingly imported from Australia and America (Jansen 1999a:8; Malcolm 1999: 79-80). Codd (1990: 201) indicates that learning or importing new educational frameworks from other countries is a healthy practice. McDonald (1999: 123) and Davies (1994: 28) reaffirm the view that there is nothing wrong or unusual in copying an education framework. This supports the observation that South Africa learnt from other countries how to transform its education and training policies.

2.2.1 The role of education in transforming society

Education is perceived by most nations as a vehicle for political, and socio-economic functioning (transformation), and an agent for development (Marginson 1993: 3; Kallaway 1997: 42; Craig 1990:87; Williamson 2000: 19). Each country emphasises different aspects of educational performance for national development. These educational performance aspects are based on the country's needs. The perspectives on education and their role in society differ. What is similar is the overall goal of education, which is to ensure survival, prosperity, a good quality of life, not only for the present generation but also for future generations (Fien 1993: 1; Williamson 2000: 78).

The South African education and training system is no exception. Its main objectives, which are based on the guiding principles of the RDP documents (South Africa 1994b) clearly indicate that the realisation of democracy, liberty, equality, justice and peace are necessary conditions for the full pursuit and enjoyment of a meaningful existence and lifelong learning (South Africa 1995: 22). In order to attain the democratic ethic, the education system needs to be transformed from content-based to outcomes-based learning. This also involves an education paradigm shift from an education system which has been based on the compartmentalisation of content (knowledge) to one which is based on outcomes (Malan 2000: 2-3; Pahad 1997: 4-8; South Africa 1997b: 1), thus establishing a new educational foundation for South African society which started pre-1994 (Jansen 1999a: 7; Kraak 1999: 39).

The decision to integrate education and training in the wake of the country's political transformation had an enormous impact on formal education provision in South Africa (Jansen 1999a: 7-10). At the start of the political dispensation, labour made a call for a competence-based qualification system that would acknowledge non-formal learning in business and industry (Kraak 1999: 40). According to Marginson (1993: 144), the word "competence" is usually related to work or employment. It is defined as the "ability to perform the activities within an occupation or function to the standard expected employment", and that "credentials are determined not by the years of training undergone but by the standard of work-related competence, whether based on formal training or job experience". On the other hand Short (1984: 165) and Norris (1991: 1) define the word "competence" as connoting a quality of being competent. One is said to have competence in a certain area, meaning that she/he possesses a quality of competence. What labour wanted, therefore, was an education system that would enable people to possess qualities and abilities that would be relevant and transferable in work-related situations. Deacon and Parker (1999: 60-62) argue that this resulted in the South African Qualifications Authority (SAQA) choosing an outcomes-based approach to education and training, and that its first job was to finalise a list of Essential Outcomes (later called Critical Outcomes) that would guide education and training in South Africa. For formal education, this marked the most fundamental change in curriculum development the country had ever seen – from a content-based orientation to an outcomes-based approach guided by the South African Qualification Framework (SAQF) (Lotz, Ashwell & Wagiet 2000).

Badat (1997: 9) refers to ills of the pre-1994 education system which resulted in the production of mainly semi-skilled and unskilled manpower from the black population sector, on account of unequal provisioning in racially segregated and ethnically structured schools. He further indicates that:

> *The form and content of struggles around education (pre-1994) have been shaped by a social structure characterised by severe economic and social inequalities of race, class, gender and geography* (Badat 1997: 15).

The emergence of an outcomes-based NQF (see 1.1) can be seen as the state's effort to transform and democratise the apartheid education system. Thus, it is assumed that the establishment of the NQF (See Table 2.1) will enable all existing public and private sector education and training providers to assist in establishing appropriate national standards in their programmes in terms of such defined standards. Learners engaged in education and training will be able to earn credits towards national qualifications.

Table 2.1 Main features of the NQF

1. The NQF consists of an 8 level framework, which enables integration of formal and non-formal education and training. The levels are divided into three bands:

- General Education and Training (GET) band (Level 1), incorporating Adult Basic Education and Training (ABET) and the first 10 years of schooling.
- Further Education and Training (FET) band and (Level 2-4), equivalent of matric.
- Higher Education and Training (HET) band and (Levels 5-8), covering post-matic and postgraduate.

2. Qualifications are organised into 12 fields of learning:

01	Agriculture and Nature Conservation
02	Culture and Arts
03	Business, Commerce and Management Studies
04	Communication Studies and Languages
05	Education, Training and Development
06	Manufacturing, Engineering and Technology
07	Human and Social Studies
08	Law, Military Science and Security
09	Health Sciences and Social Services
10	Physical, Mathematical, Computer and Life Sciences
11	Services
12	Physical Planning and Construction

3. The NQF states 7 critical outcomes that apply to every level of education and training.

4. Learning in HET is organised in unit standards.

South Africa. Department of Education and Training: Intermediate Phase (Grades 4-6). Policy Document (1997d: 10).

The SAQA is a statutory body established by government in 1995 to manage and control education and training in the country. Its task is to develop and implement a NQF which will contribute to the development of each learner and to the social and economic development of the nation at large (Nkomo 2000: 7). SAQA is establishing a qualification system intending to meet the future needs of occupational and professional training as being created through the NQF.

The NQF is an open-ended qualifications framework, organised by 12 fields of learning (see Table 2.1). It allows for and demands the development of new qualifications, and the re-development of existing qualifications within the framework of transformation. Qualifications development takes place in processes

involving Standard Generating Bodies (SGBs), National Standards Bodies (NSBs), as well as education providers and Education and Training Quality Assurance Bodies.

2.2.2 Foundations of C2005 and Outcomes-Based Education at national level

This section deals with the foundations of C2005 and OBE at national level, supported by the RDP, *Constitution of the Republic of South Africa* and the Department of Education *White Paper on Education and Training*.

2.2.2.1 Reconstruction and Development Programme

The *White Paper on Reconstruction and Development Programme* (RDP) indicates basic RDP principles for the re-building of South African society (South Africa 1994b: 6). The education system through C2005 and OBE embodies five of the six RDP principles listed in Table 2.2.

Table 2.2 RDP Principles for South African government departments.

- Eradicate and overcome the legacy of apartheid, and institute sustainable programmes in an integrated, coordinated manner in order to redress all the ills of the apartheid regime.
- Ensure that the policy programme is driven by a people's process which focuses on people's immediate needs and that it also relies, in turn, on their energies.
- Ensure that all South Africans are engaged in peace and security initiatives.
- Promote nation-building through peace and security programmes.
- Make all South Africans aware that they need to understand that the RDP is pivotal to nation-building and to cementing democratic values in South Africa.

South Africa. Reconstruction and Development Programme (1994b:6).

In 2.2.1 an overall goal of education and its role is stated, which is to ensure survival, prosperity, a good quality of life, not only for the present generation but also for future generations. The attainment of this goal rests on sustaining democratic values through the education system and other government structures. The intentions of C2005 encompass a prosperous, truly united, democratic and internationally competitive country with literate, creative and critical citizens, leading productive, self-fulfilled lives in a country free from violence, discrimination and prejudice (South Africa 1996b: 5).

The RDP further emphasises its commitment to education when indicating that:

> *... (it) deals with education from primary, tertiary and workplace level. Starting from child care, students and adult learners. Focussing on elementary and advanced scientific and technological training.* (South Africa 1994b: 6).

The RDP goes on to stipulate that the essence of its programme is to ensure that education and training is available to all. Lifelong learning should be encouraged. These goals of the RDP are reflected in the values underlying the principles of C2005 (South Africa 1995b: 21-23). However, the RDP principles indicated above embrace a broad view of education and training. They do not encapsulate education in schools or colleges and acknowledge that education can be practised in all areas of society (South Africa 1994b: 6-7).

Therefore the RDP laid a solid foundation for developing education policy needed to implement the transformation plan of the country, of which the success depends on the provision of well trained human resources through education (South Africa 1994b: 28).

The *Constitution of the Republic of South Africa* is also a key document that charges the DoE to restructure and transform education and training in South Africa so that it is inclusive and accessible to its entire people.

2.2.2.2 Constitution of the Republic of South Africa

The *Constitution of the Republic of South Africa* (South Africa 1996a: 14) guides all education structures about the achievement of educational goals for all in South Africa (see Table 2.3). This educational right enshrined in the Constitution's Bill of Rights, forms part of the foundation of the South African education system which strives to provide a just, equitable education and training system which is relevant, of high quality and is accessible to all learners, irrespective of their race, colour, gender, age, religion, ability or language (South Africa 1996a: 5).

Table 2.3 Educational Rights enshrined in the Bill of Rights

South Africa. Constitution of the Republic of South Africa (1996a:5).

Constitutional Education Rights and Implication(s) for Education and Training Constitution of South Africa (Act 108 0f 1996a), Section 32 (a). Every person shall have the right to –

(a) basic education and to equal access to educational institutions,
(b) instruction in the language of his or her choice where this is reasonably practicable,
(c) establish, where practicable, educational institutions based on a common culture, language or religion, provided that there shall be no discrimination on the ground of race.

The right to basic education accorded in section 32 (a) applies to

all persons, that is to all children, youth and adults. Basic education is thus a legal entitlement to which every person has a claim. For children, the right is satisfied by the availability of schooling facilities sufficient to enable every child to begin and complete a basic education programme of acceptable quality. For youth and adults, the availability of basic education will not necessarily be in the form of schools, but in the form of

The curriculum is also based on some of the principles and values as formulated in the *White Paper on Education and Training*.

2.2.2.3 The White Paper on Education and Training

The *White Paper on Education and Training* (South Africa 1995b) formulates in detail the purpose, scope and processes of transformation in education and training in a South African context. Professor Bengu, then Minister of Education (South Africa 1995b: 5), stated with reference to the transformation agenda:

> *The national project of reconstruction and development compels everyone in education and training (parents, teachers, educators, students, community leaders, religious bodies, NGOs, academic institutions, workers, business, the media and development agencies) to accept the challenge of creating a system*
>
> *which cultivates and liberates the talents of all our people without exception*?

Critical issues in this process of education redress are change and development, broadening access and improving quality. This signifies a significant change from the way education and training was organised and executed prior to1994 (South Africa 1995a: 17).

This policy document was therefore a guiding map which establishes education and training in South Africa, and sketches the new priorities, values and principles for the education and training system. It was

hoped that such priorities would enable the development of a curriculum (that is C2005) congruent with the needs of South African society (South Africa 1995b: 13). A synopsis of some of the values and principles

embodied in the *White Paper on Education and Training* is provided in Table 2.4 to support the researcher's argument that C2005 and OBE have their salient building blocks in this policy document.

Table 2.4 Education values and principles underpinning the development of South Africa's education curriculum

These values and principles state that:

- Parents are not only having (sic) the right to choose the form of education which is best for the children, but also that they have the right to interact with educational institutions on behalf of their children.
- Education is an inclusive right applicable to all South Africans, irrespective of the varied abilities people depict.
- Education and training are a human right, and all South Africans are entitled to some form of lifelong learning of a good quality (sic).
- The principles of democratic governance should permeate all levels of education and training.
- The culture of accountability should be reflected in teaching and learning, and also in the management of education.
- Critical thought should be encouraged.
- Arts, culture and technology should form key areas of the South African curriculum.
- EE involving an inter-disciplinary, integrated and active approach to learning should form key areas of the education and training levels and programmes.
- Mathematics and Science should be vigorously encouraged in institutions of learning through appropriate programmes.

South Africa. Department of Education: White Paper on Education and Training (1995b:21-22

These values and principles of the post-1994 education system indicate a paradigm shift from the pre-1994 education system. The *White Paper on Education and Training* (South Africa 1995b: 22), further clarifies its focus in education when it states that the curriculum ought to encourage:

> *… independent and critical thought, the capacity to question, enquire, reason, weigh evidence and form judgements, achieve understanding, recognise the provisional and incomplete nature of most human knowledge, and communicate clearly.*

According to the Ministry of Education, *Government Gazette,* No 18051 (South Africa 1997b: 13) the principles and values of the RDP, the *Constitution of the Republic of South Africa* and the *White Paper on Education* and Training underpin the COs, which are the broad generic cross curricular outcomes. These COs cannot be understood and realised outside the context of these three policy documents. The RDP unveiled the transformational foundation for the development of education policy (2.2.2.1); the *Constitution of the Republic of South Africa* mandated the Department of Education to restructure and transform education and training by availing it to all South Africans (2.2.2.2); and the *White Paper on*

Education and Training states in detail the purpose, scope and processes of transformation in education and training (2.2.2.3).

The redress processes in education and training are guided by the values and principles which underpin all curriculum activities. Curriculum change is therefore critical for addressing social, economic and political issues. It is therefore a challenge for education and training to integrate the values and principles articulated in the policy documents in the curriculum.

In the *Draft Document, Curriculum Framework for General and Further Education and Training* (South Africa 1996b: 6) the principles informing the curriculum development process include:

- **G** participation and ownership,
- **G** accountability and transparency.

These principles clearly require further explication; however, they do underpin the values and principles stated in the *White Paper on Education and Training* of 1995. The *Draft Document, Curriculum Framework for General and Further Education and Training* (South Africa 1996b; 6) further indicates that the Curriculum Framework is informed by principles derived from the *White Paper on Education and Training* (South Africa 1995b).

Furthermore, C2005 and OBE were not only derived from the policies mentioned above. International education systems also contributed to the framework and development process. The following section intends to look critically at factors that support such an argument.

2.2.3 Characteristics and principles of C2005 and OBE in South Africa

Historically, the word curriculum refers to the subjects taught during the classical period of Greek civilisation (Fowler & Fowler 1995: 330). Mothata (2000: 39) alleges that this term is defined in many ways and therefore, it is not universally defined. He concurs with Marsh and Willis (1999: 7) that this term refers to the content and purpose of an educational programme together with their organisation, and also refers to subjects offered for study. Marsh and Willis (1999) allege that nowadays school documents, newspaper articles, committee reports, and many academic textbooks refer to any and all subjects offered or prescribed as ‘the curriculum of the school’. Hawes and Hawes (1982: 60) state that the term curriculum refers to the ”entire program of studies offered in a school, college or other educational institution”.

However, Marsh and Willis (1999:7) remind scholars to be watchful about definitions that capture only a few of the various characteristics of curriculum, especially those that are partisan or biased.

In this investigation a curriculum is perceived as a broad concept including aspects such as standards setting, learning programme development and delivery, and quality assurance of the delivery process (Nkomo 2000: 6). C2005 is also an innovation aimed at transforming the South African schooling system and it is hoped that through this curriculum the learners will become critical, independent thinkers, prepared for functioning in society (Mothata 2000: 39). C2005 is an educational and organisational framework which contains the purpose, content and programmes of the South African education system.

OBE means different things to different people. Some view it as results-based learning, performance-based education, Outcomes-Driven Development Model or mastery learning (Brandt 1994: 5; O'Neil 1994: 6; Evans & King 1994: 12). According to O'Neil (1994: 7) these different perspectives on OBE help explain why, even among those who support an outcomes-driven education system, sharp divisions persist over what it should look like. Business leaders and policy-makers seem to support strongly the idea of outcome-based accountability systems. Their conceptualisation of the desirable learning outcomes is not necessarily the same as that of teachers and educators.

The initial concepts, structure and principles of C2005 and OBE are discussed in the following section. The aim is to indicate what some aspects of the original curriculum structure and principles looked like before they were reshaped and streamlined. This will enable educationists and people interested in education to understand the evolving nature of the South African curriculum.

2.2.3.1 C2005 and OBE in South Africa: original structure and principles

The Department of Education (South Africa 2001: 3) defines OBE as an activity-based and developmental process encompassing what learners learn and are able to do at the end of the learning process. This definition seems to be derived from the Canadian (2.2.3.1), America (2.2.3.2) and Australian (2.2.3.3) definitions of educational outcomes.

(a). Curriculum development and design principles

In the *Draft Document, Curriculum Framework for General and Further Education and Training* (South Africa 1996b: 6-8) principles guiding curriculum development are indicated. These are derived from the *Department of Education, White Paper on Education* (South Africa 1995b:21) and are stated as follows:

- participation and ownership,
- accountability and transparency,
- affordability, sustainability and capacity building,
- coherence within the context of the NQF (South Africa 1996:16).

These curriculum development principles are further developed into curriculum design principles in subsequent policy documents: *Department of Education, Foundation Phase, Grades R-3, Policy Document* (South Africa 1997c); *Department of Education, Intermediate Phase, Grades 4-6, Policy Document* (South Africa 1997d) and *Department of Education, Senior Phase, Grades 7-9, Policy Document* (South Africa 1997e). This indicates that they need to be holistically perceived and inclusively utilised in curriculum activities. According to the *Draft Document, Curriculum Framework for the General and Further Education and Training* (South Africa 1996b: 11-16), these principles inform curriculum design, and they include:

- human resource development,
- learner-centredness,
- relevance,
- integration,
- differentiation, redress and learner support,
- nation-building and non-discrimination,
- critical and creative thinking,
- flexibility,
- credibility,
- quality assurance.

The document, *A Curriculum Framework for General and Further Education and Training* (South Africa 1997b: 7) concurs with the *Draft Discussion Document, Curriculum Framework For General and Further Education and Training* (South Africa 1996b). However, it includes an additional principle – inclusion of children with disabilities, out-of-school children and other children with special educational needs, and it excludes quality assurance.

(b). Basic structure of C2005 and OBE

Basic features of the curriculum are indicated in the education policy documents: *Draft Discussion*

Document, Curriculum Framework for General and Further Education and Training (South Africa 1996b); *A Curriculum Framework for General and Further Education and Training* (South Africa 1997b); *Department of Education, Foundation Phase, Grades R-3, Policy Document* (South Africa 1997c); *Department of Education, Intermediate Phase, Grades 4-6* (South Africa 1997d); *Department of Education, Policy Document, Grades 7-9* (South Africa 1997e). The following structural features of the curriculum form the pillars of outcomes-based learning (South Africa 1997a) and their discussion is based on the policy documents mentioned in this section.

The outcomes-based curriculum is grounded on a structure that recognises critical knowledge, skills and values as crucial for all South Africans (Prinsloo 1999: 23). This means that the critical outcomes and specific outcomes form the basis of the curriculum structure.

(i). Essential outcomes or critical outcomes (COs)

These are the broad, generic cross-curricular outcomes which underpin the tenets of the Constitution and which have been adopted by SAQA (South Africa 1997b). Their aim is to ensure that learners gain the skills, knowledge and values that will allow them to contribute to their own success as well as to the success of their family, community and the nation as a whole (South Africa 1997b).

According the *Curriculum Framework for General and Further Education and Training* (South Africa 1997b) SAQA has proposed seven critical outcomes for education and training in South Africa. Learners should:

1. identify and solve problems and make decisions using critical and creative thinking,
2. work effectively with others and members of a team, group, organisation and community,
3. organise and manage themselves and their activities responsibly and effectively,
4. collect, analyse, organise and critically evaluate information,
5. communicate effectively using visual, symbolic, and/or language skills in various modes,
6. use science and technology effectively and critically showing responsibility towards the environment and the health of others,
7. demonstrate an understanding of the world as a set of related systems by recognising that problem solving contexts do not exist in isolation.

Five additional outcomes supporting personal development, and social and economic development of South Africans at large are the critical outcomes for FET. These outcomes are as follows:

1. reflecting on and exploring a variety of strategies to learn more effectively;
2. participating as a responsible citizen in the life of local, national and global communities,
3. being culturally and aesthetically sensitive across a range of social contexts,
4. exploring education and career opportunities,
5. developing entrepreneurial opportunities.

(ii). Specific outcomes (SOs)

According to the *Draft Statement of the National Curriculum Statement* (South Africa 1997b: 15) SOs refer to "the specification of what learners are able to do at the end of a learning experience (including) skills, knowledge and values which inform the demonstration of the achievement of an outcome or a set outcomes". It was envisaged that in each Learning Area a set of SOs would describe (show evidence of) what learners would be able to do at all levels of learning.

Furthermore, the differentiation between the "different phases of learning would be addressed by different levels of complexity in the processes learners engage in and in the kinds of evidence through which learners demonstrate outcomes" (South Africa 1997b: 15).

In answer to the Review Committee's recommendation in 2000 that C2005 be streamlined, the 66 Specific Outcomes of the eight learning areas have been dropped as part of the curriculum development process (South Africa 2000a: 18-21; South Africa:2002a: 16).

(iii). Range Statements

The C2005 document (South Africa 1997b:16) states that Range Statements indicate "the scope, depth, level of complexity and parameters of the achievement. They include indicators of the critical areas of content, processes and context which the learner should engage with in order to reach an acceptable level of achievement". However, it does not restrict learning to specific lists of knowledge items or activities which learners can work through mechanically (South Africa 1997b: 16).

Range Statements also provide direction, allow for multiple learning, are flexible in the choice of specific content and process, use a variety of assessment strategies, describe the level of complexity and the expected rigour, describe the broad contexts of learning and guide the choice of methodologies and teaching and learning strategies. In the Revised National Curriculum Statements (RNCSs), Range Statements have been dropped. They are perceived by curriculum designers as too cumbersome to work with (South Africa 2000a).

(iv). Performance indicators

The *Department of Education, Foundation Phase (Grade R-3)* document (South Africa 1997b: 17) indicates that performance indicators "provide the details of the content and processes that learners should master, as well as details of the learning contexts in which the learner will be engaged". They therefore, "help in the planning of the learning process, tracking of progress and the diagnosing of problems" (South Africa 1997b: 17). It is also important to note that performance indicators:

- exhibit the level of achievement that the learner ultimately achieves;
- allow assessment of whether the learner has achieved the outcome or not;
- allow statements to be made about the quality of achievement, namely that the achievement is at the level required or whether the learner has exceeded this level.

(v). Assessment Criteria

The *Department of Education, Foundation Phase, Grades R-3* (South Africa 1997c: 12) states that the

Foundation Phase	Literacy; Numeracy and Life skills.
Intermediate Phase	Language; Mathematics; Science and Technology; Arts and Culture/Life Orientations; Human and Social Sciences/Economic and Management Sciences.
Senior Phase	Language; Literacy and Communication; Human and Social Sciences; Technology; Mathematical literacy, Mathematics and Mathematical Sciences; Arts and Culture; Economics and Management Sciences and Life Orientation.

"assessment criteria provide evidence that the learner has achieved the specific outcome. The criteria indicate in broad terms, the observable processes and products of learning which serve as culminating demonstrations of learners' achievement". The policy document (South Africa 1997c: 12) further remarks that the assessment criteria do not themselves provide sufficient detail of exactly what and how much learning marks an acceptable level of achievement of the outcome.

Table 2.5 Learning areas clustered according to phases (GET) band

South Africa. Department of Education. Foundation Phase (Grade R-3). Policy Document. 1997c: 14.

(vi). Learning Areas

The eight Learning Areas which were clustered according to critical outcomes and derived from SAQA's 12 fields of learning (South Africa 1997c :150) were also organised into educational phases. The phases

grouped learners according to their progression in the learning process. Table 2.5 indicates Learning Areas organised according to Phases of the GET band.

(vii). Learning Programmes

To drive the whole process of teaching and learning, Learning Programmes are the vehicles through which the curriculum is implemented at the various sites of learning (South Africa 1997c: 15). They are perceived as the sets of learning activities in which the learner will be involved while working towards the achievement of one or more specific outcomes. They are still the focal point of teaching and learning in the RNCS.

(viii). Organisers

According to the Curriculum for the General and Further Education and Training (South Africa 1997c) organisers are referred to as tools by which the outcomes are grouped for planning. Two types are listed:

- **G** phase organisers,
- **G** programme organisers.

Society
Personal Development
Health and Safety
Entrepreneurship
Communication
Environment

Lotz, Tselane and Wagiet (1998) and Lotz, Ashwell and Wagiet (2000) claim that the concept of phase organisers emerged during the Phase Committee meetings. Six phase organisers defined for schools, reflected the critical outcomes and provided a strategy for ensuring balanced learning programme development during the year. Through the phase organisers, the grouping of specific outcomes within different learning areas with the intention of producing meaningful integrated programmes, was fostered (Lotz, Ashwell & Wagiet 2000). Table 2.6 indicates the phase organisers.

Table 2.6 Phase organisers for learning

Sisitka et al 2000: Chapter 4. Research in process:... Policy making as praxis.

According to Lotz, et al (1998:18) a programme organiser is similar to a topic. Williamson (2000: 84)

mentions that they are themes chosen by teachers from everyday life to reflect local social priorities and are widely used as the starting point for the planning of lessons. These help teachers to organise learning programmes (learning experiences).

2.2.3.2 Critical observations and recommendations of C2005 and OBE

A number of educationists voiced their concern about a number of issues concerning C2005 and OBE (Jansen 1999b:7-9; Malcolm 1999:110; Prinsloo 1999: 64-66; Dreyer 2000; Williamson 2000: 154; Sunday Times 2000: 22). Probably these concerns forced the Ministry of Education to appoint a committee to review C2005 and OBE. Two prominent reviews of C2005 and OBE were undertaken by a group of researchers. *Getting Learning Right: Report of the President's Education Initiative Research Project* (Taylor & Vinjevold 2000), A *South African Curriculum for the Twenty First Century: Report of the Review Committee on Curriculum 2005* (South Africa 2000a) were subsequently produced.

Taylor and Vinjevold (2000: Preface) do not clearly specify what critical issues were a problem in the implementation of outcomes-based learning in South Africa. They claim that their research was undertaken to "provide scientific basis for the future planning and delivery of educator development and support programmes". On the other hand the *Report of the Review Committee on Curriculum* 2005 is specific about issues causing concerns in C2005 and OBE.

The *Review Committee on Curriculum* 2005 acknowledges the enormous and complex task of the DoE deliberately intending to overturn the legacy of apartheid education and 'catapult South Africa into the 21st Century' (South Africa 2000a: 1). But it also acknowledges the shortcomings of C2005 (South Africa 2000a: 18-21). It tabulated findings and made recommendations to the DoE (South Africa 2000a:21-24). Some of these recommendations were implemented later (South Africa 2002a) through the NCS (see 2.2.4.4).

Under the chair of Professor Linda Chisholm the *Review Committee on Curriculum* 2005 (South Africa 2000: vi) was required to research and provide recommendations on:

- steps to be taken in respect of the implementation of the new curriculum in Grades 4 and 8 (in 2001),
- key success factors and strategies for a strengthened implementation of the new curriculum,
- the structure of the new curriculum,
- the level of understanding of outcomes-based education.

The Review Committee was then expected to present findings of the investigation to the Minister of Education. Their first step was to identify some of the challenges of implementing C2005 and OBE, which are listed in the Review Committee Report on C2005 as:

- resources (for training and information, instructional materials [textbooks, exercise books, pens and pencils] and departmental support),
- infrastructure (classroom space, desks, electricity, toilets, telephones, fax machines, photocopiers),
- conditions of teaching and learning (large classes, learner: teacher ratios, diversity of classrooms),
- local and institutional capacity (staffing, leadership and management of schools, planning, administration),
- will to implement (readiness of teachers to engage with new ideas and put them into practice),
- pressure in the form of policy (mandated implementation),
- support from implementing agencies (professional development, support and monitoring),
- adequate and timeous information and training,
- feasible time-frames,
- participation.

They argued that “improved implementation will require more attention being paid to these systemic and institutional features” (South Africa 2000a: 14). Key features of the findings are discussed below.

(a). Key findings of the Review Committee on Curriculum 2005

(i). Structure and design of the curriculum

The Review Committee (South Africa 2000a: 18-21) found out that the structure and design of C2005 was “unimplementable” due to a number of conceptual confusions, and lack of clarity in policy documents. However, three main areas of concern were outlined.

- The use of a complex language and confusing terminology in C2005 does not enable teachers and educators to implement and access policy documents with ease. The use of “meaningless jargon and vague and ambiguous language, the unnecessary use of unfamiliar terms to replace familiar ones and the lack of a common understanding and use of C2005 terminology” (sic) cause

confusion. Jansen (1999: 9) attests to this flaw.

- **G** Overcrowding of C2005 presents it as a curriculum that is "too busy". The eight learning areas prescribed for the GET band do not give educators and learners

  enough time to address issues of the "development of effective reading skills, foundational mathematics and concepts in the sciences". Jansen (1999: 203) reiterates this shortcoming.
- **G** Mechanisms that promote progression, pace and sequencing in the design structure are lacking. The observation made is that the design structure is strong on integration and weak on conceptualisation and lacks coherence. The design features are: 12 critical outcomes; 66 specific outcomes; range statements; performance indicators; assessment criteria; learning programmes; phase organisers; and programme organisers. Conceptual progression is not adequately attended. Range statements, performance indicators and "expected levels of performance are intended to provide progression features but have failed to act as mechanisms which promote sequence, progression and pace" (South Africa 2000a: 28).

(ii). Curriculum and assessment

The Review Committee found that there was inadequate agreement (alignment) between curriculum and assessment policy and practice. This led to some teachers spending more time on assessment at the expense of classroom work. Teachers were also not sufficiently trained in assessment and curriculum design. It was suggested that a "coherent policy document on assessment aligned with the curriculum and containing clear guidelines and procedures" for implementation purposes was needed (South Africa 2000a: 99).

(iii). Inadequate training

Some educationists thought that the cascade model used in the INSET programme, was a top-down approach to teacher and educator professional development (South Africa 2000a: 14). Ways of strengthening this aspect of C2005 and OBE training were therefore essential. The level of training of trainers and their understanding of C2005 and OBE also created problems, because their knowledge and use of concepts was not in line with the language of the curriculum (South Africa 2000a: 52). They suggested that attention be paid to:

- **G** strengthening the design structure and adapting the model/s of training and the duration of teacher preparation,
- **G** addressing the quality of the trainers and training materials,
- **G** improving the quality of the content and methodology of training,

- providing for follow-up in-class support for teachers.

(iv). Learning Support Materials (LSMs)

Schools face various problems regarding the use of LSMs. Prevalent ones are availability, quality and use. Some schools are better resourced in LSMs than others. Teachers lack time, resources and often skills to develop their own materials. This calls for intervention programmes to remedy the situation.

(v). Insufficient follow-up support

Teachers feel that schools and education departments are either negligent in supporting them with LSMs and professional guidance or are not equipped to do so. Provincial and district departments are also not able to assist them due to problems in the organisation of curriculum support structures, shortages of personnel, inadequate expertise of personnel and lack of resources. This calls for:

- reorganisation and consolidation of curriculum structures at national, provincial and district levels,
- reinforcement of personnel,
- adequate resource provision.

(vi). Level of understanding of C2005

The understanding of C2005 differs within and between schools, teachers, trainers and education officials. Although these educationists subscribe to the underlying principles of learner participation, activity-based education, emphasis on relevance, flexibility, anti-bias, inclusion, holistic development, critical thinking and integration, many are confused about the design structure and the implementation of the curriculum. Teachers have a very shallow understanding of C2005 and OBE (bound to improve in time). Although teachers' working conditions are poor, teachers are doing their best. Their efforts are undermined by lack of resources and inadequate training.

(vii). Classroom-based learning

The Review Committee revealed that the varying levels of understanding of C2005 and OBE combined with the confusion concerning the implementation process, overcrowded classrooms, inadequate training, LSMs and support, overload, and lack of clear guidelines for planning and assessment, resulted in little teaching and learning taking place in classrooms.

(viii). Unmanageable and unrealistic time-frames

Rushed implementation led to inadequate and inefficient implementation of C2005. The C2005 and OBE frameworks were supposed to be presented to the public before implementation and the training of teachers and educators to ensure "a meaningful, on-going support process being put in place" (South Africa 2000a: 18). The Review Committee on Curriculum 2005 did not only focus on the shortcomings of the curriculum framework, principles and its implementation, but also made recommendations aimed at addressing the problem areas.

(b). Recommendations of the Review Committee Report on Curriculum 2005

According to the *Review Committee Report on Curriculum 2005* (South Africa 2000a:vi) the Review Committee made a number of recommendations.

(i). Structure and design of the curriculum

This process proposed the reduction of the learning areas (from eight to six); the development of high level skills; learning programmes (three in the foundation phase and six in the intermediate and senior phase) and the provision for a NCS (South Africa 2000a: 21-22).

A synoptic description of recommendations made regarding the structure and design of C2005 ensues. The revised curriculum should :

- **G** infuse human rights education and education for civic responsibility throughout the curriculum, paying special attention to anti-discriminatory, anti-racist, anti-sexist and special needs matters,
- **G** simplify curriculum documents by producing a NCS for ECD, GET, FET and ABET. It should be imperative that the NCS expresses in clear terms what is to be learnt and at what level it is to be assessed,
- **G** ensure that a streamlined NCS is produced, as a clear and accessible document, and it includes: critical outcomes with learning area statements, comprised of learning outcomes and assessment standards. The 66 specific outcomes, assessment criteria, phase and programme organisers, range statements, performance indicators, including expected levels of performance should be dropped,
- **G** reduce the overloadedness of the curriculum by rationalising learning areas from eight to six learning areas in the GET band. The six learning areas are: Language, Mathematics, Natural Science, Social Sciences, Arts and Culture, and Life Orientation. Three learning programmes in

the Foundation Phase and six in Intermediate Phase and Senior Phase should be specified. This will ensure that the curriculum is not only streamlined and simplified, but that its design features are rationalised and allow for the reallocation of enough time for language learning and foundational mathematics,

- ensure that a conceptual coherence is promoted by defining learning outcomes and assessment standards by grade; providing enough time for languages and mathematics; encouraging integration across learning areas by using critical outcomes and assessment exemplars and encouraging integration within learning areas by using learning area statements and learning programmes.

(ii). Teacher orientation and training

Teacher support, preparation and development needs located in FET require long-term and short-term planning.The Norms and Standards for Educators Framework, Education Management Development Framework and Labour Agreements should form the basis for the pre-service and INSET strategy for teacher professional development (South Africa 2000a). In the short-term a 'special' cadre of national, provincial and district trainers working with NGOs and FET should be selected and trained.

(iii). Learning Support Materials

In order to ensure quality and appropriate use of LSMs the Review Committee recommended that the DoE should provide clear statements to publishers; that textbooks should be produced and evaluated in line with these statements and the DoE should refrain from producing curriculum support materials. The White Paper on Education and Training (South Africa 1995b) proposes that dedicated units or institutions are to produce curriculum support materials; macro-planning should be phased out and teachers should be trained in the use of LSMs, especially textbooks; availability of LSMs should be improved.

Moreover, the following recommendations were made:

- institute a fund specifically for the provision of readers and reading schemes for all Foundation phase learners,
- provide ring-fenced budgeting for curriculum materials and LSMs,
- separate the stationery budget from the textbooks budget,
- improve the low rate of textbooks retrieva,
- extend the open list currently in use in some provinces to all provinces,
- institute and recommend a national list to be compiled by an advisory panel for each learning

area.

- **G** move away from the existing tender procedures in book acquisition by schools,
- **G** create in each province a special project team to co-ordinate and manage LSMs.

(iv). National, Provincial and District Support

It is recommended that the national DoE and provincial education structures strengthen and support teacher practice by consolidating, realigning and reorganising curriculum structures, roles and functions; enhancing the curriculum units responsible for the implementation of C2005; training school principals, teachers and managers to be curriculum developers; promoting collaborative relationships between curriculum and support officials, NGOs and higher education institutions; providing the necessary resources.

(v). Strengthening the implementation process

These recommendations are directed at teacher preparation, learning materials and departmental support for teachers in classrooms and are intended to strengthen implementation of a streamlined curriculum. The following are critical supporting a revised curriculum with trained teachers; good learning materials; effective departmental support; adequate resources, feasible time-frames and regular monitoring and evaluation strategies.

(vi). Pace and scope of implementation: Grades 4 and 8

It is recommended that C2005 be phased in after revising and streamlining the structure and design features. This means that the pace and rigid time-frames for the implementation of C2005 must change to reasonable and manageable time-frames.

In order to implement the curriculum in Grades 4 and 8 it is recommended that this process should take place after the revision and improvement of the curriculum has been undertaken. Two significant recommendations were forthcoming.

- **G** The NCS, which provides the framework for teaching and learning from grades R to 9, should be developed by June 2001. Once it has been approved, teachers should begin to orient their teaching, paying particular attention to learning outcomes assessment standards for each grade,
- **G** Grade 4 should continue with the present curriculum until it is overtaken by a revised, streamlined curriculum. Grade 8 should continue on a modified curriculum. The modified design (form) should comprise of the reduction of the learning areas from eight to six. and to Learning Outcomes

References have been made in the preceding discussion about the NCS. The next section will focus on this aspect of curriculum development and design.

2.2.4 A National Curriculum Statement for schools: enabling implementation process for C2005 and OBE

The NCS replaces the present format of C2005 in all the current policy documents by proposing statements for Early Childhood Development (ECD), GET, FET and ABET. Specific terminology is defined in the NCS and it explicitly signifies what is to be learnt and at what level it is to be assessed. It is envisaged that learners will be better positioned to acquire skills and values which are relevant and meaningful. In this section the inquiry tries to determine how the NCS intends to support and enable outcomes-based learning in South African schools (South Africa 2000a: 95).

2.2.4.1 Key features of the NCS structure

Features regarding the NCS structure are discussed below.

(a). Critical outcomes

It is proposed that the existing Critical Outcomes be retained and be used in guiding the entire learning process and the development of all learning programmes. The reason is that these 12 Critical Outcomes are seen as providing a more than reasonable agenda for education.

(b). Learning area statements

The Review Committee noted that some of the Specific Outcomes do not depict the cognitive distinctiveness of the learning areas. But more importantly, all of these Specific Outcomes are expressed differently in each learning area. They refer to social goals, values, range between seven and ten for each learning area and relate to subjects or disciplines of learning areas, in other cases similar to the Critical Outcomes.

(c). Learning outcomes

Recommendations made are that the NCS re-affirms the distinctive nature of each Learning Area Statement which identifies the goals, expectations and outcomes to be achieved through related learning outcomes and assessment standards (South Africa 2002a: 11) as they apply to each learning area.

It is recommended that the NCS indicate "which knowledge, within each learning area, should be taught and learnt when, in what sequence, and which level of competence" (South Africa 2002a: 11). This process should be undertaken through the use of learning outcomes and assessment standards for each learning programme by grade. Thus, learning outcomes are derived from the critical and developmental outcomes. They describe the type of knowledge, skills and values that learners should know, demonstrate and be able to do at the end of the GET band. These are prescribed for each learning area. It is also essential to note that learning outcomes do not prescribe content or method (South Africa 2002a: 14).

Learning outcomes by grade should specify the sequence of the core concepts, content and skills to be taught in each learning programme at each grade level; and represent an integrated skill, concept and content statement of the projected learning outcome.

(d). Assessment standards

These should describe the expected level and range of performance for each of the what kind of activities can be set, what assessment strategies should be adopted, and learning outcomes for each grade level; provide assessment exemplars which explain the kind of answers that should be expected; and provide guidance on summative and formative assessment.

2.2.4.2 Principles of the NCS

Educators and teachers will not only need to understand and know education policy explicating C2005 and OBE, but they will also have to understand and know what education policy entrenches environmental learning internationally and nationally. In the South African education context, such knowledge also includes the principles of social justice, a healthy environment, human rights and inclusivity.

The DoE and Training hopes that the "curriculum can play a vital role in creating awareness of the relationship between human rights, a healthy environment, social justice and inclusivity" (South Africa 2002a: 10).Thus all learning area statements reflect the principles and practices of social justice, respect for the environment and human rights as defined in the Constitution (South Africa 2002a: 10). The design and implementation of appropriate learning experiences remains a mammoth challenge for teachers.

2.3 ENVIRONMENT AND ENVIRONMENTAL EDUCATION POLICIES UNDERPINNING THE INCLUSION OF ENVIRONMENTAL LEARNING WITHIN FORMAL EDUCATION IN SOUTH AFRICA

Before studying the policies underpinning the inclusion of environment and EE within formal schooling in South Africa, it is important that an investigation of international policy initiatives guiding environment and environmental learning is undertaken.

2.3.1 International Environmental Education Policy initiatives and implications for formal education

Some of the landmark international events are critical for this inquiry and are therefore briefly illuminated in order to understand why South Africa's education system has embraced active formal environmental learning and has started implementing some of the policy guidelines in this regard (South Africa 1995b:22). These events came into being through enormous pressures from different nations, NGOs and environmentalists concerned about the deteriorating state of the environment. In 1972, world government structures held the Stockholm Conference and produced the Belgrade Charter in 1975 (Janse van Rensburg & Taylor 1993: 11). See Table 2.7 for the important International Environment Events and Trends, and their contributions to EE.

Table 2.7 Important International Environmental Events and Trends

YEAR	EVENT	OUTCOME
1972	The Stockholm Conference on Human Environment	At this conference a recommendation was made to establish an international programme in EE, interdisciplinary and encompassing all levels of education (UNESCO-UNEP 1972).
1975	The Belgrade Charter	A charter is established and the foundation for a world wide environmental education programme is established (UNESCO-UNEP 1976: 1-2).
1977	The Tbilisi Declaration	The Declaration emphasised that environmental education should further the development of conduct compatible with the preservation and improvement of the environment (UNESCO-UNEP1978: 2).
1980	World Conservation Strategy	The World Conservation Strategy pointed out that ultimately the behaviour of societies must be transformed (IUCN, UNEP and WWF 1980.

1987	Moscow Conference	Environmental problems are given priority. Socio-economic and inappropriate human behaviour are seen as problems aggravating environmental risks. Thus, environmental education should play a key role in alleviating the situation (UNESCO-UNEP 1988: 6).
1987	The Brundtland Report	The Report stressed that the worlds' teachers have a crucial role to play in helping to bring about the extensive social changes needed for sustainable development (Brundtland Report 1987:xiv).
1991	Caring for the Earth: A Strategy for sustainable living	The Strategy stressed that living sustainably depends on accepting a duty to seek harmony with people and with nature) IUCN, UNEP & WWF 1991:8).
1992	The Earth Summit - Rio de Janeiro	Agenda 21 was produced in this summit. A decision was taken to acknowledge the critical role of education in promoting sustainable development (UNCED 1992, Chapter 36: 2).
1997	The Rio +5 Conference	The Rio +5 Earth Summit Conference programmes were reviewed. A call for action in environmental sustainable development was made and 27 principles were recommended for action in environment (Earth Summit).
1987	Moscow Conference	Environmental problems are given priority. Socio-economic and inappropriate human behaviour are seen as problems aggravating environmental risks. Thus, environmental education should play a key role in alleviating the situation (UNESCO-UNEP 1988: 6).
2002	The Johannesburg World Summit on Sustainable Development	The theme of the Summit was: People, Planet and Prosperity. The next 5 years (from 2005) were also declared as the decade for environmental learning (World Summit on Sustainble Development 2002).

These resolutions adopted by international conferences or summits have guided and are still directing environmental care programmes, internationally and nationally, with the sole purpose of improving the lives of people. Obviously, education is distinguished as a major contributor to the attainment of such a goal.

Not surprising, therefore, that education and training has become part of the environmental learning agenda. Environmental awareness programmes and EE and training are not only essential for addressing environmental concerns, but are also the key for transforming the behaviour of society towards sustainable lifestyles.

2.3.2 National Environmental Education Policy initiatives and implications for formal education

There is a tendency to only acknowledge those EE policy initiatives that are lobbied by environmental educationists through conferences/workshops like the Dikhololo Workshop on Environment in Brits (O'Donoghue1993) and initiatives like the Environmental Education Policy Initiative and Environmental Education Curriculum Initiative rather than those initiatives undertaken and pursued in government circles. However, this investigation acknowledges the policy initiatives contained in government policy documents such as the RDP (South Africa 1994b), the *Constitution of the Republic of South Africa* (South Africa 1996a), the *White Paper on Education and Training (*South Africa 1995b), *Curriculum 2005. Lifelong learning for the 21st century* (South Africa 1997a), *Environmental Management Act* (South Africa 1999b), and *Revised National Curriculum Statement Grades R - 9* (South Africa 2002a). However, it is acknowledged that the government policy documents containing environmental policies are a result of the lobbying initiatives such as the Dikhololo Workshop on Environment, EEPI and the EECI (Lotz, et al 2000).

The following policy documents guide the purpose, scope and implementation of environmental learning nationally. These policy documents are indicated in Table 2.8.

Table 2.8 National policy documents for environmental education implementation

YEAR	POLICY DOCUMENT	PRINCIPLE ENABLING ENVIRONMENTAL LEARNING
1994	RDP	Rekindle our people's love of the land, to increase environmental education policy at all levels, and empower communities to act on environmental issues and to promote an environmental ethic (South Africa 1994b).
1996	Constitution of the Republic of South Africa.	Every one 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 present and future generations, through reasonable legislative and other measures that (i) prevent pollution and ecological degradation; (ii) promote conservation; and (iii) secure ecologically sustainable economic and social development (South Africa 1996a: 1253)
1995	White Paper on Education and Training.	Principles 2 Ensure that all South Africans are literate. Principle 5 Enable individuals to value, access, and succeed in lifelong education and training of good quality. Principle 20 Environmental education, involving an inter-disciplinary, integrated and active approach to learning, must be a vital element of all levels and programmes of the education and training system, in order to create environmentally literate and active citizens and ensure that all South Africans, present and future, enjoy a decent quality of life through the sustainable use of resources (South Africa 1995b: 21-22).

1999	NEMA	It emphasises that community well-being and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means (South Africa 199b: section 2).
2e+07	Education policy documents for the Foundation Phase, Intermediate Phase and Senior Phase. The Revised National Curriculum Statement	Environment is intended to be used as one of the phase organisers of learning (South Africa 1997c; South Africa 1997d; South Africa 1997e). Environment is integral to all learning areas and is also a focus of learning through the principle of a healthy environment (South Africa 2001; South Africa 2002a).

The policy documents highlighted above are important for environmental learning not only because they give focus to environmental learning, but also because they underscore the endeavours of environmentalists in ensuring that EE is an integral aspect of the South African curriculum. Teachers and educators can enrich teaching and learning with environmental related knowledge, skills and values through the support of environmental learning implementation policies.

2.3.3 Environmental learning as a response to environmental risks

Environmental learning as a response for improving the quality of life in different communities through formal, informal and non-formal strategies remains the focus for most ministries of education, NGOs, business and all interested bodies in the care of nature and humanity (Gutek 1993: 13; 257).

Moore and Masuku van Damme (2002: 68) are of the opinion that EE enables local communities and other citizens to acquire, or rekindle, a knowledge and pride in their natural and cultural heritage. This implies that environmental learning enables learners to acquire essential skills, values, understanding and knowledge of environmental issues and to grapple with strategies of responding appropriately in order to address environmental crises.

Environmental learning gives learners an opportunity to construct meanings critically in social contexts that entail socio-political and economic dimensions of environmental issues. Thus, the challenge lies in encouraging teachers and learners to deepen and challenge (their) limited and superficial understandings (Lotz-Sisitka 2002:116).

The issue of sustainable development as an environmental learning agenda cannot be over emphasised. Yeld (1997: 12) attests that EE is a powerful tool to enable communities and schools to make a positive difference in and for their environment when they engage themselves in learning about sustainable development. Hattingh (2002: 6-12) concurs with this view and he further indicates that environmental learning as a green agenda of nature conservation, as a social, economic agenda of needs satisfaction,

as an integrated agenda of caring for the community of life on earth and as a radical political and ethical agenda of transformation, is a need in and for humanity.

2.3.4 National Environmental Education Policy initiatives in formal education

The implementation of the two environmental learning projects undertaken at the Potchefstroom / Klerksdorp in North West province and Vryheid in KZN province, will be explored in this section(see Chapter 1.1). These two case studies are the SOP and the NEEP.

2.3.4.1 Science Outreach Project (Environmental Education)

The Science Outreach Project is a project of the Faculty of Education at Unisa. The aim of the project is to assist teachers as professionals to better their understanding and skills in OBE and EE so that they can improve their quality of teaching. The project was started in 1997 with schools in KZN, Mpumalanga, North West and the Northern Province (Limpopo).

These provinces have benefited from this project. The project provides LSMs for teachers under the supervision of the leader of the project and facilitators of the disciplines offered (Natural Science, Technology Education, Mathematics Education and EE). This project will be discussed in Chapter 4.

2.3.4.2 National Environmental Education Project

Though the establishment of the NEEP-GET at the national Ministry of Education can be seen as a creation of the Education Ministry, EE integration in formal schooling is the direct result of environmental lobby groups in South Africa who advocated for the inclusion of environmental issues in formal schooling. Ultimately in 1999 the DOE initiated an environmental learning pilot project in six provinces (KZN, Gauteng, Mpumalanga, North West and Free State) between August and December 2000, with the aim of informing the implementation of environmental learning in the NEEP - GET in 2001 (Lotz & Raven 2001:7). The purpose of the pilot project was to establish how environmental learning would be realised in classroom-based learning. The NEEP -GET case study in North West is discussed in Chapter 5.

2.4 THE ROLE OF TEACHERS AND EDUCATORS IN EDUCATION TRANSFORMATION

Because this investigation does not use the terms teacher and educator interchangeably, their respective roles in education are examined separately.

2.4.1 The role of teachers

McDonald (1999: 121) states that everywhere in the world the enthusiasm to raise the quality and standards of educational achievements has been accompanied by an emphasis on the accountability of schools and teachers to the general public and particularly to parents of their learners. He continues to mention that attempts to raise educational standards raise important issues of equity and human rights.

Thus, schools in the post-apartheid era seem to embrace a much wider range of educational functions than in the pre-democratic dispensation. The educational role of teachers cannot be overemphasised in the education process of learners. Not only are teachers viewed as key contributors to the transformation of education in South Africa, but are also envisioned by the NCS to be teachers that are qualified, competent, dedicated and caring and who will be able to fulfill the various roles outlined in the Norms and Standards for Educators.

Teachers are now expected to be facilitators of learning and not the bearers of all knowledge. Other roles are that they should be custodians, communicators with parents, community members, colleagues, and policymakers, leaders, facilitators, teachers, educators, pastors, learners, professionals. Some of these roles are similar to those of the DoE which perceives the roles of teachers as being mediators, designers and managers, leaders, pastoral figures to learners and community, scholars and researchers, life long learners, citizens and community developers, and developers of learning programmes (South Africa 1997d: 71-80).

According to Marsh and Willis (1999:3) precision in planning, flexibility in execution and the intrinsic love of learning and the philanthropic desire to pass the superior aspects of culture on to succeeding generations, are the motivating factors for most teachers and educators to continue teaching (i.e. developing and implementing curriculum) even under trying circumstances and conditions. The NCS therefore, expects teachers to be designers and planners of their own curriculum. Marsh and Willis

(1999:4-6) feel strongly that teachers are the people who should enact the curriculum. Thus, their professional role is to span the gaps between the planned curriculum and the curriculum actually experienced by their learners.

The teachers' role in curriculum development is challenged by the limit on their freedom to make professional decisions on the curriculum. Some of the challenges that teachers encounter are constraints caused by traditions, state laws, administrative directives, financial emergencies, and the immediate wishes of the communities. They are also frequently confronted with the views of powerful groups within society that have vested interests in either preserving schools as they exist or changing them in some particular direction (Marsh & Willis 1999: 6).

Furthermore, the teacher-learner relationship does not have an immediate visible effect. In fact, teachers' influence on children entrusted to their care may not be felt for a long time, and the school itself is only one of several of society's agencies intended to influence children's lives. There is, therefore, danger in putting an emphasis on learners passing examinations at the end of year, as evidence of an immediate effect of learning and not the overall outcome of lifelong learning intended in OBE.

Generally teachers interact with their communities through their school curriculum. It is therefore, essential that they are adequately prepared and continue to grow as professionals. These issues become matters of serious consequence to the broader society as well as deserving considerable investment of time, energy, political will, intellectual rigour and material support (Griffin 1999: 2). This view sums up this aspect of the investigation about the role of teachers in implementing environmental learning. They are certainly indispensable in this task.

2.4.2 The role of educators

The role of educators (cf. 1.7.2.3) involves the support to teachers regarding classroom practice. They are expected to be experts in the fields or disciplines in which they render support to teachers. They also need to be conversant with educational methods and the development of learning support materials. However, sometimes this is a fact they dismiss as erroneous. They do not see the development of resource materials as part of their core business (pers. conversation with subject adviser). In the South African educational context, their core business includes among other things, running daily errands to schools.

The tasks mentioned above do not exonerate them from being 'teachers in the first place', since they initially trained as teachers. They were only elevated to the status of 'educators' later whilst still in the teaching milieu. They will probably continue to play a dual role in the educational sites in South Africa, especially during the transition period. Sometimes they need to respond to realities as seen in the teaching and learning institutions and education management sites (education circuit, regional and head offices).

2.5 CLOSING COMMENTS

The Review Committee of Curriculum 2005 (South Africa 2000: 2) aptly acknowledges the embeddedness of OBE in international education thinking when it states:

> *this model drew on a variety of ideas current in the international arena and reshaped them to fit the local conditions. Included amongst these was that of outcomes-based education. Local conditions and social realities themselves, in turn, shaped consequent developments.*

This study has briefly sketched the sources from which the post-1994 South African education system drew its guiding tenets and the reason for such a choice given the global demands of education.

Manzer (1994: 213) points out that investing in the human capital of a better-educated work force is the single most important strategy for a society to compete effectively in a knowledge-intensive global economy. It is for this reason that South Africa had to transform its education through the implementation of C2005 and OBE as an educational system and strategy, that elevates the quality and access of its education to all of its citizens.

In this inquiry it seems that educational policy-making and implementation are fundamentally a concern for all South Africans as a democratic community that enshrines a broad participation strategy in policy formulation. In contrast Manzer (1994:19) referring to the Canadian education situation strongly supports the notion that the implementation of educational policy is best done by professional school teachers and educational administrators without interference by parents or politicians. However, policy implementation inevitably incorporates political values; hence, educational administration should not be institutionally segregated from democratic processes of educational politics and policy formulation. In South Africa since the inception of the democratic order in 1994, the Department of Education consults widely in policy making (South Africa 2002: 2), though teachers are the main custodians of the implementation of OBE.

The RNCS is the most important policy document concerning current curriculum development for all South African schools. It perceives environmental issues as integral processes within its principles, learning area statements and outcomes. This indicates a major shift from the initial position of seeing environment as a phase organiser of learning programmes envisaged to be integrated across all learning areas.

Teachers and educators are the implementors of environmental learning in schools. Without their support and willingness to fully dedicate their time and energies, environmental learning will not succeed. Of course, it can be expected that certain schools will meaningfully undertake environmental learning activities/programmes and others will need support as determined by their context.

Taylor (1999) reiterates the notion of school-context teaching and learning. He says that “formal education, or schooling, is always contextual in that it occurs in a particular place and in a given historical period”. However, it is critical to understand that the contextualisation of learning is not simplistic but is steeped in the sophistication of meaning construction through appropriate learning outcomes.

However, INSET is viewed in this study as a vital human resource development strategy discharged by the DoE. Professionally developed and skilled teachers and educators are seen as pillars of the success and meaningful implementation of education programmes in general and EE learning in particular in South African schools (South Africa 1995b: 29).

There seems to be no doubt that the C2005 and OBE in South Africa are rooted within international education orientations, mainly those education systems practising some form of OBE. However, the South African government policies have contributed immensely to the adoption of such an approach to education. Critically important is the fact that the South African curriculum seems to be sensitive to contextual needs, and thus, keeps on refining some of its aspects that need improvement.

The education community is therefore interested in how EE policy is actualised in formal schooling practically. Chapter 3 investigates the methodology and research process for this inquiry.

CHAPTER 3

METHODOLOGY AND RESEARCH PROCESS

> *The most immediate external factors that affect the research process are: opportunity, peers and mentors, institutional requirements, experience of the researcher, literature and emerging research questions. You may want to think of these as the micro-forces that affect the research process. The macro-forces ethics, human resources, values, and the environment also influence the research process and shape the context. If a research project is to succeed you must be aware of how these micro- and macro-forces can both positively and negatively impact the research process* (Anderson & Arsenault 1999: 27-28).

3.1 INTRODUCTION

The debate regarding the issues and challenges encountered by teachers and educators in implementing EE policy in formal schooling is not straightforward, but complex. What complicates this discourse is that not one methodology seems to be adequate in unravelling all the issues and challenges faced by the education fraternity. Thus, appropriate research designs and methods need to be sought when faced with school-based research involving education policy (in this case EE policy). It is hoped therefore that the following discussion regarding the theoretical framework, research design and process, research method and data collection techniques will be appropriate for this investigation in critically studying the research focus and providing credible findings.

There are various definitions of research methodology explicated by various researchers. Le Roux (2001d: 33) perceives methodology as the research method used in a particular inquiry, which falls under two categories - experimental and nonexperimental research and qualitative and quantitative research. Miles and Huberman (1994: 5) see research methodology as a research design for data collection and data analysis. However, the definition by Leedy (1993: 121) and Terre Blanche and Durrheim (1999: 6) seems to broaden Miles and Huberman's definition. They state that methodology is merely an operational framework (strategic framework for action) within which the 'facts' are placed so that their meaning may be seen more clearly (that is, serving as a bridge between research questions and the execution or implementation of the research). This explanation embraces broad-based data collection techniques, which makes it appropriate for this research since it will allow for the qualitative approach and a naturalistic-interpretive paradigm for data collection, analysis and interpretation of the facts to be employed in the investigation.

According to McMillan and Schumacher (1989:30) and Terre Blanche Durrheim (1999: 29), a research design refers to the plan and structure of the investigation used to obtain evidence to answer research questions. It describes the procedures for conducting the study, including when, from whom and under what conditions the data will be obtained. It is clear that this plan does not only include the methods to be used in collecting data, but also includes how the collected data are to be analysed, interpreted and reported. In this investigation therefore, research design and research methodology will be used interchangeably.

A research process normally involves the execution of the research design plan step-by-step (De Vos 1998: 37). This plan is based among other aspects of research, on the research method of inquiry. For example, if the method of investigation is qualitative, it will build its design activities around this method guided by its theoretical framework. It is however, critical to note that the qualitative research process is not a linear process and therefore, although various steps taken during the fieldwork process could be identified, it does not mean that one stage will follow the other sequentially (Schurink, Schurink & Poggenpoel 1998: 256).

Deviations made during the research process (from what is stipulated) will be pointed out during the research analysis stage.

3.2 THEORETICAL FRAMEWORK

In order to refine a research focus area a theoretical framework upon which to base the study is critical. Bless and Higson-Smith (1995: 23) argue that "theory serves as an orientation for gathering facts since it specifies the types of facts to be systematically observed". This indicates the viewpoint that elements of a theory are interrelated and therefore comprise enabling tools for research questions to be deduced based upon particular relationships between the elements (Terre Blanche & Durrheim 1999: 19).

LeCompte and Preissle (1993: 118-119) indicate that the role of theory in research is not only crucial in pointing out how things are connected, but also pivotal in explaining why things occur as they do. Educational theory varies in its underlying premises. It may be predictive – if it explains general phenomenon and it may be retrodictive – in that it explains things which happened in the more or less distant past, such as historical explanations of the causes of specific revolutions. Moreover, it may be descriptive – in that it is more oriented to things close in time. An example of the latter is an explanation of how EE policy is implemented in schools in the Vryheid region in KZN and the Potchefstroom region in North West.

Although theories are generally used to explain phenomena in individual cases (situations) and not generalised (LeCompte & Preissle 1993: 119), it is hoped that the two case studies under investigation will explain the issues and challenges faced by teachers and educators, and will contribute to the grounding of educational policy in what is taking place in schools as far as school-based EE implementation is concerned.

Theories may also centre on understanding and interpreting the meaning of constructs rather than explanation of phenomena. These theories address interpretive rather than sensory phenomena (LeCompte & Preissle 1993: 119) as this inquiry intends to do. In the two case studies the participants are expected to construct meaning of the interactions among teachers, educators and CS staff. This means that the interpretive-interactionist theoretical perspective will be used while employing the qualitative methods of inquiry.

Such an orientation to the study is intended to allow the researcher not to frame the research design and process in a particular theory, but to allow the theory to emerge from the data. Glaser and Strause (1967) confirm the notion of grounded theory not framing the process of a research inquiry, that is, allowing research to be undertaken without a priori theory (hypothetico-deductive approach) where theoretical propositions or hypothesis are generated in advance of the research process. It must be noted that the research data for this study warrants grounded theorising where theory emerges from and is grounded in data.

3.3 RESEARCH METHOD

In this section the qualitative research method is discussed, that is, educational paradigms that allow data to be collected qualitatively.

3.3.1 Qualitative research designs

Qualitative and quantitative methods are not supposed to be exclusive methodologies for the sake of exclusivity. Leedy (1993: 141) indicates that they who practise qualitative research must eschew quantitative research and vise versa. Supporting this notion, Guba and Lincoln (1994:106) argue that if both schools of thought would practise quantitative and qualitative research in the 'hard' sciences (chemistry, mathematics, natural science) and the 'soft' science (social sciences), this "might thus lead both to greater acceptance and to more valid knowledge". Eisner's argument (1991: 32-40) that the difference between

qualitative inquiry and quantitative research pertains mainly to the forms of representation that are emphasised when presenting a body of knowledge, seem to be reiterating that both methods address the question of investigating phenomena from different inquiry angles, theoretical paradigms, data collection methods and, data analysis and interpretation processes. In other words, the research question(s) and research design will determine whether a qualitative or quantitative research design should be conducted. Leedy (1995: 137) explains this view eloquently when stating that the data sought controls the methodology (research design), be it qualitative or quantitative.

Because qualitative research methods investigate phenomena in their natural settings or social context (Terre Blanche & Durrheim 1999: 123; Fraenkel & Wallen 1990: 367-369; Miles & Huberman 1994: 9;

McMillan & Schumacher 1989: 385; Sherman & Reid1994: 1-2; Schurink et al 1998: 240; Sherman & Webb 1990: 5), implying that the data depict verbal interaction processes in the contexts of investigation, the qualitative methodology seems to be an appropriate option in this inquiry. Other reasons for selecting this methodology are based on the six features of qualitative research indicated by Eisner (1991: 32-40) and Fraenkel and Wallen (1990: 368-369). An abridged version of these features is provided below:

- **G** Qualitative research tends to be field focused (embedded in the natural setting).
- **G** Qualitative studies perceive the self as a method (instrument of data collection).
- **G** Qualitative research is interpretive in nature. Inquirers endeavour to account for what they have given an account of. They also aim beneath manifest behaviour to the meaning events have for those who experience them.
- **G** Qualitative inquiries display the use of expressive language and the presence of voice in the text (for an example ''I had a discussion with the teacher and he said that ....").
- **G** Qualitative research focuses on participants.
- **G** Qualitative studies become believable because of their coherence, insight and instrumental utility.

Thus qualitative investigations lend themselves to a variety of methods to interpret, analyse and understand. Their research design and process is steeped in natural interactions and social context, making it imperative for the researcher to acknowledge his/her participation in the research context and to interrogate reflexively his/her effects on the data gathered (Scott & Usher 1999: 100; Terre Blanche & Durrheim 1999: 126-127). There is, however, contestation regarding the researcher-as- instrument (Walker 1993: 91-92; Wolcott 1975:

115). An elaborative discussion of the researcher as an instrument of data gathering ensues in 3.4.

LeCompte and Preissle (1993: 92-93) argue that the qualitative inquirer is perceived as subjective, and that this stand ignores the fact that:

> *qualitative research is distinguished partly by its admission of the subjective perception and biases of both participants and researcher into the research frame. The subjectivities of participants are usually a major part of what investigators seek to capture in their records, the subjectivities of the researcher serve multiple purposes...(they) are essential to establishing and building the intimate relationships with participants that permit trust and confidence, ...and subjective reactions and responses are often sources for methodological decisions.*

The question of the subjectivity of the qualitative data in a research investigation cannot be seen as a factor rendering such a study unworthy and inconsistent with the tenets of scientific investigation. This

type of scientific inquiry (qualitative research) is in its essence based on the interpretation of data collected in and between individuals, groups and communities in specific settings. The meanings ascribed to the settings are therefore personal experiences as constructed by those researching and being researched in a particular site. Therefore, Scott and Usher (1999: 23) argue that:

> *any acknowledgement of the location of reason and hence of science in "tradition" (or put it another way, in its own cultural confusions) immediately Introduces an unacceptable subjectivity, thus destroying the 'objectivity' of science.*

This investigation acknowledges the 'positive intentions' of all the participants involved in the research processes. Verification processes guiding the drawing of conclusions will endeavour to ensure that the subjectivities purported in the investigation are useful. This will be possible as McMillan and Schumacher (1989: 384) point out that symbolic interactionism considers the researcher's own subjective experiences as an important (useful) source of data.

3.3.1.1 Symbolic interactionism

Blumer (1969: 2-3) defines symbolic interactionism as an approach to the study of human group life and human conduct. He further argues that symbolic interactionism rests on three premises that:

G human beings act toward things on the basis of the meanings that things

have for them.

- the meaning of such things is derived from, or arises out of, the social interaction that one has with one's fellows,
- these meanings are handled in, and modified through, an interpretative process used by the person in dealing with the things he (she) encounters.

This argument simply indicates that symbolic interactionism observes meanings as social constructs, as creations that are in and through the defining activities of people as they interact. This notion is reiterated by McMillan and Schumacher (1989: 386) when they say that reality is a social construction, that individuals or groups derive or ascribe meanings to specific entities such as events, persons or objects.

On the other hand, Denzin (1989: 7) states that interpretive-interactionism refers to the attempt to make the world of problematic lived experience of ordinary people directly available to the reader. This means that "the interactionist interprets these worlds". Denzin (1989: 7; 1987: 19) points out that the research methods of this approach include open-ended, creative interviewing, document analysis, semiotics, life-history, life-story, personal experience and self-story construction, participant observation and thick descriptions. According to Denzin (1989: 33) a thick description encompasses the following features: (1) it gives the context of an act, (2) it states the intention and meanings that organize the action, (3) it traces the evolution and development of the act, (4) it presents the action as a text that can then be interpreted.

The intention of this inquiry to use the above concepts interchangeably concurs with Denzin's (1987: 13 & 19) notion that the term interpretive-interactionism, signifies an attempt to join traditional symbolic interactionist thought with participant observation, and that interpretive-interactionism is a point of view that confers meaning on problematic symbolic interaction. Based on this argument, symbolic interactionism andinterpretive-interactionism are used interchangeably in this investigation.

3.3.1.2 Interpretive-interactionist paradigm

The interpretive-interactionist paradigm lends itself to interpretive and interactive approaches of inquiring. According to LeCompte and Preissle (1993: 24), the researcher is perceived as involved and subjective in the inquiry and the researched as active and collaborative. The merits of the researcher's subjectivity are discussed in 3.3.

According to Denzin (1989:11) and Becker (1967: 23-24), there are several advantages for using the interpretive approach, of which the following are relevant for this investigation:

- the assumptions often belied by the facts of experience that are held by various interested parties, policy-makers, educators teachers can be located and shown to be enhancing or posing challenges to all involved in that situation,
- strategic points of intervention into social situations (schools) can be identified,
- it is possible to suggest alternative moral points of view from which the problem the policy, and the programme can be interpreted and assessed (for example, the EE policy implementation strategy which is the focus of this study).

Denzin (1989: 19) states that the interpretive research has characteristics that:

- are existential and interactional,
- are naturalistic,
- are based on sophisticated rigour,
- could be pure and applied,
- are postpositivist,
- are concerned with the social construction of knowledge.

Critically important to this research approach is the fact that it involves the collection of thick description and personal experiences as stories of human interactions within their context (Denzin 1989: 10). This means that more than one data gathering method can be used (Terre Blanche & Durrheim 1999: 139). Reiterating this fact, Denzin and Lincoln (1994: 2) state that in the qualitative research process a multi-perspective approach (utilising different qualitative techniques and data collection methods) is used in social interactions, aimed at describing, making sense of, interpreting or reconstructing the interaction in terms of the meanings that the subjects attach to it.

Fraenkel and Wallen (1990:379-380) concur with Terre Blanche and Durrheim (1999) and with Denzin and Lincoln (1994) when stating that qualitative researchers check on the perceptions in order to ensure that

they are not being misinformed, that they are, in effect, seeing (and hearing) what they think they are seeing (and what they are hearing). They indicate that procedures for checking on or enhancing validity (Fraenkel & Wallen 1990: 379) and reliability (Fraenkel & Wallen 1990: 179) include using a variety of instruments for data collection in the form of words and pictures rather than numbers; prioritising the processes and the findings within the setting and allowing data collected to be analysed inductively. Shortcomings of the qualitative research inquiry which relies heavily on descriptions of interactions in specific settings are eliminated. The main aim is to critically establish the 'what' and the 'how' of problematic social experience (in this case, its to establish the 'what' , 'how' and 'why' of EE policy implementation in formal schooling).

3.3.1.3 Naturalistic orientation to research

The approach involves a holistic description to data collection, i.e., describing in detail all of what goes on in a particular activity or situation rather than on comparing the effects of a particular treatment as in experimental research (Fraenkel & Wallen 1990: 368).

Terre Blanche and Durrheim (1999: 127-128) reiterate what Fraenkel and Wallen (1990: 379-380) are echoing in stating that the natural setting is the direct source of data and that the researcher (self instrument) is the key instrument in this type of research. This investigation is also based on the view that the settings of the two case studies are the main sources of data.

3.3.2 Case study as research-based inquiry

Denzin (1989: 26) argues that case studies will often be the preferred method, because they are epistemologically in harmony with the reader's experience and thus to that person's natural basis for generalization. However, LeCompte and Preissle (1993: 119) argue differently as far as the generalisation of case study findings is concerned. To them case study results are particular to a context and can therefore not be generalised because they cannot be replicated in a different setting. Le Roux (2001d: 90) seems to support this view when she indicates that data acquired in a case study provide a description of current conditions and that a series of case studies (one or more) may reveal information that might help in forming a new idea for further research. This means that the results are not generalised but are context based and are useful for further investigation of the issues revealed.

This study is based on two case studies. The SOP case study in Vryheid in KZN and the NEEP-GET case study in Potchefstroom in North West. In order to study these two cases, a cluster-based approach to

teacher professional development is used. This means that only one cluster of teachers and educators in Vryheid and one cluster of teachers and educators in the Potchefstroom will be considered for study.

According to Scott and Usher (1999: 70) cluster sampling refers to the selection of clusters which contain individuals who comprise the object of study. The cluster may be chosen on a random basis, or with individuals bound by a common purpose to accomplish a set task (purposive selection). The nature or format of the case studies is based on the assumption that case studies provide opportunities for those involved to share their valuable learning experiences in order to improve the quality of education. Thus, during the learning process various issues and challenges encountered in implementing education policy can be unravelled. These case studies are further based on the following three views:

- interpretive appraisal,
- formative, monitoring appraisal,
- summative appraisal.

These appraisals will probably not try to categorise or separate the approaches into 'little boxes'. An integrated approach seems to be the option in order to allow for maximum analysis and inductive interpretation of collected data.

3.3.2.1 Merits of 'case studies' for this inquiry

There are numerous definitions of the case study revealed by literature review (Spirer 1980: 13). However, in this investigation only a few definitions are indicated for the purpose of explicating the usefulness of case study as a method of data collection in qualitative research designs.

Stenhouse (1988: 49) advances a comparative reason for this approach between qualitative and quantitative methods, while clarifying what case study is all about. Stenhouse explicates that:

> *case study methods are often described as naturalistic, qualitative, descriptive, responsive, interpretative, hermeneutic, or idiographic by way of contrast to the abstracted, quantitative, nomothetic approach of psychostatsical methods that strip observation to indices.*

Stenhouse's perspective is reiterated by De Vos and Fouche (1998: 125) and Stake (1997:406) when they argue that case study is a research design strategy which intends to describe a single unit thoroughly during a specific period in time, and that a unit might include an individual case, (or more cases). They

further indicate that longitudinal case study can use any method (i.e., multi-faceted methods), and that data are typically obtained through observation, in interviews with key informants (participants) and from available documents. Clarifying the sampling process of case study they say that this type of design is purposive and not random. The researcher selects cases which will provide contrasting experiences that will assist in developing ideas.

Spirer (1980: 13) identifies four characteristics of case study: particularistic, holistic, longitudinal, and qualitative. Merriam (1998: 11-13) also distinguishes four characteristics or features of case study: pluralistic, descriptive, heuristic, and inductive. In this investigation all the features are discussed because they provide a broad base for understanding and portraying the dynamic and complex nature of case study research. These characteristics are succinctly discussed below:

G The case study is particularistic

This means that the case study is contextually bound and focuses on events in one particular context (setting). Spirer (1980: 13) emphasises this fact when saying that:

> *The case is something deemed worthy of close watch. It has character, it has a totality, it has boundaries. It is not something we want to represent by a score. It is not something we want to represent only by an array of scores. It is a complex, dynamic system. We want to understand its own complexity.*

G The case study is holistic

Its intentions are to 'capture' the totality of the phenomenon studied. It therefore, endeavours to display (Spirer 1980: 13):

> *... the interplay of different factors that are brought to bear on the program and tries to present the views of the different groups involved. The intended result is a rich description and understanding of the program, its complexity, and its dynamic nature*.

G The case study is longitudinal

It relates a story of a phenomenon as it unfolds over a period of time. Because of time and financial constraints, it may only portray 'moments in time' of a phenomenon

G The case study is usually qualitative

It uses a variety of research methods. Qualitative and quantitative methods may complement each other in the collection of data in the social sciences research process. However, qualitative research tends to favour the use of case study in gathering information, because case studies use language in describing images, analysing situations and interpreting documents, events, and artifacts.

G Pluralistic

Explicated as particularistic.

G Descriptive

This aspect means that the final case study report portrays a rich and thick description of the phenomenon under investigation.

G Heuristic

The phenomenon studied is accented in such a manner that the reader is enabled to grasp fully what is researched.

G Inductive

Data are grounded in the context in which the investigation takes place. Thus, issues are reasoned inductively.

Johnson and Christensen (2000: 328) argue that instead of distinguishing features of case study, one can characterise case study on the basis of whether the case is:

G intrinsic – meaning that the interest is in understanding a specific case;

G instrumental – meaning that the interest is in understanding something more general;

G collective – meaning that the interest is in exploring a multiple of cases in one research investigation.

According to Le Grange (2000: 169) case studies in education have not only offered

useful insights into educational practice, but have also influenced educational policy.

Le Grange cites his own experiences in using case study. Displaying a concern in the restriction of our ways of communication, he says that:

> *My concern ... is: how we as educational researchers can help those who inhabit our schools, colleges, universities and education departments to better understand educational programmes and educational problems, and how we can communicate our research in more accessible ways. I am convinced that case study has merits in this regard.*

Nevertheless, all research methods have limits to a certain extent, case study included (Spirer 1980: 16). It is hoped that using case study in this inquiry will enable the researcher to reveal the complexities and dynamic nature of understanding the EE policy implementation in formal schooling, thus exposing the issues and challenges that teachers, learners and educators encounter in their endeavour to realise quality environmental learning.

3.3.2.2 Short term cluster-based workshops

Short term cluster-based workshops refer to workshops that are composed of a group of teachers (individuals) with a common purpose who come together for a limited duration. For example, teachers participate in a series of workshops over a short period of time (less than 6 months). For example in the SOP case study.

3.3.2.3 Long term cluster-based workshops

These are cluster-based workshops that take place over a long period of time. Participants come together on specific agreed upon times to focus on matters of common interest. For example participation of teachers or educators in long term projects (longer than 6 months). For example in the NEEP-GET case study.

3.3.3 Participants' roles supporting the research methods

In this study the researcher's role is to describe and produce 'richly detailed' descriptions and accounts of interactions and experiences given by the participants.

The researcher assumes an interactive social role in which (s)he records observations and interactions with participants in the settings (McMillan & Schumacher 1989: 385). Researchers are, therefore, trusted to write worthy accounts of the interactions and also to explore documents relating to the research question. Denzin

(1989: 10) concurs with Lincoln and Guba (1985: 199) that the researcher who conducts her/his research in the qualitative methodology ought to realise that she/he is entrusted with the most challenging task of ensuring that the data gathered is thickly described and accounted for.The intention of the researcher is therefore, to ensure that data that is critically and thickly described and accounted for and is collected in order to ensure a rigorous process of data analysis and interpretation.

3.4 DATA COLLECTION

Qualitative inquiry uses more than one method of data collection because of the subjective nature of data to be gathered (Le Roux 2001d:74).This is caused by the researcher's reliance partly or entirely on her/his feelings, impressions and judgements in collecting data. They also rely heavily on their own interpretations in understanding the meaning and giving meaning to their data. However, secondary sources of data gathering are as valuable as the primary ones.

3.4.1 Research instruments/methods

There are various ways of classifying data collection instruments in educational research. Adler and Adler (1994: 377), Fontana and Frey (1994: 361), Knight (2002: 56 & 61), Scott and Usher (1999: 99 & 108), Terre Blanche and Durrheim (1999: 128 &134), classify qualitative data gathering methods into two main groups: observation and interviews. Under each main group, they discuss relevant techniques of how to go about the collection process. Johnson and Christensen (2000: 320) argue that any of the methods of data collection: observation, interviews, questionnaires, documents, can be used in case study research indicating that this kind of research "tends to be pragmatic and advocate the use of multiple methods and multiple data sources"(Johnson & Christensen (2000: 330). They however, cite that qualitative research methods tend to use participant observation, in-depth interviews, and open-ended questionnaires for data gathering.

LeCompte and Preissle (1993: 158 & 205) mention that there are interactive and noninteractive data collection methods. These may be subdivided into more specific strategies, i.e., participant observation, and participant interviewing. Adler and Adler (1994), Fontana and Frey (1994), Knight (2002) Scott and Usher

(1999) and Terre Blanche and Durrheim (1999), describe data gathering instruments' categories that are easy to use and are appropriate since they also elaborate on the roles of the researcher, participants and documents in interpretive research .

Although qualitative researchers can only specify the research instruments used in the collection of their research data (LeCompte & Preissle 1993: 159; Johnson & Christensen 2000: 324) when they begin synthesising and analysing their data, it is critical for the researcher to know exactly how data will be collected before entering the study site(s). This does not mean that the researcher will not continuously check whether the data wanted are satisfactorily gathered by the methods used, and that the research question(s) are adequately answered.

3.4.1.1 Observation

Both the researcher and participant(s) are strategically positioned throughout the research process to gather data grounded in context. Their roles in this process cannot be taken for granted. Before embarking on the discussion of their roles in the qualitative case study, it is appropriate to explicate briefly observation as an instrument of qualitative research that tries to establish (understand) what issues and challenges teachers and educators encounter when practising environmental learning.

(a). Observing by being there: 'little structure'

Knight (2002: 117) explains that this technique is useful "in the exploratory stages, getting a feel for situations, what people do and what matters". Since it would be difficult to compare observations made without a common agenda and there would be a high risk of missing out on subtle and significant things, an observation schedule is essential, e.g., when attending the first workshop and visiting schools for the first time.

(b). Semi-structured observation

This technique uses a schedule that contains questions that are fixed-response probes, and questions that are open-ended. The researcher is also given an opportunity to probe further if need be. Participants are therefore skilfully directed to explain their decisions and answers to questions asked.

3.4.1.2 Interviews

The following techniques are researcher designed. This means that the researcher must design a schedule which will guide the discussion or responses probed (see a, b and c below). Questions asked can be a combination of fixed-responses and open-ended probes and are stated in the schedule. During the probing, the researcher can improvise or change the course of probing as the need demands. Commenting about this process in interviews (face-to-face work), Knight (2002: 50) indicates that:

> *... for many researchers, improvisation is a sin and flexibility a curse. For others, though, face-to-face work offers the chance to change the direction of a whole inquiry to accommodate new insights, comments made by participants, prompts or patter that turn out to work well. They can also jettison things that aren't working. With research at a distance, the researcher watches helplessly as the enquiry keeps heading to the rocks.*

Interviews also put an emphasis on the role of the researcher in the research process.

The researcher is seen as part of the data development and collection process (Knight 2002: 54). Thus, the researcher is also perceived as the data collection instrument, and together with the participants, they create the interview (see 3.3.3).

(a). Semi-structured interviewing

This instrument uses a researcher formulated schedule to involve participants in the research through fixed response questions and open-ended questions. Participants are encouraged to explain their responses in order for the researcher to gain an understanding of their beliefs in relation to the area of study, e.g., education.

(b). Focus group interviewing

According to Knight (2002: 63) a flexible sequence allows for the researcher and participant(s) to address issues that are not perhaps adequately given attention or answered in questionnaires. This might be in the form of lightly structured prompts or questions, in a flexible sequence. Knight (2002: 117) goes on to say that focus group interviewing is "very useful for identifying the range of ideas, concerns, feelings, etc, that people have, (and that they are) widely used ... to get a sense of the sort of things that concern people, that they talk about, prefer, dislike, etc". This is a useful technique in this study to check whether critical issues are attended to or not. Focus group interviewing intends to interview a selected sample of a research population or the whole research group if it is small.

Knight (2002: 117) indicates that semi-structured questionnaires are an attractive way of combining fixed response probes and requests for an explanation. In other words, fixed response items are combined with open-ended requests for explanations.

Questionnaires can be used in collecting data normally through the post – known as self-administered questionnaires (Knight 2002: 87). However, Knight argues that if questionnaires are not self-administered, then they should be reserved for face-to-face interviewing. Scott and Usher (1999 : 108) concur with Knight when they indicate that the purpose of using pre-set questionnaire methods is to gather information across a large number of cases. Seeing questionnaires as an interview technique of data gathering, fits in with the envisaged plan of this study to ensure that these questionnaires are administered during the workshops sessions. This strategy will ensure that all the participants are given the opportunity to respond and hand in their questionnaires during the workshop time. Expenses, loss of posted questionnaires and delays will be avoided.

3.4.1.3 Photographs

Walker (1993: 83) says that:

> *We can use the photograph in the context of memory-work, as an instrument for the recovery of meaning, in a way that we all recognise when we think of how we view collections of photographs in the drawer at home. What is important is not the image in itself so much as the relationship between the image and the ways we make sense of it and the ways in which we value it.*

It is indicated explicitly by Walker that interactions depicted by the photograph image are critical in reflexive learning in interpretive research. Though there are numerous uses of photographs in educational research, it seems that it is necessary to utilise photographs to study relationships in social contexts.

This study views photograph usage as an enriching method in a qualitative research design. They complement language usage. Language limitations can be overcome by the use of photographs . Highlighting the shortcomings of language, Le Grange (2000: 169) argues that “although language is likely to remain central to interpretive research work it has certain shortcomings and its limitations often go unrecognised”, and “that language, though important, remains only one way of representing social life“.

Photographs present researchers with ‘another method’ of gathering data in qualitative research. It is therefore hoped that using photographs in this research will lead to the acquisition of data which might not

have been captured through the use of other data collection methods, especially data that reflect critically on the socio-political contexts of the schools.

Summing up this section (3.4), it is important to note that it is ironic that data collection methods like questionnaires, reports and documents, and photos (3.4.1.3) are sometimes viewed as noninteractive because only when they stand on their own, are they noninteractive. But with the interrogation of the researcher and the participants, they yield a dialogue within that context (Terre Blanche & Durrheim 1999: 127) which enables the researcher to continue exploring them for accounts and interactions that would answer the 'what', 'how', 'when' (what replaced by 'why'). Denzin (1989: 24) argues that 'how' is embedded in social experiences and constructed by interacting individuals, and 'when' is guided by the research focus and sub-questions, and is based on the notion that while the researcher is gathering information, information must be created, organised and presented in terms of ideas that can be verbalised (Schurink, Schurink & Poggenpoel 1998: 328).

3.4.1.4 The researcher as the primary source of data collection

Qualitative researchers are viewed as primary data collectors (Le Roux 2001d: 74; Terre Blanche & Durrheim 1999: 126). This view is also attested by Knight (2002: 54) when indicating that the researcher is part of the data development and collection source in qualitative research.

The researcher is a participant in qualitative research. This notion is based on the belief that the researcher is part of the world that consists of individuals and collections of individuals interacting with each other and negotiating meanings in the course of their daily activities (Burgess 1984: 78).

3.4.2 Validity and reliability of data collected

Sowell (2001:145) argues that data in case study research should (a) be collected over a time span

sufficient to assure their accuracy and (b) be collected through the use ofmore than one instrument to ensure that all data collected are consistent with the events embodied in the research. To review data for accuracy might even call for two or more participants to gather information simultaneously. In other situations, researchers gather data using more than one collection strategy.

Knight (2002: 550) supports this view of ensuring that data collected are both valid and reliable. He stresses that data gathered through interviews or observations, should be fed back to the participants to check whether the researcher is on the same wave length regarding aspects of the discussion. Participants can then read, comment and suggest changes to the field notes. Sometimes further discussions can be carried through the telephone if the issue(s) checked are not too many.

3.4.3 Sources consulted

Literature to be reviewed in regard to this research inquiry falls under two categories, namely primary sources and secondary sources.

3.4.3.1 Primary sources

Primary sources consulted include government policies, government reports, education department reports, environment department policies and reports, newspaper clippings on education policy issue and SOP and NEEP-GET documents.

Field notes and field notes transcripts are valuable sources of information for the study. Some of the field notes are based on photographs of environmental issues in the schools participating in the research (see Chapter 4).

3.4.3.2 Secondary sources

Sources on research in education, research in EE and education policy have been retrieved. These sources are in the form of books, journal articles and education communiques. Several EE resources were also accessed from the SOP leader at Unisa and from the NEEP-GET office in Pretoria.

3.5 RESEARCH DESIGN AND PROCESS

It is envisaged that any research design should focus on a research question. This is so because the research design provides the researcher and participants the opportunity to focus on the issues at hand rather than to digress. Thyer (1992: 94) defines a research design as a blue-print or detailed plan for how a research investigation is to be studied (see 3.1 also). A specific view of a research design is expounded by Huyseman (1993: 10) who states that such a plan or blue-print should offer a framework according to which data are to be collected to study the research focus or question in the most economic way. This does not mean in any way that the research design (blue-print/ plan) is a fixed, non flexible plan that needs to be adhered to through thick and thin (Huyseman 1993).

McMillan and Schumacher (1989: 385) also argue that the research process and methods adopt a flexible stance towards the research strategies which encompasses various combinations of participant-observation, in-depth interviews, and artifact collection. Anderson and Arsenault (1999: 27-28) reiterate the dynamic nature of research processes when they indicate that micro-forces and macro-forces affect the research process either positively or negatively. This means that the research process is dynamic and responds to contextual forces within a methodology appropriate to the research question and sub-questions.

Durrheim (in Terre Blanche & Durrheim 1999: 31) goes on to say that:

> *Although there is nothing wrong in understanding research designs as blueprints, there are other legitimate research designs that cannot be defined in these terms. Qualitative researchers in particular propose designs that are more open, fluid and changeable, and are not defined purely in technical terms. According to this view, research is an iterative process that requires a flexible, non-sequential approach.*

This explication by Durrheim, and supported by Lincoln and Guba (1985: 225), is seen as a broad strategic framework for research. It intends to allow the researcher to specify a series of activities which would ensure that valid conclusions can be drawn from the research. Durrheim (in Terre Blanche & Durrheim 1999: 32-33) further argues that a flexible and pragmatic research design cannot be an excuse for not providing a detailed strategic framework or for producing invalid or unsound conclusions.

The researcher acknowledges that such a strategic framework does not necessarily mean that this is an easy way for collecting needed data for the investigation. Durrheim's (in Terre Blanche & Durrheim 1999: 33) caution is critical. He reiterates the fact that:

Far from being an easy way out, fluid and pragmatic research designs make for very demanding research, as the researcher must continually reflect on the research process, and ... make difficult decisions, refine and develop the research design throughout the research process to ensure valid conclusions.

Both Durrheim (1999: 30) and LeCompte and Preissle (1993: 30) indicate that the research may be viewed as a process consisting of stages. Durrheim mentions four stages which link the research activities composing the research process bi-directionally:

- **G** Stage 1: defining the research question or focus.
- **G** Stage 2: designing the research (this stage involves multiple decisions about how the data will be gathered and analysed).
- **G** Stage 3: implementing or executing the research (that is, data collection and data analysis - to ensure the final report).
- **G** Stage 4: writing up the research report (answers the final research question or focus).

On the other hand, Le Compte and Preissle (1993), perceive the stages as criteria that need to be considered when undertaking research. These criteria are: clarification of the research design language; formulating research purposes and questions; theoretical influences on the research purpose; assumptions governing social science research design and; the research process as a qualitative, interpretive-interactionist, naturalistic endeavour. Although De Vos (1998: 43-44) supports Durrheim's research design-process, his research design has six stages. They are briefly explained below as applied to this study.

- **G** Stage I, choosing a research question and research sub-questions.

  This activity is detailed in Chapter 1.
- **G** Stage II, preparing for the field of investigation.

  Gaining entry and building relationships during data gathering activities throughout the research process. Consider assumptions (De Vos 1998: 43). Discussed in the case studies in Chapter 4 and Chapter 5.
- **G** Stage III, purposive sample selection.

  Framing the sample; selecting a specific research design; delineating the researcher's role in the research; identifying boundaries for data collection;Establishing protocol for recording information and the coding of procedures; Writing the research proposal. Chapter 1, Chapter 2, Chapter 3 and Chapter 6.

- Stage IV, data collection.

  Conducting interviews; recording observations; recording questionnaire information; collecting and logging data; collecting information through observation, interviews, etc. and recording of data immediately. Chapter 4 and Chapter 5.

- Stage V, analysing and interpreting the data.

  Data processing; data analysis; mapping the findings; Making recommendations; drawing conclusions. Chapter 4. Chapter 5 and Chapter 6.

- Stage VI, writing the report

De Vos's research process seems to be elaborative. It does not assume that qualitative researchers would necessarily explore all the activities involved in such a study. All activities thought to be necessary in qualitative research, are indicated and explained. Therefore, a flexible, pragmatic and changeable (Lincoln & Guba 1985:267; Terre Blanche & Durrheim 1999: 127) research design and process for this investigation, will be based on both Durrheim's and De Vos's stages of research process. The researcher is of the opinion that such a strategic framework will be enabling enough to gather data appropriate for answering the research question and making valid conclusions about the study.

3.6 RESEARCH TIME SCHEDULE

The research process and time line for this study is based on both Durrheim's and De Vos's outline of research designs. A brief explication of each stage is undertaken in Table 3.1 illuminating on how the research process unfolded.

Table 3.1 Research Design, process and time schedule

DESIGN FEATURES AND DATA COLLECTION METHODS	RESEARCH PROCESS AND ACTIVITIES	PERIOD

Literature study: • Primary sources Relevant government policies and reports; education and environment policies and reports; new paper articles on education and environment policy, and photos. • Secondary sources Relevant sources retrieved by the subject librarian 9Unisa).	– Although this activity took place mainly during the period of defining the focus area of study, the activity continued throughout the research study. – Some issues needed to be further explored during the study in order to inform the research process and to fill in gaps where necessary (Fraenkel & Willem 1990: 47; Terre Blanche & Durrheim 1999: 19-20). Chapter 1-6.	April 2001 to November 2003. Rationale of activities: – glean the ideas of others interested in EE policy implementation and education policy implementation, – observe results of similar investigations, – identify knowledge gaps, theoretical framework issues, sub-questions, conceptual definitions and methodology.
Defining the research question	– Choosing a research question and research sub-questions. – This activity is detailed in Chapter 1.	April 2001 to November 2003. Rationale: – To enable researcher to focus on data that will provide answers to the research question. – Therefore providing new knowledge about the phenomena studied.
Designing the research inquiry	The research design comprises of: – Purpose of study, i.e., the exploration of issues and challenges in EE implementation in formal education. – Conceptual framework, i.e., the clarification of concepts to be used in the study. – Context, i.e., the settings in which the case studies are based. – Methodology, i.e., an operational strategy framework for action, serving as a bridge between research questions and the execution of the inquiry. This strategy is base on the notion that theory is grounded and emerges in data as the research process unfolds.	– April 2001 to November 2003. Rationale: Tio make decisions derived from the four research process activities that will enable the researcher to make valid and reliable findings of the investigation. – The process of reflection is guided by two principles of decision-making: • design validity, and • design coherence.

Purposive sample selection	– The Science Outreach Project case study in Vryheid started in April 2001 when the first workshop was conducted for teachers and educators. – Two other workshops followed during June 2001 and August 2001. – Initially the researcher had thought he would study the National Environmental Education Project of the General Education and Training in Mpumalanga. But could not because the provincial EE coordinator was only appointed late in 2002. – In January 2002 the researcher then started to research the NEEP-GET project in Potchefstroom/Klerksdorp in North West province.	April 2001 to September 2001 Rationale: – As the researcher participated in these two projects he saw a need to contribute some insights into the projects.
Data collection: ◦ Observation – Observation by being there. – Semi-structured observation. ◦ Interviews – Semi-structured interviewing. – Focus group interviewing. – Semi-structured questionnaires. ◦ Photographs	– Observation during the three workshop sessions. Using a researcher observation schedule. – Interviewing some participants during breaks, lunch time and evenings. – Interviewing a focus group of participants. – Reading photographs for related interactions about the research focus.	April 2001 to April 2003 Rationale: – To gather data that will enable the researcher to make valid and reliable findings about the research question. – To make valuable conclusions about the study.
Data analysis and interpreting	_ Data analysed according to emerging themes related to the research question and sub-questions. Theoretical framework assumed to be grounded in the data.	April 2001 to November 2003 Rationale: – To enable the researcher to make informed decisions about the findings of the study.

It has been pointed out that the research design and process is not a fixed and rigid execution plan which needs to be adhered to. It is also important to understand that the research process and time schedule are dynamic research plans of implementation that depend on the contexts of the investigation of the research focus. Changes to this execution process and time schedule plan are therefore responded accordingly to the natural (social, economic, political and bio-physical) settings.

3.7 CLOSING COMMENTS

The research methodology and research process defined in this chapter forms a strong basis for the investigation of the research question and sub-questions. Though the nature of the data and the research problem determine the research methodology, this research design also acknowledges the fluidity and pragmatic nature of qualitative research processes that strive not to compromise the validity of collected data. However, there was no need during the research process to change the research design drastically. Thus, major impacts on the study were avoided, with only minor changes effected with no major effects.

During the process of data collection he researcher endeavoured to keep healthy research relationships with the participants in order to ensure that the gathering of information is not compromised. Sherman and Webb (1990: 111-112) attest that relationships in a case study research might strengthen or weaken the desired processes that ensures that a research project is completed within specified time frames.

Follow-up interviews with teachers and educators in this region took place in 2002 and early 2003. Coupled with these activities, certain schools were visited by the researcher During 2002. Findings of all the research processes indicated in this inquiry are discussed in Chapter 4 and Chapter 5.

CHAPTER 4

IN-SERVICE TEACHER EDUCATION AND TRAINING PROCESSES ADVANCING ENVIRONMENTAL LEARNING IN SCHOOLS: THE SCIENCE OUTREACH PROJECT CASE STUDY

> *Generating categories of data to collect can be an important focusing strategy for the research. However, structured, highly organised data gathering and analysing schemes can filter out surprises and if attended to, could provide a new dimension in the research. A balance should be kept between efficiency measures and flexibility of the design (Marshall & Rossman 1998: 112).*

4.1 INTRODUCTION

In this age of knowledge explosion the teacher and the educator are not only called upon to adjust effectively to rapid, pervasive changes and demands to ensure that the process of improving the quality of children's learning stays on course (Bagwandeen 1997: 1), but are also called to guarantee that the children's learning is underscored by the principles of social justice, human rights, a healthy environment and inclusivity (South Africa 2002: 10). Environmental issues and risks, thus, remain an integral part of learning.

The SOP case study is investigated as an INSET process aimed at advancing school-based environmental learning. Data gathered for the inquiry is explored through various methods which have been employed during the implementation of the research design process. Specific issues and challenges encountered in the implementation of school-based environmental learning will be illuminated in the investigation. It is essential to note that this process of data gathering took place prior to the adoption and implementation of the NCS. This changed EE policy in the GET band: environment as phase organiser was changed to environment as integral to all learning areas (see 2.2.4.1 (b) (viii).

4.2 ENVIRONMENTAL LEARNING IN THE SCIENCE OUTREACH PROJECT

Teachers and educators play a vital role in the implementation of school-based environmental learning (see 1.7.2.). Lotz-Sisitka and Raven (2001: 31) indicate that in order for teachers to contribute meaningfully to the improvement of the quality of environmental learning, an open process framework to guide EE processes amongst teachers and learners is imperative. Such an open-process framework should be based on the Tirisano Campaign (South Africa 1999) which aims to encourage active learning through OBE, school-community links and professional development of teachers. It is critical that teachers and educators are professionally developed in order to meet the challenges of implementing environmental learning in schools. If they are not equipped with the necessary skills and knowledge to do so, they will provide learners with poor learning experiences.

According to Loubser (1995:3) the main objectives of the SOP (see 1.1, 3.3.2) are to:

- **G** empower teachers to address recent developments in science, mathematics, technology and environmental education in their teaching,
- **G** empower these teachers to teach in the new outcomes-based education system of South Africa,
- **G** raise the standard of teaching to motivate learners to choose science subjects and career paths,
- **G** foster a culture of lifelong learning,
- **G** develop training in additional learning areas and address needs as they arise.

These objectives of the SOP can be viewed as outcomes and therefore all workshop evaluation findings must also be understood against the background of these outcomes. The strengths and shortcomings of the SOP should be measured against these outcomes. For the purpose of this study, meaningful teacher professional development in the Vryheid case study will not only depend on the achievement of the set outcomes, but will also depend on a number of factors directly related to the implementation of school-based environmental learning.

Through examining and analysing the feedback after the workshops, the semi-structured interview and the school visits, it is envisaged that the issues and challenges encountered in the implementation of environmental learning will be elaborated on. Table 4.1 indicates the attendance of the teachers and educators during the three workshops.

Table 4.1 Number of teachers and educators who attended the workshops

DATES OF WORKSHOP	WORSHOP NUMBER	EDUCATORS	TEACHERS	TOTAL
18-19May 2001	1	2	17	19
14-15 May 2001	2	1	16	17
13-14 May 2001	3	3	16	19

4.2.1 Contextual profiles of the Vryheid case study and other issues regarding environmental learning

The purpose of the construction of contextual profiles of the individual teachers, the community and the schools was to ensure that all relevant data regarding the context of the case study were collected. Data for the contextual profiles were gathered through questionnaires 1 and 2 (see Appendices 4.1 (a) & 4.2 (a)). Some of the items were found to overlap. The intention was to establish consistency in data provided and the validity of the data. Other relevant data were also gathered through questionnaires 1 and 2. Reflection on these issues is relevant to identifying the issues and challenges teachers experience in implementing environmental policy.

4.2.1.1 Questionnaire 1

This questionnaire is divided into two main sections: A. General questions and B. OBE questions. Fifteen teachers and one educator completed the questionnaire. A brief explication of the data gathered through this questionnaire follows:

G A. General Questions

Of the 15 teachers who completed questionnaire 1 (sections A and B), 10 were from high schools (one from a private high school), two from primary schools, one from a technical college, one from a combined school and one from a pre-primary school. The primary school teachers are intermediate phase teachers and the high school teachers teach from Grades 7 to 12. The number of learners for each teacher (from Grade 7 to Grade 12) is over two hundred, except for the teacher from the private high school who has 94 learners.

This data relating to the participating teachers, the schools where they come from, what they teach, and the number of learners (Appendix 4.1 (a), A. General Questions) enables an understanding of the issues and problems teachers encounter in their endeavour to implement environmental learning within their individual contexts.

G B. Outcomes-based education

B. 1 after attending the first workshop on the 18-19 May 2001, did you discuss what you learned with your principal and / or school management team (SMT)?

Of the 15 teachers who completed the questionnaire, 60% said that they had discussed what they had learnt from the first workshop with either their colleagues or principals. Action plans were also discussed and included plans on how to implement environmental learning at the school, how to care for trees and plants in the school yard and to keep the school yard litter free.

Forty percent (40%) of the teachers said that they had not discussed what they had learnt from the workshop with their principals or their SMTs. They cited the following reasons for their failure to do so: absence from school because of illness, not given an opportunity to report, time not available, and school already preparing for mid-term examinations.

B. 2 and B. 3 Did you manage to develop your own environmental learning programme(s)? and if applicable, what environmental issues were your learners engaged in?

Eight out of 15 teachers developed their own environmental learning programme units after the first workshop. Programme units covered topics such as water management and lessons at the water purification plant, pollution (all forms), soil erosion, litter clearing (all forms),cleaning the local well, permaculture gardening, celebration of environmental days and environmental awareness campaigns on HIV/AIDS, vandalism, drug-abuse and conservation of plants and animals (wild).

B.4 Give details of the resource materials your learners used during their learning mentioned in B 2 and B 3.

The resource materials learners used varied from the school's natural environment, plastic bags, tree leaves, flowers, water, papers, wheelbarrow, brooms and sticks, posters, soft drink cans, cement bins, Science Kit from the Wildlife Society, black waste plastic bags, surrounding school environment, charts, notice boards and colour pens.

B.5 What kind of support do you need in terms of resource materials for environmental learning?

Support required in terms of learning resource materials could be broadly categorised as support on a practical level for tangible resources and also support on a theoretical level regarding guidelines for developing materials and acquiring expertise and skills related to EE. Support that these teachers need depends on the resources that each school already has. However, almost all the schools indicated that they needed training in resource materials development and selection thereof, training in learning outcomes

assessment, assistance in improving their EE understanding and knowledge, assistance in understanding EE methods and strategies in/for teaching. Support from colleagues is also perceived as essential. Funds are needed to purchase the necessary equipment for environmental learning. Some of the schools need drums to use for litter disposal. Posters and charts explaining environmental learning are also needed.

B. 6 What other issues would you want to discuss with the researcher with regard to environmental learning?

Funding was consistently mentioned as an issue regarding accommodating environmental learning in schools. Funds in these schools for paying educational excursions and buying LSMs seem to be a burning issue. Parents are generally unable to pay for their children to go on excursions (probably due to the high rate of unemployment of most parents in this region). The challenge is then how these schools should go about applying for sponsorships for environmental learning excursions and resources.

Other issues that teachers mentioned included how to encourage the whole school to be active in environmental learning, for example how to recycle waste and how this relates to environmental learning. Further issues include explanation of EE policies to teachers, suggestions on how South Africans can ensure that South Africa is environmentally cared for and guidelines about ways teachers can introduce environmental learning in Grades 10-12.

Although almost all the schools indicated that they needed money to facilitate environmental learning activities in the schools, one high school (J-H) actually indicated that “our school has sufficient funds to purchase items within a reasonable limit”, and that what the school needs is “more information on how to integrate EE in a language class”. Information on how to encourage colleagues to participate actively in environmental learning is needed. However, teacher O seemed to be echoing the need for support differently when indicating that “I think I still need more knowledge than resource materials at the moment, I still need more to observe about this environmental learning because I’m far behind (lagging behind) and ignorant about the whole system” (sic).

4.2.1.2 Questionnaire 2

Questionnaire 2 complements questionnaire 1 and further includes items that were not part of questionnaire 1. These items are covered in C, teaching methods or strategies used by the presenters, D, resource materials, E, support in/about environmental learning, and other issues that the participant might want to highlight. A brief interpretative exposition of questionnaire 2 ensues.

G A. General information

Although it seems apparent that schools preferred to expose their biology and geography teachers to EE (personal discussion with teacher E; teachers A, G, I, K & N), some schools seem to be using other criteria when deciding who to send to EE workshops. This is clear from the number of language teachers (teachers D, J, M & O), EMS teachers (teachers B &F) and HSS teachers (teachers E &I) (see appendix 4.2 (b)). This tendency challenges the idea that environmental learning should be located and taught within subjects like geography and biology.

G B. Outcomes-based education

B. 1 Have you attended other OBE workshops before the Unisa workshops? If Yes, can you indicate when and by whom the workshop(s) was/were presented?

Twelve teachers completed the questionnaire. Five of the teachers were trained in OBEpreviously, between the years 1998 and 2000. The training was mainly conducted byDoE officials. One of these teachers was also trained by the Department of Agriculture, Conservation and Environment (DACE) and two by an NGO. Six of the teachers had not previously received any OBE training before the SOP training. Teacher O said this item was not applicable to her, since she is teaching at a private high school. Thisschool (M-PH) believes that the school has been teaching using the outcomes-based approach since pre-1994 (personal discussion with principal).

B. 2 Have your perceptions about OBE changed after attending the Unisa workshops?

YES/NO. Support your answer.

All the teachers said that their perceptions about OBE changed after attending the SOP workshops. Their reasons were varied but were focussed on the EE knowledge and OBE knowledge gained (teachers C, E, G, M, D, I & N). Interestingly, teacher B said that “OBE does not contain new information but old information being updated to new terms and concepts and just an addition of certain things which will best benefit the learners” (sic). This sentiment was echoed by the principal of school M-PH (B. 1).Some of the reasons clearly indicating that the teachers gained valuable knowledge in the SOP workshops were: “These workshops have given me some ideas on how to approach OBE classes (teaching). Many practical examples were given which are of tremendous help in the classroom situation” (teacher J), “I know now how to develop activities for learners” (teacher K) and “It seems more activity based. It captures attention in a better way than the old chalk and talk method” (teacher F) (sic).

B. 3 After attending all three Unisa workshops do you think you know and understand OBE? YES/NO. Briefly support your answer.

Ten of the teachers responded positively (C, D, E, F, G, I, J, K, M, & N). Teacher O said that she was quite unclear about OBE. She still had unanswered questions and needed "to do a lot of research through interaction with a variety of information sources". Teacher B did not give a response.

B. 4 Which aspects of OBE do you think need more attention at school level? Please give reasons.

Aspects of OBE which the teachers think will need more attention at school level include: COs, SOs, learning programme units (learning experiences), designing/developing learning activities for learners, assessment, cooperative classroom teaching and learning, team work with other teachers in a school, integrating environment in the curriculum, how to teach large numbers of learners within the OBE system, self-discipline of learners to enhance individual learning, management of school and learner files and time management. However, one of these aspects highlights the seriousness of the expected intervention and was conveyed by teacher F, namely that, "Meaningful learning experiences take time (to design) for this to happen for 35+ learners could be time consuming" (sic), and teacher J said, "Group work and large numbers in classes are a major challenge for OBE. Learners need to learn self-discipline and self-study for OBE to be successful". Moreover, discipline is difficult to maintain in large classes of forty upwards.

B. 5 Did you discuss what you learned in workshop 2 with your principal and / or school management team (SMT)? If YES, briefly give details of your discussion. If NO, briefly give reasons why you did not.

Five of the teachers (C, D, F,K, & M) discussed their workshop experiences with their principals (C, D, F, K) or colleagues (M). The remaining teachers claim that they had not yet discussed what they had learned from the workshops. Reasons advanced for failing to report to their principals or SMTs are: "The reasons are too sensitive and training processes therefore confidential. I've never been given a chance to do a report back to the SMT except that I've discussed the importance of this workshop and all valuable experiences with some of my colleagues. Whether I'll ever manage to get time to report to the SMT is not easy to tell" (teacher G);the principal is new at the school (teacher B); there is reluctance to integrate environment in learning (teacher O) and time constraints because "There are so many OBE training we are expected to attend and the classes I teach are too many because I teach 5 Grades 8 classes and 3 Grades 9 classes (teacher I) (see Appendix 4.1 (b)).

B. 6 What successes and what problems have you achieved/encountered when implementing your own environmental learning programmes at your school? Please give reasons for your answer.

Successes and problems encountered when the teachers were implementing environmental learning at their schools comprise changed teaching styles. For example, the old chalk-board teaching style has been replaced with the facilitative style and the development of relevant learning activities for learners. However,

learners seem not to understand why environment should be part of their learning. Problems encountered are that most of the participants do not teach Grades 8 and 9 in which OBE has been implemented (2001 - 2002), and that there is a shortage of resources that could facilitate environmental learning (LSMs and funds). Some of the teachers have actually not started because "I have an English First Language Grade 12 class, which involves a great deal of work and time, but I will certainly make use of this learning in junior classes in future (teacher J). A more serious problem was mentioned by teacher K: "No successes achieved because the principal doesn't want to participate in environmental programmes".

G C. Teaching methods or strategies

C. 1 Which methods or strategies used by the workshop presenters do you think were appropriate? Give reasons for your answer.

Presentation methods or strategies employed by the workshop presenters that the teachers think were appropriate are: facilitation skills because "they let us do the job (learn by doing) and then facilitate" (sic) (teacher E), planning activities for the participants, practical, active involvement of participants in learning activities, (they assist all learners to participate in the learning), group work, group discussions, handouts, worksheets. Group work is perceived as promoting cooperative learning and creative thinking through "describing and analysis methods" (teachers B, M, N, O), and "members of each group help each other and share their ideas with other groups for criticism and complement (sic)" (teacher N). Active learning is also seen as important in teaching and learning because learners are personally involved in the learning (teachers E, G, B, D, K). Teacher J seems to think that "all methods and strategies used were appropriate".

G D. Resource materials development

D. 1 Would you be able to attend a course on the development of resource materials if organised in your region? YES/NO. Support your answer.

All the teachers except teacher I (no response given) said that they would be able to attend training in resource materials development if organised. Their conviction is that teaching and learning must be enhanced with effective and appropriate learning support materials. OBE is also seen as an education approach that is resource-based and that relevant resources must be developed if this approach is to succeed.

D. 2 Have you contacted the following departments in your area requesting resource materials from them? If YES what was their response? Department of Health, Department of Environment and Tourism, Department of Water and Forestry, Department of Labour and Local Town Council.

Contacting government departments for assistance regarding appropriate resources for teaching and learning seems to be a problem. All the teachers except teachers E who contacted Health and DACE and N whose school I-H was visited by the Local Town Council, responded negatively to all the items.

G E. Support in/about environmental learning is tabulated below.

E 1 Do the following individuals or groups support you in environmental learning at your school? Tick the appropriate answers

Colleagues, principal, SMT, subject advisor, curriculum implementer, teacher centre manager, circuit manager, Vryheid Environmental Education Club, any NGO/CBO (give name).

Although Table 4.2 covers a detailed response to item E 1, a brief exposition is warranted:

- Support from colleagues

From the 12 respondents, five said they were supported, two said some of their colleagues support them (indicating that they were not sure or certain about the number of those colleagues who support them), one said (s)he was not supported, three did not respond and one said the question was not applicable to her (teacher O from the private high school).

- Support from principal

From the 12 respondents, five acknowledged support from their principals, three denied any support, three did not respond to the question and one said the question was not applicable to her (teacher O).

Table 4.2 Support in/about environmental learning

Support from	Supported	Not sure	No support	No response	Not applicable
Colleagues	5	2	1	3	1
Principal	5	0	3	3	1
SMT	0	1	3	7	1
Subject advisor	5	0	1	5	1
Curriculum implementer	2	1	1	7	1
Teacher center manager	1	0	2	8	1
Circuit manager	1	0	2	8	1

Vryheid environmental education	2	0	2	7	1
Any NGO/CBO	5 (1 supported by KZN Wildlife, Public works, Roads and Transport) 2 supported by KZN Wildlife 1 by the Vryheid Lions Club and 1 by the Vryheid Environmental Education Club)	0	1	4	2

- SMT

Of the 12 respondents one was not sure, three said they were not supported, seven did not respond to the question and one said the question was not applicable to her.

- Subject Advisor

Five of the 12 teachers acknowledged support received from their subject advisors. One said (s)he was not supported, five gave no response, and one said the question was not applicable.

- Curriculum Implementer

Two teachers said they were supported by their Curriculum Implementers. One was not sure, seven gave no response and one said the question was not applicable.

- Teacher Centre Manager

One teacher acknowledged support from the Teacher Centre Manager. Two said they were not supported, eight gave no response and one said the question was not applicable.

- Circuit Manager

One of the 12 respondents acknowledged support from the Circuit Manager. Two said they were not supported, eight indicated a no response and one said the question was not applicable.

- Vryheid Environmental Education Club

Two respondents acknowledged support. Two said they were not supported, seven gave no response and one said the question was not applicable.

- NGO/CBO support

Five respondents were supported (1 by KZN Wildlife, Public Works, Roads and Transport, 2 by KZN Nature Conservation, 1 by the Vryheids' Lion Club and 1 by the Vryheid Environmental Education Club). One said (s)he was not supported, four gave no response and two said the question was not applicable to them.

E. 2 Any other issue you would want to mention.

Eight said they had no issue(s) to mention. Four had the following to indicate: "this workshop, Unisa Outreach Programme helped especially because I knew nothing concerning OBE. Keep up the good work" (sic) (teacher D). Teacher O suggested that the National Department or the "the government itself may take an initiative and have a lookout on private schools in as far as OBE is concerned so that their 'dormancy' does not collide (clash) with the country's democratic education system and finally lead

to such institutions/kids/learners being victims (sic)" (teacher O). The other issues were expressions of appreciation to the Unisa facilitators for providing the learning experiences.

4.2.2 Workshop sessions

The SOP case study is based on a short term cluster-based workshop approach for teacher professional development (cf 3.3.2.2). A series of three workshops conducted in a sequence (two days at a time), with short intervals in between were conducted for teachers. After the completion of the series of three workshops there was no contact with the teachers. This project started around 1996 in certain provinces in South Africa. It will probably continue for some years provided it is needed by teachers and educators in various parts of the country (cf 1.1 and 3.3.2) and that sufficient donor funding is secured.

The three workshop sessions which were held for teachers were coordinated by the subject advisor for biology in Vryheid. The lecturers from Unisa facilitated the workshops. Each workshop is discussed under subheadings for the sake of focussing on critical issues and not necessarily because these issues are separate and unrelated.

The format of the workshops is based on the 1995 SOP Document (Loubser 1995: 3) which maintains that one introductory workshop and two follow-up workshops would be provided. Thus, each group of teachers at a workshop will receive two follow-up workshops to enable continuation and reinforcement of concepts, and progression in environmental learning in each subject/field of learning. This notion reaffirms the perception that workshops are mere models for open-ended, reflexive processes emergent within the context of the project (Lotz & Robottom 1998: 25).

Loubser (1995: 3) further indicates that during each workshop session, teachers will be "introduced to problem solving strategies in outcomes-based education and shown

activities to perform with their learners and how to develop their own resources and design their own learning programmes. Each participant receives a certificate of attendance from Unisa".

4.2.2.1 First workshop

Under this section (4.2.2.1) the researcher reflects on his workshop observation, interviewing and workshop evaluation findings of the first workshop which took place from 18–19 May 2001.

The participants were given an opportunity to indicate what their expected outcomes for the workshop were. The workshop books given them had a page in which they were to write down their expectations. The aim of this exercise was that towards the end of the workshop participants would be given an opportunity to review their expectations and see whether they had been addressed sufficiently. However, a researcher designed observation schedule was employed to observe not only the impact of the workshop, but also the issues and challenges teachers encounter in environmental learning.

(a) Observation

An observation schedule guiding data to be collected included the following items:

- **G** education policy issues,
- **G** OBE curriculum,
- **G** workshop facilitation strategies,
- **G** the concept 'environment',
- **G** participation of teachers and educators in the workshop,
- **G** the use of resource materials,
- **G** teachers and educators' support (for teaching and learning),
- **G** teachers and educators' support (logistics),
- **G** development of learning programmes,
- **G** involvement of teachers and educators in environmental learning,
- **G** other relevant issues.

The researcher gathered data for most of the points indicated above during and after the workshop sessions. The data collected are not discussed according to the sequence of the observation schedule, but according

to observed issues during the workshop sessions and the interview of two participants – teachers A and M.

- **G** The participants were enthusiastic about environmental learning. Their active participation in all the workshop activities was evident. However, some of the responses to questions indicated that knowledge about the relationship and interrelatedness of environmental problems with socio-economic, political and bio-physical dimensions was lacking. For example, the pollution of the *Mpofini Dam* (supplying water to the Vryheid area) cannot be viewed in isolation to informal settlement, poverty and forced removals during the apartheid era.
- **G** Participants observed that the facilitator understood his subject matter well. This enabled the participants to want to know more about the environment. He used a variety of resources, most of which are self-made from waste materials, to illustrate and explain certain concepts which are critical in environmental learning. For example: environment, pollution, management of natural resources, environmental problems et cetera.
- **G** Though the participants know about OBE, they did not understand how this education approach is to be implemented. Primary school teachers seem to have a better understanding of OBE than high school teachers. This is probably due to the fact that training of OBE is concentrated in primary schools.
- **G** Policy guiding environmental learning seemed unfamiliar to the participants. Moreover, this aspect was not given enough time in the workshop session. It was hoped that the section in the Work Book relating to EE policy would be read by the participants.
- **G** LSMs (Work Books) distributed to the participants called the *Environment– Outcomes Based Education Phase Organiser* (Learning Programmes for the Intermediate & Senior Phases) Booklet Series (Le Roux & Loubser 2002) are probably appropriate for Intermediate and Senior Phase learners. High school teachers can use the activities either as they are or adapt them and deepen their sophistication.

Some of the points mentioned in the observation schedule could not be addressed during the workshop session, but were dealt with in a semi-structured interview session with teachers A and M.

(b) Interviewing

Each of the interviewing schedule items indicated in Appendix 4.3 is briefly discussed as expounded by teachers A and M

G Support from stakeholders

At the moment support for environmental learning is not appropriately coordinated. Each stakeholder engages teachers and educators in OBE without relating that to the initiatives of other stakeholders (NGOs, CBOs, and educators). The suggestion is that each stakeholder in education should know what the others are doing so that resources can be utilised effectively and optimally.

G Expected outcomes of participants

At the beginning of the workshop session the participants were asked to write their expected outcomes for the workshop. The aim was to review these expected outcomes at the end of the two day workshop, and see whether the teachers' expected outcomes had been met or not. Unfortunately in this workshop the teachers' expectations were not reviewed. Teacher A and M agreed that expected outcomes of teachers in the workshop should be discussed during the last session of the workshop in order to learn from each participant's new experiences, thus assessing the workshop outcomes.

G Report back after workshop

Teacher A and M felt that time should be set aside for planning how participants will report back to their schools after the workshop. If this exercise is not done at the workshop, teachers find other school related issues taking their attention. The two teachers suggest that all the support structures at the school (School Management Team [SMT] and School Governing Body [SGBs] should know of the contents of the workshop and thereafter decisions must be taken for action to implement or accommodate the experiences to which the teachers were exposed.

G Support needed for rural schools

Farm schools still combine learners from different grades in one classroom. These learners are then taught by one teacher (e.g. all foundation phase grades are combined in one classroom under the leadership of one teacher). If this teacher attends a workshop then her/his class is left unattended that day. Other issues seen as problems in such cases are the inaccessibility of workshop venues for farm schools, time constraints experienced by teachers who use club-arranged transport (these teachers are normally fetched by transport arranged to take more than one teacher to their respective homes, for example from EMondlo to Vryheid), and the posts provisioning norm. This is, the measure or number of learners for each teacher, which is one teacher: 40 learners in the primary schools and one teacher: 35 learners in the high schools.

G Communication in the region

Circulars inviting teachers to workshops do not reach teachers in time. However, it is alleged that they do reach the principals in time. Thus, the information is delayed between the principal's office and the teacher who is supposed to attend a workshop. Generally this issue causes frustration on the part of the teacher.

G OBE related issues

Teacher M felt that OBE is too broad and involves too many aspects. Teachers are bored if one talks of OBE in general and broad terms. Aspects of OBE should be the focus now in order to strengthen the whole curriculum. An example could be a workshop for training teachers in assessment standards as articulated in C2005.

G LSMs

There are too few textbooks in most rural schools and obsolete books are still ordered for some schools. According to teacher A this problem is caused by the lack of input from relevant teachers who have either too few or obsolete books in their Learning Areas/Subjects, to influence the decisions of text books selection committees. Norms for selection are either not considered or are unknown. Teachers and learners have not yet been trained in developing their own resource materials.

G The impact of teachers and educators in acting positions

Teacher A felt that teachers who are in acting positions do not carry out their duties effectively and responsibly. This has a negative impact on the morale of the school and effectiveness of teaching and learning.

G Visits to schools by Circuit Managers

In certain instances Circuit Managers are expected to notify the schools before they visit them otherwise the schools refuse to see them as they are perceived to be spying on the schools. This is a serious problem for Circuit Managers. They cannot always notify schools about intended visits because they depend on the availability of 'pool' cars for transport. The problem is worsened by the fact that subsidised cars have a monthly limit on the number of kilometres driven.

G Time for workshops

Teacher A and M felt that the time allocated for the first workshop was insufficient. Because of this logistical issue, important aspects and issues regarding OBE were not adequately addressed. Issues such as the participants' expected outcomes and the action plans for feedback at school could have been discussed if sufficient time was available.

G Assumptions about OBE

The three categories of schools (categorised before 1994), namely public community schools, ex model C schools (these two categories are now called public schools) and independent schools, have different views about the OBE approach to education. Public community schools and public model C schools are all categorised as public schools[2] in the post 1994 education dispensation. However, teachers still feel that the categories exist. The observation of the participants are given as follows:

23. Public community schools

These schools assume that teaching and learning in the OBE curriculum can succeed as long as they are adequately and appropriately supported by the Department of Education and all education interested groups.

Ex model C schools

Some of these schools assume that OBE will not succeed. They assume that they always had exceptional results in matriculation because they knew, understood and had been teaching according to the OBE approach prior to 1994 when changes were made to the education system and OBE was introduced (interviewed teachers). Thus, most teachers from these schools do not attend workshops unless it is compulsory to do so. For example, all the teachers who attend the SOP are from public community schools and one from an independent school.

P Independent schools.

Independent schools assume that they have been teaching according to the OBE approach since their schools came into existence. Therefore, they do not usually attend workshops in OBE unless it is compulsory for them to attend. The teacher from the independent school participating in the SOP, teacher O, teaches IsiZulu. Perhaps further investigation is needed to reveal the extent of the disproportionate equity and provisioning of education between these categories of schools.

G Ill-qualified teachers and educators and the OBE curriculum

The perception of ill-qualified teachers is that some of them resist changes in education, and that they are not confident of themselves as teachers. Some have the lowest education qualifications in the Department of Education. Thus, they avoid OBE workshops at all costs. They probably perceive OBE as too difficult an

1 This categorisation by Mothata (2000: 133) differs from the one given by Blake and Hanley (1995: 132) who state that public schools are non state-schools. They are not financed by the state. Mothata's version seems to concur with the Department of Education's categories (South Africa 1996b) which states that the public school category includes all schools which were known in the previous dispensation as community, farm, state and state-aided schools including church, model C, mine schools and others.

education approach to even try to understand it. This observation warrants further inquiry to provide valid information about the status and role of ill-qualified teachers in education.

G Re-deployment versus voluntary severance packages

Teacher A and M considered that the issue of re-deploying teachers has contributed to some teachers opting to leave teaching as a career. This view requires further in-depth exploration to confirm the allegation. At present it is not certain if re-deployment forces teachers and educators to opt for severance packages.

(c) Workshop evaluation and findings

The workshop evaluation schedule is a standard procedure (Appendix 4.4 Evaluation Form Dated 19 May 2001) for the SOP since it is a donor funded project. Reports are compiled and submitted to the sponsor, through the Department of Corporate Communication and Marketing at Unisa. Lecturers who facilitate workshops also receive copies of the reports as feedback from their workshops' participants for internal appraisals (Le Roux 2001a: 2). These reports entail findings of the four learning areas covered at the workshops with EE included. For the purpose of this inquiry, the analysis of the course evaluation focusing on the teachers who participated in EE, is illustrated as discussed in the *Science Outreach Project, Workshop Report of 18-19 May 2001* (Le Roux 2001a).

G Analysis of the evaluation questionnaire

The data were quantified because the number of participants in each group (ie. EE, natural science, technology education and mathematics) was not equal, therefore the results (were) expressed as a percentage to provide a more comparative result of participant responses to the different issues being evaluated (Le Roux 2001a). The quantifying of the data for the EE learning field done by Le Roux, for the number of participants in each issue evaluated, are pertinent to this investigation.

The organisation of the course – 99% of the participants were satisfied with the organisation of the course.

The clarity of the aims and objectives – 94% of the participants were satisfied that the aims and objectives were clear.

The degree to which the presenter had prepared him/herself – 93% of the participants were satisfied with the presenter's manner of preparation.

The presenter's knowledge and experience of topic(s) covered in the course – 98% of the participants lauded the presenter's knowledge and experience in EE.

The enthusiasm with which the workshop presenters conducted the course – 97% participants were satisfied with the presenter's enthusiasm in conducting the workshop.

The effectiveness with which the content was communicated – 98% of the participants said that the content was communicated well.

The degree to which course participants were given the opportunity to participate – 100% of the participants attested to being given sufficient time to participate in the workshop activities.

The extent to which the workshop content can be applied in their teaching practice – 84% of the participants said that the content can be applied in their teaching practice.

The extent to which the workshop manuals and/or apparatus can be used in teaching practice – 92% of the participants were satisfied that the workshop manuals and/or apparatus can be used in teaching practice.

Ability to follow the presenter and the workshop proceedings – 97% of the participants were able to follow the presenter and the workshop proceedings.

G General qualitative evaluation

Aspects of the course found useful. Several participants mentioned that all the aspects of the workshop were useful. Specific aspects were also indicated, namely, participation in group activities, guidance in the essence and implementation of OBE, development of programmes, teaching for the environment, water pollution activities, the theme colour activities, and an increased knowledge about environmental issues.

Points of criticism. Seemingly participants were satisfied with the workshop outcomes, but indicated that the workshop was too short and that more guidance was needed regarding assessment.

Issues that could lead to the improvement of the programme. The following aspects were perceived as critical for the improvement of the SOP environmental learning programme: the duration of the workshop should be prolonged, the workshop should be extended into the evenings, provide a variety of activities to avoid monotonous group feedbacks, provide guidance on assessment processes, and group participants according to their learning areas.

G The desirability of follow-up workshops

The majority of the participants indicated that they would appreciate follow-up workshops.

G Suggestions regarding what should be dealt with in follow-up workshop

The following aspects were indicated as critical to follow-up workshops:

- further guidance in programme development and implementation strategies,
- workshop guides and manuals,
- further guidance on assessment,

- the monitoring of implementation of workshop results in teaching practice,
- strategies for community participation,
- the workshop time should be extended and more activities, especially practical activities, should be included,
- acknowledgement of indigenous knowledge systems,
- conducting some of the workshops in a nature conservation setting,
- information on environmental centres and contacts on environment,
- adequate relevant LSMs,
- addressing of practical problems experienced in teaching,
- more information about OBE and the challenges embedded to teaching according to the principles of OBE,
- further subject-specific knowledge/information regarding content, skills and processes.

G Findings, conclusions and recommendations

Participants mentioned that the activities were meaningful and have application value in the teaching situation.

Considering the earnest request of participants for a follow-up workshop, the second workshop was organised.

4.2.2.2 Second workshop

The second workshop took place on 14–15 June 2001 (Workshop number 2, Programme). The programme entailed various activities regarding biodiversity within the outcomes based approach. Other issues discussed were LSMs, assessment of LOs and the establishment of an EE Forum for the Vryheid region. These issues are explored under (a) below. Sixteen participants attended this workshop.

(a) Observation

A self-developed schedule was not used for this workshop because the researcher wanted to observe what was taking place during the learning session without being directed to certain issues or interactions.

G LSMs

Three booklets titled *The Environment – Outcomes-Based Education* were handed to the participants. One was on biodiversity and two were on health. Various activities based on the theme biodiversity and health

were performed. These themes provide useful information on environmental concerns. If used in teaching and learning, learners can be taught to become critical thinkers and encouraged to take appropriate decisions concerning the environment. Activities relating to pollution dealt with litter and community pollution. The trees for life activity dealt with sustainability.

G Content of biodiversity

All the activities were based on teaching and learning about the care of the environment. Knowledge about, skills related to, attitude towards, participation in and understanding of the environment were the main foci of learning. The role of biodiversity in people's lives and the interrelatedness of living species was portrayed through the use of activity cards. The water theme was used for all the cards with sequence of events: rainfall, clouds, water vapour, precipitation, condensation, running water, drainage, dams, rivers and wells. Participants were then requested to place the cards in sequence depicting the water cycle.

G Content of health activities

The activities were about the importance of using clean water, how to purify polluted water and sanitation in order to avoid water borne diseases. The participants were divided into three groups and were asked to: describe how water pollution occurs, identify the dangers of using contaminated water, describe various methods of purifying water, explain why it is important to dispose of human waste in a responsible way and to enumerate a variety of basic hygiene rules. These activities were not only intended to broaden the participant's knowledge and understanding in environmental health issues, but also to hone skills in observation, critical analysis, making connections and making responsible decisions.

G Workshop activities

Cards were used to demonstrate that events happen within certain conditions and time

frames. For example, humid conditions are required for rain and certain air temperatures cause precipitation and condensation. Normally such conditions occur in summer in the Southern hemisphere and in winter in the Northern hemisphere. A discussion of the sequence of events and their significance to human existence and other living organisms followed. The commemoration of environmental days was discussed using cards too. This activity was not successful as most of the participants did not know what the environment days where about. This session was concluded with an activity on the factors contributing to the extinction of biodiversity.

G Assessment of learning outcomes

It was emphasised that assessment should be based on learning outcomes and not on content exclusively because content might be outdated in the near future, and therefore it calls for upgrading. However, this does

not mean that content must be neglected or be of lower quality and standard required. Unfortunately activities done in this session were not assessed. Only a theoretical background to assessment in OBE was given.

G The establishment of the EE Forum

A suggestion was for guidance on establishing an EE Forum for the Vryheid region based on the following questions: Who? Who are the members of the Forum? What? What is the business of the Forum? Where? Where should the activities of the Forum take place? When? When should the activities of the Forum take place? How? How is the Forum going to do its business? Action? What action to take? The participants were excited about this framework and promised to pursue their goal of establishing a functional EE club for their area.

(b) Interviewing

The researcher interviewed one person during workshop number 2. This person is the biology subject advisor who organised the workshops. There was no interviewing schedule because the researcher wanted to establish protocol for visiting schools in the Vryheid Department of Education and Culture. The researcher was assured that this issue would not be a problem. As soon as the researcher was ready to visit schools, he was supposed to inform the subject advisor who would then arrange and assist in informing schools about the researcher's intended visits. It is important to note that visits to schools would enable the researcher to determine how teachers were implementing what they learnt at the workshops.

(c) Workshop evaluation findings

After the second workshop sessions an evaluation form (Appendix 4.5 Evaluation Form 2 Dated 14-15 June 2003) was completed by the participants. Le Roux (2001b: 2) cites the following reasons why the Evaluation Form was necessary, namely, to determine:

- whether participants believed that their teaching practice had in any way altered as a consequence of their attendance of the previous workshop,
- to what extent they believed they could apply OBE principles to their teaching practice,
- which aspects of the previous workshop had been the most and the least meaningful in practice,
- their learners' attitude towards learning in an OBE situation,
- colleagues' attitudes towards OBE,
- further training needs.

The following information was given by the participants:

G Analysis of the evaluation questionnaire

Just like the analysis in 4.2.2.1 (c), this analysis has been quantified and graphically represented. But since the number of participants in each group (EE, natural science, technology education and mathematics) was not equal, the results were then expressed as a percentage to provide a more comparative result of participant responses to the different issues being evaluated. The explanation given in 4.2.2.1 (c) about the quantification of the participants' data regarding issues evaluated in the EE field of learning, also holds for this analysis of the workshop evaluation questionnaire.

- The organisation of the course – 95% said that the facilitator competently fulfilled the tasks required of this role.
- The clarity of the aims and objectives of the course – 96% expressed satisfaction on the achievement of the clarity of aims and objectives.
- The degree to which the presenter had prepared him/herself – 98% regarded the presenter to have prepared well.
- The presenter's knowledge and experience of the topic(s) covered in the course – 98% rated the presenter as having excellent knowledge of and experience in the topics covered in the course.
- The enthusiasm with which the workshop presenter conducted the course – 98% described the presenter's enthusiasm as excellent.
- The effectiveness with which the content was communicated – 99% of the participants said that the content was communicated exceptionally well.
- The degree to which course participants were given the opportunity to participate – 99% said that the degree to which they had been given the opportunity to participate is exceptional.
- The extent to which the workshop content can be applied in their teaching practice – 89% of the participants indicated that the workshop content can be applied in their teaching practice.
- The extent to which the workshop manuals and/or apparatus can be used in teaching practice – 95% stated that the workshop manuals and/or apparatus can be used in teaching practice.
- Ability to follow the presenter and the workshop proceedings – 95% indicated that they were able to follow the presenter and the workshop proceedings.

G Influence of previous workshop on current teaching practice

Seventy five percent of the participants claimed that the experiences and knowledge gained at the previous workshop had improved their teaching ability in environmental learning, and that the way they teach had improved. Exactly 70% maintained that the knowledge, skills and teaching strategies workshopped in the previous workshop series had been applied and incorporated in some of the activities done in the workshop and in their own teaching and learning practice. Again 70% indicated that they had incorporated OBE

teaching strategies that they had been introduced to during the workshop, and 75% alleged that OBE is a positive approach to education.

G Ability to apply OBE principles and cross-curricular teaching

Slightly more than 50% of the participants maintained that they were now able to design their own teaching and learning programmes as a result of their participation in the previous workshop. 50% of the participants alleged that they understood what is meant by cross-curricular teaching and half confirmed their lack of understanding regarding the concept and what it embraces. Only 12% indicated their attempt to teach a theme using a cross-curricular approach.

G Aspects of the previous workshop that were most useful in practice

The following aspects dealt with in the previous workshop were found useful: the manner in which the theme Water was workshopped, highlighting the possibilities of using the theme in a cross-curricular way, practical ideas regarding classroom practice, the use of natural resources in teaching, groups presenting their own work, ideas on assessment strategies for teaching and learning practice, individual practical activities such as making items from waste, discussion of issues such as the food chain and the water cycle, and ideas on how to teach in, about and for the environment. One participant attested to the fact that the previous learning about water encouraged the class to visit the local water purification plant.

G Aspects of the previous workshop that were least useful in practice

- Critiqued issues included the designing of lessons around the outcomes instead of first deciding on the outcomes to be achieved.
- Aspects which are viewed as difficult to deal with in the classroom setting included getting learners to learn effectively in groups, doing OBE assessment, and getting enough LSMs to make a lesson meaningful.
- Issues that would require more attention in future workshops were practical ideas on how carry out assessment in the classroom situation, guidance on how to implement OBE, providing more detailed theoretical knowledge regarding the topic, deciding on more realistic time frames, and administering assignments/tests based on knowledge gained during the workshop.

G Learners' attitude towards OBE

Those who were unsure whether learners attain knowledge and skills better in OBE teaching were as follows: Yes: 6; Maybe: 9; No: 1. Slightly more participants thought that learners found the new teaching and learning approach more interesting = Yes: 9; Maybe: 6; No: 1. Participants were sceptical whether their learners were able to work independently after the necessary groupwork had been done = Yes: 5; Maybe:

10; No: 1. The participants (75%) were, however, convinced that their learners benefited from cooperative learning.

G Colleagues' attitude towards OBE

The participants responded as follows to this issue: 50% said that their colleagues were positive about OBE; 30% said that their colleagues were unsure about OBE, and 20% indicated that their colleagues were negative about OBE.

G Further training needs

Half the participants had previously attended OBE workshops, but 75% of these maintained that they still needed more guidance on how to include the principles of OBE in their teaching. Nine participants needed further guidance about the content of EE; four were unsure whether they needed further information and three were sure that they did not require more information on EE.

G General qualitative evaluation

- Aspects of the course found useful: group activities, opportunity for participation, handouts, guidance in cross-curricular teaching, practical work, environmental health activities, time line and biodiversity.
- Aspects of the workshop criticised: the workshop was too short, too little time was spent on environmental health, biodiversity and energy, lack of the theoretical aspects of environmental learning and the quality of the food served during the workshop lunch recess.
- Issues that could lead to the improvement of the programme: more time should be allowed for the activities, more activities should be included, the workshop should start on time, practise the implementation of OBE in the group and improve the catering.
- The desirability of follow-up workshops

  Participants who responded to the question indicated that they would appreciate a follow-up workshop.

G Findings, conclusions and recommendations

The workshops were viewed as well presented. The presenters were rated as knowledgeable, competent and enthusiastic in their presentations. The activities were also viewed as meaningful and had application value for teaching practice. The qualitative evaluation revealed a general feeling that time was too limited and that the workshop should have been extended over a longer period. In the follow-up workshop, participants felt strongly about the inclusion of the following issues:

- the inclusion of focussed practical activities,
- the provision of relevant teaching LSMs or guidance on the design or acquisition of such materials,
- guidance on assessment strategies that can be applied to large groups of learners,
- inclusion of subject specific content,
- guidance on programme development that follows the principles of OBE; and
- allocating sufficient time for discussion and to explore the application possibilities of the activities that were workshopped.

The presenters will probably attend to these needs if possible in the follow-up workshop.

4.2.2.3 Third workshop

The third workshop took place on 13–14 August 2001 (Workshop number 3, Programme). In this workshop no specific research observations were carried out. Therefore, only two aspects of this workshop will be discussed, namely, the content of the workshop and the workshop evaluation. Sixteen participants attended this workshop.

(a) Workshop content

The content of this workshop embraced:

- themes for learning,
- activities,
- LSMs,
- workshop evaluation.

Themes dealt with in the workshop were pollution and natural environment. Pollution, namely, water pollution, air pollution, marine pollution and land pollution were discussed and various activities were done regarding these types of pollution (see activities below). The theme natural environment focussed on what natural environment entails; what its importance is to human beings; and how should one go about teaching about the natural environment.

G Activities participants engaged themselves in were taken from *The Environment – Outcomes Based Education* (Le Roux & Loubser 1998) with the themes: pollution and natural environment.

Activities regarding pollution: participants shared their knowledge of what pollution is. They discussed in groups and presented the following topics to the whole class: undertaking a survey of litter on the school grounds by collecting different types of litter in the school premises and asking the learners to identify the types of litter and record the number of each item. Thereafter the participants were asked to draw a simple bar chart of their results. The participants ended the activity by discussing the effects of pollution and the causes. Other activities were activity numbers 4 (the air we breathe, which was to be completed at their respective schools) and 5 (community pollution) in the workbook provided.

Activities regarding the natural environment: activity 1 in the workbook which requires learners to become sharper observers of the environment and use their sensory organs. Other activities in the workbook included activity 2 – It's Only Natural (which deals with the importance of natural resources), activity 3 – Desert Island (deals with human needs and natural resources), and activity 8 – Mystery Bags (which deals with the description of concepts used in natural resources).

G LSMs

The only learning support materials used were those provided by the presenter as indicated above (*The Environment – Outcomes-Based Education*). Also included were the recycled waste. For example, for the activity on combustion tins, nails, match-sticks and used newspapers were provided by the presenter.

(b) Workshop evaluation findings

This aspect is discussed under the following subsections: analysis of the workshop evaluation questionnaire, an overview of the workshop series and findings, conclusions and recommendations. (See Appendix 4.6 for the questions in the Evaluation Form).

G Analysis of the workshop evaluation questionnaire

- The organisation of the workshop - most of the participants (95%) were satisfied with the organisation of the workshop.
- The clarity of the aims and objectives of the course - the clarity of the aims and objectives of the course was rated as 95%.
- The degree to which the presenter had prepared him/herself -the degree to which the presenter had prepared himself/herself was perceived as 94%.
- The presenter's knowledge and experience of the topics covered in the course -the presenter's knowledge and experience of the topics covered in the course was rated as 95%.
- The enthusiasm with which the workshop presenter conducted the workshop -the enthusiasm with which the workshop presenter conducted the workshop was perceived as 94%.

- The effectiveness with which the content was communicated -the participants rated the effectiveness with which the content of the course was communicated as 90%.
- The degree to which course participants were given the opportunity to participate -the degree to which course participants were given the opportunity to participate in the workshop activities was rated as exceptional (99%).
- The extent to which the workshop content can be applied in teaching practice -participants rated the applicability of content in teaching practice as 70%. Probably this is because more abstract and complex policy issues regarding the implementation of EE were integrated in the activities.
- The extent to which the workshop manuals and/or apparatus can be used in teaching - the extent to which the workshop manuals and/or apparatus can be used was rated as 91%.
- Ability to follow the presenter and the workshop proceedings - participants perceived the ability follow the presenter and the workshop proceedings as 96%.

G General qualitative evaluation

- Useful aspects of the course

Specific aspects and activities of the course found useful included: the opportunity to become actively involved in activities dealt with in the workshop, group work, being guided on how to plan activities that could be implemented in teaching-learning settings, clarification of the concept cross-curricular teaching with environment as phase organiser, sensitising environmental issues, broadening the knowledge base regarding pollution and the natural environment and the workshop manuals.

- Recommendations to improve the programme

Aspects recommended for the improvement of the course included allowing more time for activities, extending the duration of the workshop, providing further guidance on programme development and allowing time and opportunity to engage in programme development during the workshop, actively developing cross-curricular OBE learning programme units and ensuring that the groups are kept actively involved throughout the workshop.

- Significance of the series of workshops to the participants

The participants claimed that the workshops had improved their teaching ability, increased their knowledge about the environment, increased their awareness of the environment and environmental issues, improved their ability to implement OBE, provided them with an opportunity to share ideas on good teaching practice and that they were enriched and empowered.

G An overview of the workshop series

The participants acknowledged that their overall knowledge of OBE had increased remarkably during the workshops. They were now confident to teach in the OBE approach. Their knowledge of environmental learning had increased significantly. They implemented some of the workshop activities in their own classrooms and referred to the manuals for new ideas to improve the quality of their teaching practice. Fourteen of the participants indicated that the certificate of participation presented at the end of the workshop was very important to them. Half of the participants maintained that they were not expected to give feedback at their schools. However, the other half managed to discuss their workshop experience with the principal. Of these principals, only six showed interest in the feedback. All the participants, but one, discussed the workshop experience with their colleagues who were all, apart from one teacher, enthusiastic about the experience.

G Findings, conclusions and recommendations

Participants attested to the constructiveness of the workshops. They maintained that they could apply the knowledge and skills acquired at the workshops, and that their confidence and expertise in OBE and environmental learning had been enhanced by the presentations. However, participants were not satisfied with the duration of the workshops. They felt that time was too limited and, thus, they could not engage themselves fully in practical activities like developing cross-curricular learning programme units. They recommended that the workshops' time should be extended. Participants also felt that the venue of the workshop at the school was not appropriate since it was noisy. They recommended a noise free environment for workshops in future.

Regarding the lack of obligatory feedback strategies, Le Roux (2001c: 13) is of the opinion that "at the outset of any future workshop series, participants should be actively urged to report back to their principals and colleagues – regardless of whether this is a prerequisite stipulated by the school management or not". This fact should be considered by all workshop presenters for INSET.

Data gathered through the three workshops indicated the numerous issues and challenges that teachers and educators encounter in the implementation of environmental learning in formal schooling. These issues are directly illuminated in Chapter 6. Data collected through the focus group interview and school visits interviews will also complement data already gathered through the other methods.

4.2.3 Focus group interviewing

This interview was conducted at Abaqulusi Teachers' Centre on 22 August 2002. Not all teachers who attended the workshops attended the interviewing session. The selection of the teachers was based on a representation of each category, that is: the independent high school, primary school, combined school and three public secondary schools (Appendix 4.1) The secondary schools had the largest number of participants during the workshops. The aim of the interactive, semi-structured interview was to establish whether what the teachers had learnt in the workshops was being implemented or not. If not, the challenges and how they could be overcome were investigated and discussed. Appendix 4.7 entails the interviewing schedule. Responses to each item in the interviewing schedule are briefly detailed below:

G Institutionalisation of environmental learning

All the participants felt that the mind-set of some education managers, educators, and parents should change and they should accept that environmental learning is not an add-on, but is an integral part of learning. If such a position is not taken, then environmental issues and concerns will be peripheral to other learning in formal schooling. The responsibility to ensure that environmental issues form part of learning, will be relegated to those only who are concerned with environment in teaching and learning.

G What happened after the series of workshops?

For teacher A at school A–C it was business as normal after attending the workshops. He continued with the subjects he teaches in Grades 10–11. Subject teaching is strictly adhered to in these Grades. A 40 % pass rate is expected at the end of the year in Grade 12 by the regional and provincial education department.

Teacher D at school D–H also experiences the same problem as teacher A. She teaches Grades 10–11 and OBE has not been introduced in these grades this year. So for her it is also business as usual and environmental learning is not part of teaching and learning except in learning experiences that lend themselves to environmental learning.

At school M–PH where teacher O teaches, OBE is not perceived as an innovative teaching and learning approach. Teacher O is therefore expected to continue as usual with her teaching duties. However, she does see opportunities for environmental learning in the subject IsiZulu which she teaches. For example, teaching about the harvesting of medicinal plants in a learning experience *Imithi yokwelapha* (*healing medicinal plants*) gave her a good opportunity to focus on the environment.

Due to his transfer to a primary school in the Babanango area, teacher M has not been able to implement what he learnt at the workshops at his previous school (A–C). However, he has managed to start an

environmental club at his new school (M–Q), and the principal and other teachers are all very supportive of all the environmental learning activities he is initiating at the school.

Teacher J at school J–H felt that "OBE needs time for implementation. At the moment things are happening very fast. Teachers seem to be struggling to keep up with the pace of understanding, and implementing" within the OBE curriculum. She felt that the standard of education might suffer in the process. She has tried some of the environmental learning activities with her classes and they worked well.

G Issues and challenges encountered in the process of EE implementation in formal education.

Issues raised seem to be embedded within the view that environmental learning is an extra-curricula activity or an add-on for teachers. Therefore teachers who attend environmental learning workshops are either themselves enthusiasts of the environment or are seen as teachers who can teach EE as an 'add-on' extra-curricular activity because of the lighter teaching load they have. For example teachers D, J andO teach languages. At times teachers are asked to attend environmental learning workshops based on the subjects geography or biology which they teach. Most educators and teachers feel that these subjects lend themselves to an environmental focus in teaching and learning (teachers A and M).

Another issue is the lack of support from school management in environmental learning. Principals seem to be engaged in management issues and therefore do not have time to support teaching and learning at their schools. Instead some are still convinced that learning about the environment is equated to learning about plants and animals, and therefore learning using the school pond and excursions to the game reserves are seen as the only critical environmental activities for teachers (school J–H and school M–PH).

Other issues that emerged in this interview are:

- the intensive nature of assessment procedures make it difficult for teachers with large numbers of learners to provide an education of high quality (they spend most of their teaching planning time filling in learners' assessment),
- large numbers of learners in certain schools put constraints on the assessment strategies that can be used,
- the training of teachers in environmental knowledge and understanding should be followed up with school-based support (especially if the training model intends to cascade information, cf 2.2.4.3.1),
- cluster meetings (like the SOP) if conducted during school hours, seem to be depriving learners of opportunities to be taught,

- a strategy that purposely engages all teachers at school level to be literate about environmental learning should be formulated and implemented,
- curriculum implementers or subject advisors are a critical component of school-based
- environmental learning support. They should be purposely included in teachers' professional development training programmes and be empowered to support teachers in curriculum issues.

Teacher J observed one of the challenges that teachers are faced with when she reiterated that "the whole school needs to buy-in the environmental learning school programme. Other teachers need to know what EE is all about" otherwise environmental concerns will always be marginalised in school. Therefore "they need to know that it is within the South African Department of Education's policy to engage learners in environmental learning". This is definitely a challenge for both educators and teachers and all involved in ensuring a better quality of education for all learners.

4.2.4 School visits and interviews

A number of schools whose teachers participated in the three workshops were visited during 2002. Semi-structured interviews were conducted using a researcher- compiled interviewing schedule for both the schools' principals (Appendix 4.8) and the teachers (Appendix 4.9). Schools were visited twice to interview principals and teachers. In each instance, fieldnotes were written and later signed and commented on by the participants. However, as it will be indicated in 4.2.4.1 and 4.2.4.2 two principals and two teachers were not present at their schools when the researcher visited them the second time.

4.2.4.1 Interviews with principals

Principals were interviewed using the researcher-compiled schedule. The aim was to establish how the learning in the workshops was being implemented in the school's curriculum and what issues and challenges the schools encountered in implementing environmental learning. Appendix 4.8 contains the Principals' interviewing schedule. The intention of interviewing principals and teachers was to obtain further data that would enable the researcher to answer the research question and sub-questions.

G Principal of school A–C

Principal A was interviewed once as she was not present on the second visit of the researcher. A Head of Department (HOD) was interviewed. In this school the HOD handles all curriculum issues. The school is not involved in any other projects. Teachers participate in many environmental learning activities within the school, for example, celebrating Enviro-Days. The school is a member of the Vryheid Environment Club. Teachers who attend workshops are expected to share their workshop experiences with their colleagues.

Teachers are also supported by NGOs, the *Siyathuthuka* (We advance) Project and by net-working in the Department of Education (DoE) cluster meetings. The principal of this school felt that some teachers do not share everything learnt in workshops, therefore, it was advisable to invite principals to workshop introductory meetings. Principals would then share the information with other teachers. However, she acknowledged the fact that principals have numerous other tasks which warrant their attention. The school requires painting and learners need uniforms that reflect the colours of the school. Learners of this school come from the neighbouring farms. Learners are therefore forced to seek accommodation in the nearby Nkande Settlement, and stay there alone without parental or adult supervision. Parents staying on these farms are very poor. Most of them cannot afford to pay school fees for their children, nor can they provide them with food for the day at school. Multi-grade teaching in the primary section of the school (Foundation Phase) seems to be a norm. This situation does not promote an ideal teaching and learning context. The school does not have a caretaker, thus, burglaries and vandalism are rife. During 2002 this school had been vandalised and valuable items stolen.

G Principal of school J–H

The school participates in the Whole School Management Project, which involves all the teachers of the school. Teachers who attend workshops give feedback to their colleagues and the HODs. The principal does not have time for workshops due to the many meetings he has to attend. Other teachers support environmental learning by taking their learners on education excursions so that they can observe and experience nature. However, not all learners participate in environmental excursions because of financial implications. Perhaps if the DoE had a fund for environmental learning this problem would be addressed: The principal felt that principals are too busy with other school management and administration issues, therefore, they do not have time for workshops. People who should attend are the subject advisors and the curriculum implementers because they are expected to support teachers in curriculum matters. A number of the school's teachers implement environmental learning in their teaching and learning, but more could still be done. Problems encountered in implementing EE in this school are that: the school needs funds to acquire LSMs, learners do not see the value of cleanliness, or a positive environmental ethics and some teachers do not see environmental learning as an integral part of teaching and learning. However, government departments like Department of Water and Forestry (DWAF) and the Department of Transport are commended for promoting EE by donating trees to the school.

G Principal of school E–H

The school participates in the Shoma Computer Literacy Skills Programme. This programme involves learners and the community of *Nquthu*. Although school fees are raised from time to time to buy LSMs, there is a need for more resource materials. Waste materials are also used as LSMs. The principal of this school felt that as long as the teacher who attended the workshops gave feedback to him and the SMT there

was no problem if he was not invited to a workshop. However, the teacher might not be in a position to take decisions that commit the school other than what the project promises to offer to the school. Attending workshops is also a burden to schools if they have to provide transport to their teachers to and from the workshop. Many workshops are not so helpful because they take teachers away from their classes, and that is not good for learners. If principals are also expected to attend a workshop together with their teachers then the school is rendered ineffective in both teaching and learning, and management. It is difficult to convince teachers that the integration of EE in the existing curriculum can only happen through them. The teacher who attended the workshopscannot monitor all the teachers to determine whether they implement EE or not. The integration of environmental learning could begin with geography and biology because these subjects lend themselves to EE. When asked, how can we

ensure that the teachers own environmental learning, he answered if different teachers could attend the various workshops, then they could support each other at school level.

G Principal of school I–H

The school is involved in the HIV/AIDS project of the Department of Education. Teachers are trained to implement the project at school level. The Department of Social Welfare and Social Development supports the school with the Poverty Alleviation project. These projects are most needed in this community because of poverty and unemployment. Teachers at this school hope to implement EE in their teaching and learning in 2003 after receiving sufficient training in EE. However, the impact of EE is visible in the school. The School's EE Club is in charge of the school premises and environmental activities. Excursions to various education sites have taken place. If the principals had been invited to the first workshop, that would have strengthened implementation of EE at school level. The principal would have gained first hand information to enable her to support teachers plan a strategy for environmental learning implementation for the school. Although the school is well built and there is enough school furniture, the library needs a lot of books and other LSMs. Funds are needed for such a venture. Issues of concern at this school include: vandalism, burglaries and learners' negative perceptions about the cleanliness of the school premises. If asked to work in the school gardens and yard they think they are being punished. Thus, this has become the duty of the School's EE Club. Other teachers in the school think that the two teachers who attended the SOP workshops must always be responsible for environmental learning and any activity that has to do with the environment. The SGB is very supportive of EE in the school. Teachers have been encouraged to start food gardens in order to raise funds for their needs in the school. The principal is very proud of the two teachers who are the driving force behind the success of EE activities in the school. The school also has a healthy, conducive learning ethos, which is strongly supported by the SMT and the SGB.

G Principal of school M–P

There are two major projects in which the school is involved. These are the Feeding Scheme and the Poverty Alleviation projects. Forestry Education is also a project supported by Mondi Forestry. Other normal annual school activities like sports, the Arbor Day celebration and music competitions feature on the school's calendar. The HOD feels that since the introduction of EE there has been a dramatic change in the way learners respond to the care of their school gardening, tree planting and the general interest in environmental excursions. Other teachers support environmental learning by assisting whenever called upon to help with activities. For example, on Arbor Day they help in teaching their learners and giving a hand in the celebrations. Teachers at this school are said to be cooperative and supportive of each other. This climate promotes environmental learning in the school. Problems the school is confronted with regarding their food gardening project include high cost of seedlings, lack of garden tools, (learners are asked to bring their own from home and these are sometimes lost which causes problems for the school) and a lack of funds to buy the tools that the school needs. Since there is no water at the school, the school wants to be assisted in a strategy to harvest rain water. Neither is there electricity at the school thus cutting the school off from any endeavours to use modern technological apparatus for enhancing teaching and learning. Learners come from the nearby forest compounds and communities and the local township. Poverty and unemployment are rife and a challenge for the school. The school also experiences drug-abuse cases from time to time. There are no recreation facilities in this community. Other challenges include the teaching of Technology Education and Economics and Management Sciences. LSMs are needed but there are no funds to acquire them.

G Principal of school M–PH

The 2020 Water Vision project sponsored by DWAF enables teachers and learners to test water in the surrounding rivers and local dam. The school's EE Club is involved in different environmental learning activities, of which the following took place recently: an educational excursion to the Ntinini Nature Reserve, enviro-competitions, and clean-up campaigns. The new C2005 seems to be posing a challenge to transforming teaching and learning. The principal claims that OBE is not a well planned curriculum activity in South Africa, thus, things are not done systematically in education in order to involve teachers. She also alleges that her school has always used the OBE approach. Learners were not just taught to pass examinations but they were equipped with knowledge and skills essential for life. Teachers do not have enough time for environmental learning. They are doing their best under the circumstances. More teachers need to be trained in EE not just one teacher per school. The principal intended discussing what teacher O learnt in the workshops with the biology teacher.

4.2.4.2 Interviewing teachers

The aim of interviewing teachers was based on the notion that teachers know best whether environmental learning in their schools was promoted by their attendance of the SOP. They would also know the issues and challenges that they were faced with in their endeavours to implement environmental learning. Appendix

4.9 contains the teachers' interviewing schedule. It should be noted that the interviewing schedule does not only entail items that seek to provide answers to issues and challenges encountered in EE implementation in schools, but also entails items that seek to provide answers to the sub-questions of the research question.

G Teacher A

Teacher A felt that there was confusion and a lack of understanding regarding the implementation of OBE. The assessment of learning outcomes is based on examination of common work (content) at the moment. This defeats the purpose of lifelong acquisition of knowledge and skills through the achievement of learning outcomes. The LSMs materials provided by the Department of Education do not give learners the necessary knowledge and skills to answer questions asked in the common examination papers in Grades 8-11. Making teaching and learning even more difficult is the fact that the school does not have a caretaker. This means that teachers cannot leave learning materials in the classrooms without their being destroyed by hooligans. Other resources that the school needs are a photocopying machine, a library and a larger school yard. The school is built on a farm, making it impossible to enlarge its premises. The school is also supported by the Dundee clinic with drugs for health related diseases and education on HIV/AIDS. DWAF provides the school with funds to sink a bore-hole forwater. Natal Nature Conservation provides the school with trees yearly but these are either destroyed by fire or cattle. Teacher A felt that selecting teachers to attend an EE workshop based on whether they teach biology and/or geography is not an effective strategy. Teachers who are interested in EE should be invited. The first workshop ignored this fact. The subject advisor responsible for EE in the region should be purposively engaged in the project so that he supports teachers in the schools with the implementation of environmental learning.

G Teacher E

The school is situated in a rural community near Nquthu Town. The local chief is in charge of the area where the school is built. Although the school buildings are new and there is enough school furniture, there is a need for more LSMs, especially library books and charts for environmental learning. The Nquthu municipality has promised to supply the school with drums for waste collection. DWAF provides the school with trees annually for Arbor Day celebrations. Other teachers seem to think that environmental learning should be the responsibility of the teacher who attended the workshops. They only need to assist in the environmental day celebrations. Teacher E alleges that there is no time for EE, especially for him as a teacher responsible for matric biology and geography. Teachers also change subjects or learning areas almost every year. As a result teachers relinquish EE if they are allocated other subjects or learning areas other than biology or geography. Teaching subjects for matric also forces teachers to drop environmental learning because it is perceived as incompatible with achieving good results in matric. There is a feeling that the Vryheid

Environmental Club should be more active in order to support teachers in the schools with environmental learning.

G Teacher(s) I

Two teachers attended the series of workshops at this school. They are both called teacher I in this investigation since they were interviewed together and their responses were similar. Their school is situated in a semi-urban area. The buildings are new and there is enough school furniture, but, the library is not adequately resourced. There are very few books or resources on environmental learning. If enough books in EE were available, the librarian would display these books to encourage teachers and learners to use them. Other teachers at this school think that the two teachers who attended the workshops should always be responsible for anything that has to do with EE, especially with the celebration of environmental days. The school needs to be continuously supported by the SGB in fund-raising initiatives. Another challenge that the school has to deal with is the perception of learners that they are punished when asked to take care of the garden and to water the trees. They even think they are punished if requested to pick up litter in the school yard. Vandalism undermines the implementation of environmental related activities within the school. The school fence is occasionally cut by burglars who wish to enter the school yard and buildings for criminal activities. Teacher I considered it would be helpful for the facilitators to visit the schools and support the teachers in their teaching practice, especially with environmental learning. The presenters are also requested to visit the Vryheid Environmental Club annually. At this school all teachers report to the principal before being given an opportunity to report their experiences gained at the workshop to their colleagues. Together with the principal, the staff decide on the plan of action for implementing what has been reported and agreed upon.

G Teacher J

The school has beautiful buildings, and adequate furniture. The school also has adequate LSMs because it is well funded by parents through its boarding facility for learners who come from surrounding areas. Teacher J felt that there was no support given to teachers to implement EE. The subject advisor who is supposed to assist with EE is not available to teachers. Thus, teachers are overwhelmed by their work and end up relegating EE to the periphery. She felt that they were back to square one because of the lack of support. Perhaps more teachers in each school should be trained in environmental learning so that they can support each other with school-based implementation. Other teachers are not helpful because they are battling with the implementation of OBE. They feel overwhelmed by what is expected of them. The huge numbers in the classes and the redeployment of some teachers are extremely difficult for them. They feel trapped in an environment that does not seem to care whether they succeed or fail in their teaching. They are just perceived as tools of implementation and not as part of the planning and implementation machinery.

More SOP workshops should be conducted for all teachers. Teachers will then be able to assist each other in the school. The teacher thought that geography and biology teachers should be the ones who attend such workshops. Another issue of concern is the OBE training focussing on assessment. She was trained in OBE and assessment but she does not yet feel confident with her knowledge and understanding on environment to be on her own. She still needs more knowledge on EE. Another problem is how environmental learning programme units should be developed within the pre-determined assessment questions (Grades 8-10). Teachers were given learning programme units based on outcomes and assessment standards (end of 2002). They were to prepare learners for examinations.

G Teacher M

Teacher M was initially at school A–C and was transferred to school M–Q. As soon as he was settled in his new school, he continued with EE. The researcher found him at this school when he undertook his first school visits. Teachers at this school support each other in environmental activities. Environmental Days are celebrated by the whole school. Other activities include educational excursions, Forestry Education and HIV/AIDS Education. The OBE curriculum is a challenge to the teachers, especially assessment. What confuses teachers is the prescribed content for Grades 8-10 which are examined within the assessment standards (South Africa 2002: 14). In other words, outcomes and assessment standards are predetermined with a prescribed content. All learners are examined with the content indicated to the teachers. The SOP workshops helped in providing the teacher with knowledge and skills for environmental learning practice. However, their duration was limited. More practice in designing environmental learning programme units was needed.

G Teacher O

Teacher O is a teacher in one of the oldest independent schools in the country. The school is not a keen supporter of OBE. The reason is probably because the school always excels in the matric examination and it is believed that the current teaching practices are successful. She is not sure whether she is integrating environmental learning in her language class correctly. The school also seem to be very cautious of any outside influence. Again, the reason might be that the school feels that it is doing exceptionally well and therefore it does not need any intervention. The whole notion of OBE is seen as ‘old’ and not new because the school has a track record of excellence in education. It is the researcher’s observation that the school views any educational approach and the new curriculum (C2005 and EE) as outside influences. Teacher O feels that as a teacher she has acquired knowledge and skills essential for her teaching practice. But she thinks the life span of the SOP is too limited and therefore the impact might not be noticeable in the schools. The integration of environmental issues in learning needs a lot of time because it is new for most teachers. More time is needed to clarify concepts and design learning programme units with teachers to enable them to be confident to work on their own.

4.2.5 Photographs

There are various reasons why photographs are used in research. Moreover, there are different ways of using photographs in research. Le Roux (EEASA 2003) maintains that photographs are sometimes used as complementary data or supportive data and that sometimes they are the main data collecting method. In this research inquiry photographs are one of the data collecting methods and do not stand on their own without the assistance of other data gathering instruments.

Few of the schools provided the researcher with photographs of environmental activities or learning within their schools. Coupled with the issue of funding such a venture, the researcher could not provide the schools with cameras and films. Therefore, schools that responded to the researcher's request are greatly appreciated for their generosity.

G Photograph of school A–C

In 4.2.4.1 the principal of school A-C indicated that her school has been vandalised and valuable items stolen. Among these were the schools' gardening tools. As a result learners were asked to bring their own garden tools from their homes. But because these tools get lost at school, parents are reluctant to allow their children to take them to school. Teacher A (4.2.4.2) from this school also attested to the problem of hooligans destroying and stealing teachers' teaching resources, mainly because the school does not have a caretaker.

Photograph A: Learners growing vegetables for the school

In Photograph A learners are preparing the soil for a cabbage plot, using three garden spades borrowed from the learners' parents. Another nine learners are waiting their turn to use the spades. The weeds growing around this food garden show that this endeavour is a recent one. The teacher (with a stick in his hand) appears to be instructing the learners on how to use the spades in such loamy soil.

It seems apparent that vegetable gardening is not a familiar activity for the school. A large portion of the garden appears uncultivated. In the background there is a large dam and grain silos. It seems that this land is fertile and therefore suitable for farming. The school would therefore benefit by cultivating the land around its buildings to grow vegetables for the poor learners.However, the school needs a sponsor to provide the learning resources (maps for science, geography, history and biology) and garden implements required. The principal has already mentioned in 4.2.4.1 that the school has poor learners, who come from impoverished families. Most of the parents cannot afford to pay school fees.

G Photograph of school I–H

The principal of this school alluded in 4.2.4.1 to the fact that the school needs to be supported by the Poverty Alleviation project, which is a service rendered by the Department of Social Welfare and Social Development because of poverty and unemployment in the local community. It is therefore encouraging to note that a sponsor (Ellerines Furniture) has provided the school with trees for Arbor Week celebrations as indicated in Photograph B. Community members are also watching the planting of the trees because of the strong support of the school's SGB (see 4.2.4.1).

Photograph B: Celebrating Arbor Day in style

The entire school – staff, learners and community members, watch the principal of the school as she plants a tree during Arbor Week celebrations (September 2002) . She is assisted by three learners, HOD, the EE teacher and the manager of the Ellerines Furniture store that donated the trees. The three learners represent the council of learners. It is hoped that vandals will not break into the school and destroy the trees. Teacher I explained that “vandalism undermines the implementation of environmental related activities within the school” (see 4.2.4.2).

The school grounds in which the tree is planted seems green and cared for. Along the veranda learners are standing and watching the planting of the tree. They are in full uniform. This sight is commendable especially when one considers that this school is in deep rural KZN where most parents are unemployed.

G Photograph of school M–P

In 4.2.4.1 the principal of school M-P indicated that her school does not have garden tools and that “learners are asked to bring their own from home ... these are sometimes lost and this causes problems for the school”. The school does not have money to buy the tools. Most learners come from the nearby forest compounds and communities and the local township. Perhaps the different colour jerseys show that parents cannot afford the school uniform.

Photograph C: We are planting a tree for ourselves

Photograph C shows the commitment of teacher M in EE activities. In 4.2.4.2 it is noted that teachers at this school support each other in environmental activities. The celebration of Arbor Week at this school is reported to have been successful.

It is not clear from the photograph whether the whole school participated in the planting of the tree at this school. However, a representative of Mondi Forest assisted by two learners is planting a tree. The other learners are watching the activity. The different colour jerseys seem to indicate the financial status of the learners' parents, most of whom are unemployed and poor. The school building is also not visible in the photograph. The research revealed that this school is extremely needy.The photographs briefly discussed do not only show the action that the schools take for/in the environment, but they also tell a story about the schools. Although Photograph A does not include the school building, it is probably dilapidated and needs renovation as reported by the principal. Photograph B included the school building because they are proud of the school (the building is still new) and Photograph C excluded the building.

However all these schools' endeavours in environmental learning are obvious from the photographs.

4.3 CLOSING COMMENTS

The data collected during the SOP has demonstrated issues and challenges that teachers are faced with in trying to implement EE in their schools. The different data gathering methods utilised in this investigation have complemented each other to provide detailed data.

Ensuring that the fieldnotes are validated and that they provide trustworthy data was not easy, especially regarding data concerning participants and school principals. Time for undertaking such an exercise was also not always appropriate. Principals were often busy with other commitments. Consequently, principals were seen to comment on fieldnotes taken previously. Teachers were also not all present at their schools when the researcher wanted to discuss the fieldnotes further. However, because the majority of the principals and participants were present, it is hoped that the data gathered relate the story about EE implementation in some of the Vryheid schools after the SOP series of workshops. Only three schools furnished the researcher with descriptions of environmental related activities in their schools. These are schools that seem to have a healthy, conducive environment and good working relationships.

The research explored some issues and challenges encountered by educators and teachers in implementing environmental learning in the SOP case study. Chapter 5 presents the NEEP-GET case study.

CHAPTER 5

EDUCATION PROCESSES AND INTERACTIONS ADVANCING ENVIRONMENTAL LEARNING: THE NEEP-GET CASE STUDY

> *Many of the teachers are being inducted into the complexities of OBE and C2005, and of environment, by SAs who themselves in many cases have only just begun to grapple with the complexities of the processes - of the understandings of environment* (Lotz-Sisitka 2002).

5.1 INTRODUCTION

The main focus of the NEEP-GET is the professional development of its participants who are the project staff, subject advisors and teachers. Equally important, the NEEP-GET case study in North West also focusses on the Potchefstroom/Klerksdorp subject advisors' cluster and teacher cluster. The context(s) of the cluster(s) will be expounded in section 5.2. During the professional development process, they are expected to get to know and understand environment and to ensure the integration of environmental issues in the curriculum. Not only does the NEEP-GET grapple with the task of ensuring that subject advisors and teachers understand environmental learning, but also that environmental learning is school-based and resource-based. This means that EE should first be contextualised locally, and thereafter be internationalised.

The NEEP-GET project (South Africa 2002a: 7-10) maintains that the following principles, as extrapolated and interpreted from the *Project Document* (DANCED 2000: 31-32), inform the orientation to the implementation of environmental learning in the curriculum:

- **environmental focus,**
- **responsiveness and relevance,**
- **participation,**
- **balance of structure and flexibility,**
- **action reflection / Research-based evaluation of own practice,**

- **assessment as learning,**
- **lifelong learning.**

Though these principles are seen as pivotal in informing the NEEP-GET implementation process and professional development, the NEEP-GET *Project Document* does not claim that they are exhaustive. The NEEP-GET also uses two frameworks to clarify the processes of professional development for subject advisors and the professional development of teachers. These frameworks are explored in section 5.2.

In the context of the South African education system, educators and teachers need to be rewarded for their efforts in participating in INSET programmes (South Africa 1998a). It is hoped therefore, that the subject advisors and teachers participating in the processes of professional development will be accredited for their endeavours in the project. The DoE (South Africa 2002: 1) sees this as a major challenge in its implementation processes of the NEEP-GET. The challenge is to:

> ***... define accreditable outcomes for professional development of Curriculum Support (CS) staff and teachers – which can be accredited at two or more NQF levels (depending on prior qualifications and accreditation needs of participants in clusters)*.**

It is believed that this challenge will best be met through the orientation of the NEEP-GET to accredit INSET in different contexts rather than following a pre-defined course for accreditation.

5.2 THE NEEP-GET OBJECTIVES AND LEARNING OUTCOMES

Using the earlier learning experiences of the Learning for Sustainability Project and the NEEP-Pilot Project (see 1.1), the NEEP-GET Project focuses on the implementation of EE in the school curriculum by using tools like resources and researched based approaches to learning. However, in order to accomplish this goal, the NEEP-GET project uses its own objectives and intended outputs.

5.2.1 NEEP-GET objectives

The NEEP-GET Inception Document (2001b:5) and Sguazzin (2002: 4) declare that the NEEP-GET objectives are to ensure that:

- **environmental learning is integrated throughout the curriculum for the General Education and Training (GET) band,**
- **group 1 provincial departments of education have the capacity to implement environmental learning in participating districts and schools, thus providing a foundation for expanding environmental learning to all other districts and schools. Group 1 provinces are provinces which were selected by the Council of Education Ministers to receive more assistance from the Project Staff. These are KZN, Free State and North West. Three staff members are assigned to each of these three provinces. The EE Coordinator is one of the three staff members,**
- **group 2's provincial departments of education have increased capacity to implement environmental learning in schools. Six of the provinces are referred as group 2 provinces. They have EE Coordinators, but are not supported as group 1 provinces. However, Limpopo has not managed to appoint an EE Coordinator up to this year.**

These objectives are supposed to be realised through the NEEP-GET project learning outputs, of which there are seven (DANCED ent 2000: 45-47).

5.2.2 NEEP-GET learning outputs

The seven NEEP-GET project outputs through which the objectives are envisaged to be accomplished are to:

1. **take initiatives in integrating environmental learning in the curriculum for the GET band,**
2. **implement a professional development programme for Provincial EE Coordinators in order to facilitate, extend and sustain the process of enabling provincial and district CS staff to integrate environmental learning, and provide support for their advocacy for environmental learning on provincial level,**
3. **implement a professional development programme for provincial and district CS staff to facilitate, extend and sustain the integration of environmental learning in schools,**
4. **implement a professional development programme for teachers to support them with the integration of EE into learning areas,**
5. **develop and produce guideline documents for supporting environmental learning,**
6. **take initiatives to influence pre-service teacher education regarding environmental learning,**

7. improve at national and provincial levels the co-ordination initiatives of school-focussed environmental learning.

These project outcomes are esteemed and yet critical for a project like the NEEP-GET which has as its objective the support of subject advisors and teachers with their school-based environmental learning processes. However, some of these outputs seem to be more controlled by the National Department of Education than provinces. For example the issue of pre-service (output 6) and policy (output 7) are located in the hands of the National Department of Education.

The project objectives and learning outcomes are informed by the principles underlying the NEEP.

5.2.3 NEEP-GET guiding principles for professional development

These key principles were workshopped with key stakeholders and consensus reached (DANCED 2000: 31-32). They are:

- **participation, ownership and sustainability,**
- **responsiveness to context,**
- **reflexive and applied competence,**
- **utilisation of existing resources,**
- **an integrated, collaborative and co-ordinated approach.**

These principles (which differ slightly from the modified ones in 5.1) are the core NEEP-GET professional development principles. They are seen as meaningful statements to guide environmental learning within the OBE curriculum. They are not meant to create a mould within which environmental learning should take place, otherwise, subject advisors and teachers' professional development will be confined and narrow in its operation. They merely provide subject advisors and teachers with some 'ideas' and 'means' of ensuring environmental learning in schools. It is therefore important for the project staff to understand and know these principles so that their role is focussed in the environmental learning activities of the project.

5.3 PROFESSIONAL DEVELOPMENT IN THE NEEP-GET

The new education system calls for new ways of bringing about transformation in education. Similarly, a new approach to professional development cannot be ignored. Sguazzin and Du Toit (2000: 9) allege that:

> ***work done in the arena of professional development has shown that traditional professional development models are inadequate for meeting the needs of the fundamental changes to education that are currently being undertaken. Often such models are too simplistic and are only capable of providing minimal support with little opportunity for the professional growth of teachers.***

This means that new ways of professional development for teachers and educators are critical to enable change in education. The NEEP-GET is but one project which endeavours to support teachers and educators with professional development processes. The Learning for Sustainability Project (Sguazzin & Du Toit 2000: 10) indicates that in order to see teachers (and educators) as professionals, then teachers (and educators) should:

- **continue reviewing and reflecting on their teaching and other tasks with a view to improve teaching practice,**
- **develop skills, insights and critical reflection,**
- **develop an ability to take decisions, and act on these when necessary and to take responsibility for the actions,**
- **develop a community that shares practical and theoretical understanding within a commitment to a common goal.**

Thus, the project's rationale of using the learning tree framework (NEEP-GET 2002b: 11) to guide professional development is based on the notion that it is an open framework, and that it allows participants to be informed by social constructionist epistemologies and constructivist learning theories. Participants are allowed to reflect on what, how and why of their learning. Therefore, outcomes of learning, not the content, become critical in learning. Content becomes a vehicle to achieve learning outcomes.

5.3.1 The learning tree frameworks

The learning tree frameworks (Diagram 5.1 and Diagram 5.2) in the NEEP-GET project are seen as vital tools that give direction to the professional development of subject advisors and teachers. Each framework embraces various aspects of the curriculum within OBE parameters. Each branch

of the individual tree represents a critical aspect of the curriculum which attempts to focus subject advisors' and teachers' attention on aspects related to educational transformation through the curriculum.

Two professional development learning tree frameworks are used in the NEEP-GET. One is the learning tree framework for educators, that is, subject advisors and Curriculum Support (CS) staff, the other is the learning tree framework for teachers.

5.3.1.1 The learning tree framework for the CS staff's INSET

The learning tree for CS staff (Diagram 5.1) represents the following ideas:

- **G The SAQA critical outcomes as represented by the learning tree for CS staff.**
- **G Environmental education professional development as represented by the trunk.**

The tree has four main branches which are:

- **(i) environment in the curriculum – consisting of the following twigs:**
  - **– environment in context,**
  - **– environmental concepts,**
  - **– environment in learning areas,**
  - **– learning support materials for environmental learning.**
- **learning processes – consisting of the following twigs:**
  - **– learning environment,**
  - **– adult learning,**
  - **– approaches and methods,**
  - **– assessment,**
  - **– learning theories.**
- **policy – consisting of the following twigs:**
  - **– learner support materials policy,**
  - **– curriculum policy,**
  - **– environmental policy,**
  - **– school policy.**
- **management of professional development – consisting of the following twigs:**
  - **– networking,**
  - **– cluster management,**

- **research based implementation,**
- **models of professional development,**
- **relationships,**
- **roles.**

Diagram 5.1 below represents the learning tree for subject advisors and/or CS staff too. Cluster activities in which subject advisors participate are not only bench marked against the learning tree, but are also envisaged to be critically broadened and rendered flexible to their professional development. This means that the learning tree framework provides the project staff with 'themes' or 'topics' for considering whilst engaged in the process of preparing learning for themselves and teachers. Therefore, the learning tree plays a pivotal role in the professional development of the subject advisors.

Diagram 5.1: Learning Tree guiding the professional development of CS staff (NEEP-GET 2002b: 13).

5.3.1.2 The learning tree for teachers' INSET

Though there is no vast difference between the learning tree for subject advisors and the learning tree for teacher professional development, the teacher professional development tree has eight main branches (Diagram 5.2) in comparison to the four of the subject advisors' (and CS staff) professional development framework. Diagram 5.2 represents the learning tree for teachers.

The learning branches are:

- **learning area knowledge and skills,**
- **environment and context,**
- **OBE curriculum framework and implementation,**
- **national policy and transformation,**
- **learning theory and methodological change,**
- **action reflection and evaluation practice,**
- **assessment,**
- **learning support materials.**

The learning tree branches also have twigs, which mainly indicate policy, implementation guidelines, methods and activities at the action-taking level. During the INSET programme, teachers are expected to focus on these issues so as to contribute to their professional development within their educative context. A strong emphasis on contextualising their activities and focussing them on school-based implementation is key to the success of environmental learning through the school curriculum.

Diagram 5.2: Learning Tree for Teacher professional development.(NEEP-GET 2002b: 16).

5.3.2 The NEEP-GET approach to curriculum support staff and teacher professional development

The NEEP-GET project staff train subject advisors and teachers who are clustered into a group or groups in environmental learning. The provincial or district education offices select subject advisors and teachers and cluster them according to their proximity. A cluster is mainly an organisational structure which benefits those who participate. In this section the models that enhance the outcomes of a cluster are studied.

5.3.2.1 Long term cluster-based workshops (underpinned by the spiral model)

The NEEP-GET case study is based on a long term cluster-based workshop approach to support professional development of CS staff and teachers. Since its inception in January 2001 educators and supposedly teachers, have been supported. Thus there is continuous contact with the NEEP-GET staff. In July 2001 Technical Advisors (TAs) and Provincial Coordinators were appointed (NEEP-GET Inception Report 2001). CS staff are supposed to establish teacher-clusters and support them in environmental learning. The NEEP-GET project is intended to end in December 2003 (NEEP-GET Inception Report 2001: 40). The NEEP-GET project staff see the following as benefits for using the cluster model for professional development.

- **individuals from different backgrounds share information and help each other to achieve outcomes,**
- **brain-storming for better solutions is encouraged,**
- **the dynamism of knowledge is addressed,**
- **each individual is accorded time to contribute to the set goal,**
- **a chance to realise harmonious working relations is encouraged and given,**
- **endeavours to develop intellectual giants (critical thinkers) are made,**
- **mutual understanding among the group members is created.**

Possibly the benefits indicated above work well with the spiral model for professional development because of the longevity of the expected duration of such a process. Thus, workshops

for professional development in the NEEP-GET project are not 'once-off' contact sessions or a short series of workshops that take place within a year. The researcher attended three of the workshops, however, the TA and subject advisors actually attended more than three workshops. To gather data that the researcher might have missed during sessions that he did not attend, documents (reports of such meetings) and the *NEEP-GET Formative, Monitoring and Evaluation* (FM&E) reports (2002c; 2002d; 2003b; 2003c) were explored.

5.3.2.2 Spiral model to CS staff INSET

The NEEP-GET claims to be using the spiral model to professional development as was implemented by the Learning for Sustainability Project (NEEP-GET Project Document 2000: 11). The spiral model in practice represents a process and cluster-based approach that provides subject advisors and teachers with opportunities to develop professionally over an extended period of time as opposed to 'once-off' workshops. The underlying principles of the spiral model are that it moves in broadening circles (representing progression over time), it is recursive (representing the provision of opportunities for cycles of action and reflection), and allows for the building of increasing levels of sophistication and complexity of understanding in learning. The spiral model therefore represents an open ended and long term approach to professional development and a continuous and sequential process aimed at building skills, competences and attitudes (Sguazzin & Du Toit 2000: 21-22).

However, as the spiral model was a response to the shortcomings of the cascade model (South Africa 2000: 19) to INSET, some of the subject advisors and teachers training activities indicate that the NEEP-GET project does not only spiral in its subject advisors and teachers professional development, but it also cascades.

The key focus of the spiral model is to enable subject advisors and teachers through work together, work away and reflective tasks to develop applied competences that would support environmental learning processes in schools.

5.3.2.3 Work together, work away and, reflective and reading tasks

The work together, work away and reflective and reading tasks are discussed below with an emphasis on their contribution to the effectiveness of the cluster activities.

(a) Work together tasks

This type of activity refers to tasks that are undertaken during the physical attendance of and participation in cluster meetings or study weeks. These can be designed to break the ice, facilitate the negotiations and reconstruct meaning, advance new concepts and information or afford opportunities for dialogue, interaction and peer assessment (NEEP-GET Possible Tasks 2002e). The nature of the tasks is normally guided by policy, the participants' needs and contexts of teaching and learning.

(b) Work away tasks

These activities refer to tasks that are performed during the periods between the cluster meetings. Participants are afforded the opportunities to practise new theories, information and ideas that are drawn from the work together meetings. They allow the participants time to integrate and contextualise theory and practice in their work environments (NEEP-GET Possible Tasks 2002e).

(c) Reflective tasks and readings

These tasks can be undertaken during the cluster session or by individuals as work away tasks. Reflective tasks aim at assisting the participants with reflexive competence and critical thinking skills. Readings are aimed at providing the participants with the content knowledge of environmental learning and subject related information. Challenging readings can also provide reflective tasks for participants.

NEEP-GET workshop sessions are expected to focus on the different tasks mentioned in this section in order to ensure that participants develop professionally. Through the professional development of the subject advisors and teachers it is envisaged that learners at school level will also acquire the necessary skills for, in and about EE. Before investigating the interactions and activities in the TA'sworkshops, the profile and setting up of the Potchefstroom/Klerksdorp subject advisors' cluster will be studied.

5.3.3 Profile and establishment of the Potchefstroom/Klerksdorp subject advisors cluster

The Potchefstroom/Klerksdorp subject advisor cluster was established in July 2001. Other subject advisor clusters were also established during this time in other areas of the North West province. Between 48 and 60 subject advisors who were identified by the Subject Advisory Unit actively participated in the clusters. The number fluctuated because:

- **subject advisors who attended the first cluster meetings shared their experiences with their colleagues and some of them started to show interest in joining the clusters,**

- **the project is a national obligation, and it is a responsibility of subject advisors to provide support to teachers in implementing environment as a phase organiser in the curriculum. This position forced subject advisors who failed to attend meetings regularly to make an effort to attend training sessions,**
- **all subject advisors felt that they should be involved in the NEEP-GET INSET programme.**

A major challenge for the professional development of subject advisors was the large number of subject advisors in clusters who were to be trained by one TA (or two in the beginning of the project). Other challenges the TA had to contend with were the failure of some of the subject advisors to complete their 'work away tasks' due to other commitments within their job descriptions, and the irregular attendance of subject advisors in training sessions. A year planner for all cluster activities for 2002 was finalised during the first cluster meeting, and this was sent to all relevant stakeholders. However, later in 2002, due to claims that the subject advisors spend a lot of their time doing NEEP-GET activities, the number of the participants was reduced to 15 subject advisors only.

The first 'work away task' given to subject advisors was to establish school clusters. This activity was to start in the second half of 2001 and not much was accomplished as schools were engaged in rigorous programmes of preparing learners for end of year examinations. It was only after January 2002 that subject advisors started with this task. The Potchefstroom cluster seems to have managed to establish teacher clusters while the Klerksdorp cluster struggled because of a shortage of staff members and the long distances between schools.

Six school based clusters were established in Potchefstroom, of which three are primary schools and three are high schools. The first activity was advocacy of the NEEP-GET project. Meetings were held for the School Management Teams (SMTs) at the Education District Office and for participating teachers at Tlokwe High School.

Six school clusters were also established in Klerksdorp. These are three primary schools and three high schools. Advocacy for SMTs and for teachers participating in the project were conducted. Due to the fact that the number of subject advisors was reduced later to fifteen, the Potchefstroom/Klerksdorp subject advisors cluster had to change its structure and function in order to respond to its context.

5.4 WORKSHOPS CONDUCTED BY THE TECHNICAL ADVISOR

The researcher attended three of the series of workshops which were held for the CS staff. These workshops were held in different venues in North West Province. During the workshops the researcher observed and interviewed participants with the intention of determining the issues and challenges educators grapple with in implementing environmental learning in the selected schools. During the three workshops the researcher gathered data in the form of fieldnotes. Fieldnotes were used as valid data

only after they had been commented on by the TA. This means that in this study the process of using fieldnotes as data is a collaborative, critical and reflexive process that needs the TA and the researcher to clarify issues in dialogue and open debate.

5.4.1 First workshop

The researcher's first Potchefstroom/Klerksdorp subject advisors cluster workshop which he attended took place in the Potchefstroom Education District Office on 6th March 2002. This was actually the third cluster workshop for this group. Eighteen subject advisors attended the cluster meeting.

5.4.1.1 Content of the workshop

The purpose of the workshop was to discuss photographs as providing opportunities for narratives and curriculum development processes. This was to be achieved through exploring the 'work away task' of the second workshop (a workshop not attended by the researcher).

G Work together tasks

- **Summary of previous cluster meeting**

The learning tree for subject advisors' INSET was used in an attempt to summarise succinctly the activities of the previous workshop. Participants were asked to comment on whether the intended outcomes had been accomplished or not. Feedback from participants revealed that there were various levels of understanding and development. A discussion then ensured that focussed on the participants' recollection of the day's activities. This reflexive discussion enabled the participants to reflect deeper about the meaning of the activities for each one of them. Through this exercise they could also assess whether they had an adequate understanding of the activities.

- **Feedback on 'work away tasks' 1 and 2**

This session entailed the 'work away tasks' for the previous workshop. The Potchefstroom group managed to complete both task 1 – exploring our roles and those of teachers as curriculum developers and task 2 – which the readings in the *Learning for Sustainability* booklet, *Camera and Context* provided. They also met with the selected schools and introduced the NEEP-GET project to the SMTs and teachers. However, it appeared that not all the participants had managed to accomplish this activity. These participants were encouraged to continue with the task. Task 2 also required the participants to develop learning programme units individually, but participants developed these as groups (probably working as friends in each group). The TA noted that individual work reflected each individual's level of understanding and would have been useful evidence of learning to go into each participant's portfolio. The TA also noted that the subject advisors were familiar with the different features of C2005, but they seemed to lack an understanding of the sophistication of learning activities planned for the different grades of learners in the Foundation Phase. There seemed to be no relationship between planned activities and the intended outcomes and how these activities were to be assessed.

- **Exploring perceptions about the environment**

Participants were requested to make mind maps of what the environment embraced. This activity was intended to enable participants to explore their perceptions of the environment. According to the TA this activity would have been useful had it been linked to the subject advisors' daily work practice. Through the learning areas they support, they could support teachers with environmental focus opportunities.

Exploring environmental issues and risks through the urban jungle game.

The urban jungle game is an enviro-picture building game. Subject advisors seem to enjoy this game and they think that teachers might also like to use it as an introduction to reflective discussions on the environment and risks in their localities.

- **Curriculum development**

Three different types of curriculum were discussed, namely: explicit, implicit and null. These concepts were clarified through activities done by the participants. An observation regarding the understanding of questions asked by the TA is that language might be a problem if participants lack skills to access the language used in the discussions. At the end of the activities participants evaluated the day's activities by completing an evaluation schedule (form).

G Work away tasks

The participants were asked to take eight photos each of their immediate environment depicting an environmental issue of concern. Three participants needed to share a camera. This work away task would then be discussed at the group's next cluster meeting. This task which had been the work away task for the previous meeting had to be re-done since most of the participants could not managed to carry out the task because of the limited number of cameras for their use.

G Reflective tasks and readings

- **Activity on the interpretation of pictures 'Some pictures to practise with' (Du Toit, D., & Sguazzin, T. 1999: 76).This activity enabled participants to learn about their own views, thoughts and ideasthat are influenced by their historical, cultural, political and economic backgrounds. This activity also indicated to the participants that contextual settings direct what people know as truths (reality). Discussing the pictures from this source gave the participants an opportunity to interpret the pictures. What environmental issues did they see and what was the cause? Some participants became very upset when their perspectiveswere questioned. The TA handled the intense discussion well by reminding participants about the role of historical-cultural contexts in giving one meaning to what one sees in other settings. Thus, it is important that one is open to ideas of what is new to one and to what is not new to others.**
- **Reflexive and applied competence**

  The cluster agreed that a better approach to interpreting the picturers would require the participants to work in groups. Each member should say what s(he) sees in the pictures and group members should ask questions for clarification of issues. Members of the group would then learn about the different interpretations based on the member's prior knowledge (socio-cultural setting). The NEEP-GET activities need to provide learners with learning opportunities to apply reflexive and applied competence is envisaged by C2005 and OBE.

5.4.1.2 Observation of and reflection on cluster meeting, events and activities

The findings of the observation are described briefly in the ensuing paragraphs.

G Involvement of participants

Though most participants participated in the workshop discussions and activities, two or three individuals became engaged in private conversation, commenting on and ignoring what the group was busy with. The TA did not comment on this kind of behaviour. Possibly the cluster should set some 'work together rules' to guide discussion groups. If this kind of behaviour is not

addressed it has the potential of inhibiting the positive and healthy working relations of the entire group.

G Teacher coordinators for school-based EE implementation

Subject advisors are of the opinion that they should invite some teachers to the cluster meetings so that they can be developed professionally to assist their colleagues in their own schools with EE implementation. The subject advisors regard themselves as too overloaded with work to give their full commitment to the NEEP-GET project. They therefore feel that they should not assume responsibility in the NEEP-GET project as well. According to the document *Department of Education North West Province, Policy Directorate: Professional Development and Subject Advisory Service* (2000: 3). Subject advisors are subject specialists who are responsible for the implementation of the respective subject policies, syllabi work programmes, pace setters and assessors of needs for additional documents. The question can be raised as to whether subject advisors actually regard EE as part of their area of speciality.

G Implementation of the NEEP-GET project in schools

Though it was mentioned during the workshop that the NEEP-GET activities need to be implemented in classroom-based teaching and learning, this does not seem to happen in practice. Since the main aim of the NEEP-GET project is to contribute to the transformation of teaching and learning through environmental learning, discussions and activities in environmental learning should emphasise that. Through the use of the NEEP-GET start up packs subject advisors are expected to accelerate the process of engaging teachers in environmental learning. Start up packs are documents and pamphlets explaining succinctly and in a 'readable and understandable' language how the NEEP-GET project should be implemented by the project staff, EE Coordinators and all stakeholders interested in education and the environment. The following topics are covered: environment and active learning, introduction to professional development processes, setting up clusters, enviro-audit and enviro-Picture, introduction to environment in education, starting up school-based environmental activities, exploring environment in local context, School Environmental Policy and Management Plan, and Environment in the NCS.

G Development of the school curriculum

Subject advisors feel that their work involves supporting teachers with classroom-based teaching and learning. Indeed, one of the aims of their job description states that subject advisors should endeavour to set improved standards for effective teaching and learning in schools by contributing

to the development and implementation of effective curriculum documents (*Department of Education North West Province, Policy Directorate: Professional Development and Subject Advisory Service* 2000:2). However, subject advisors see themselves as curriculum implementers and not curriculum developers. They argue that teachers do not feel it is their duty to develop the curriculum, but that it is the task of the curriculum developers. It is the perception that teachers are implementers of what has already been decided by others – the education officials.

5.4.1.3 Issues of concern

G Unavailability of subject advisors for the NEEP-GET project

Subject advisors feel that they do not have sufficient time to support the NEEP-GET project activities because of their already heavy work-load. To overcome this problem, they suggested including some teachers from the participating schools to participate in the NEEP-GET training might alleviate this problem.

G Dates of cluster meetings clashing with subject advisors' other commitments

The heavy work schedules of subject advisors make it impossible to schedule cluster meetings so that they do not clash with their other tasks. In such cases, the NEEP-GET cluster meetings come second to their other duties. Seemingly subject advisors do not see the NEEP-GET activities as integral to their job description.

G Challenge of an increased number of subject advisors and teachers in the cluster

The Potchefstroom/Klerksdorp subject advisors have already identified teachers they think can assist in alleviating the problem. They think that if teachers could be included in the NEEP-GET training, then such teachers would support their own colleagues in the schools. The TA is, however, concerned that the number of participants in the cluster meetings might overwhelm her. Probably, cost issues need to be considered as well.

G Clarification of the Project Document contents

From the discussions pertaining to issues regarding the implementation of the project, it seems that the participants are not familiar with certain documents. They did not seem clear about the institutional capacity, stakeholder participation and ownership issues.

G Education policy issues

These need to be aligned to contextual environmental problems in order to indicate a paradigm shift from the pre-1994 era in education. Both national and provincial education policies need to be investigated to identify environmental learning opportunities.

G Selection of schools to participate in the NEEP-GET project

Some schools perceive themselves as 'environmentally unhealthy' if they are selected for participation in the project because they do not know the reasons for their selection.

They regard themselves as not being in the same category of other schools who are not participating in the NEEP-GET activities. In their view if a school participates in an 'environment project', then such a school is environmentally unhealthy. Thus, there is a strong feeling that criteria for selecting schools to participate in projects should be discussed transparently. Benefits of participating should be shared with participating schools.

G Accreditation of the NEEP-GET teacher professional development training

Though this issue was discussed by the TA, participants seem uncertain how this process will develop in the cluster activities. More clarity seems to be crucial. A questionnaire intending to address the concerns of participants has been distributed by the TA for the participants to complete. Unfortunately the findings are not yet known.

G The role of the NEEP-GET among other projects in the province

Some of the subject advisors expressed frustration in participating in more than one project supporting schools with EE in the province. Thus, a policy guiding all partners involved in various projects in the province was seen as critical. Such a guidelines would address the tensions which come to the fore from time to time as individual projects contest for 'existence' in the province – also because these projects take most of the subject advisors' time. They need to be effectively coordinated and managed to ensure maximum benefits for teachers and learners. The NEEP-GET guidelines for working with partners could be useful in this regard.

G Level of understanding the NEEP-GET outcomes

It was also observed that some partners are not familiar with objectives and envisaged outcomes of the NEEP-GET. It was therefore felt that these partners in the NEEP-GET project need to be continuously made aware of the project outcomes. Such an undertaking will have the potential to ensure that all stakeholders involved have more or less the same understanding of the project's outcomes.

5.4.1.4 Documentation collected

The document *Department of Education North West Province, Policy Directorate: Professional Development and Subject Advisory Service*, contains the job description of subject advisors. The mission, vision and aims of the subject advisors' directorate are also stipulated.

5.4.2 Second workshop

The second workshop that the researcher attended took place on 6 December 2002 at the Mmabatho Education District Office. Subject advisors from Potchefstroom/Klerksdorp and other districts were expected to attend. The meeting did not start at the intended time because the participants arrived late. The reason was that the original venue for the meeting had been changed and participants alleged that they did not know about the new venue until that morning.

5.4.2.1 Content of the workshop

G Work together tasks

The mood of the meeting was a little strained because of the assumed lack of commitment of participants to the project. The TA could not understand why subject advisors did not have time for the NEEP-GET activities, and failed to excuse themselves if committed elsewhere. However, tasks for the meeting included a number of salient issues.

 # Reflections on the year's work

The TA started with her own reflections of the year's work. She seemed convinced that she was not assisting the subject advisors adequately with their needs. Their lack of motivation in the NEEP-GET project's activities was probably an indication of this thinking. The subject advisors responded to the TA's concern by giving her the following reasons for their lack of motivation in the project: The decision taken by the Curriculum Director to cut down the number of subject advisors participating in the NEEP-GET project had a negative impact on the subject advisors as a group. They interpreted this decision in various ways. Some of them are the following:

- **The NEEP-GET was not important to teaching and learning. It was just 'another project' that would soon dissipate.**

17. **Participation in other projects in the province is compulsory. Directives to attend come from superiors. The question why it seemed that the Curriculum Director was negative towards the NEEP-GET project was also raised.**

- **Subject advisors feel that they are overloaded with work. They questioned why they should attend training workshops instead of allowing them to adhere to their year plans.**

– **Fridays are not appropriate days for workshops.**

The TA explained that initially it was decided to make participation compulsory in the NEEP-GET project, but after lengthy deliberations it was resolved that participation of subject advisors should not be compulsory. This would not encourage participants to be self- motivated nor would they value opportunities for professional development.

– **Subject advisors were unanimous in their observation that the NEEP-GET project activities are beneficial to their work of supporting teaching and learning. They allege that they actually use some of the NEEP-GET activities to support teachers in the learning areas they coordinate.**

– **Responding to the question why they did not call to say that they would not attend because of other commitments, they said that was an oversight on their part. In future they would make apologies timeously.**

– **In their conclusion, the subject advisors agreed that these problems are systemic in North West. They cannot plan ahead without their plans being interrupted. Their work programmes are therefore reactive at the moment. They are frequently called on at 'awkward times' to attend workshops. Sometimes they receive calls during weekends requiring them to report early on Monday at a certain venue for a workshop.**

– **They claim that some of these workshops are held with the intention 'to consume/spend the allocated budget before the end of the year'. In other words,the workshop is only planned to ensure that money left for training is spent before the end of the financial year.**

G A need for progress and continuation of the NEEP-GET project in the cluster

Since study days (cluster meetings/workshops) were based on the notion that subject advisors would work together to achieve certain outcomes, subject advisors were expected to implement the outcomes. Thus, the subject advisors were expected to give feedback and reflect on their progress after the implementation phase to enable further planning and implementation of the environmental learning process. Unfortunately, at the moment, implementation seems to be a huge hurdle that subject advisors need to overcome.

– **Subject advisors seem to be stuck in advocacy only. Perhaps teachers should also be invited to subject advisors' meetings/workshops so that they can then assist their colleagues with environmental learning when subject advisors are busy with other tasks.**

– **Subject advisors are to be encouraged to seek permission for teachers to attend the envisaged meetings. A suggestion made by the cluster is that one teacher per school should attend (three schools should be invited).**

- **A workshop of two to three days should be arranged for early the following year.**
- **Another suggestion was that in the following year subject advisors should look for opportunities in the teachers' planning to 'attach/hang' environmental learning.**
- **Subject advisors feel that there is too much theory in the NEEP-GET which is not helpful in their task of supporting teaching and learning. Teachers want to be assisted with classroom practice. For example, how does a subject advisor help a teacher who wants to conduct water testing experiments using the science toolkit provided? Subject advisors think that teachers need practical skills and knowledge in applied competence.**

G Plans for the coming year

These plans included the intention of subject advisors to visit their schools to find out on which environmental issues each school intends to focus. Thereafter, subject advisors would inform the TA about these plans or topics. She would try to resource these plans so that together they can support and monitor the implementation thereof in schools.

G Work away tasks

No work away tasks were given to the participants. The subject advisors promised that early in the following year they would invite the TA to accompany them to the participating schools in order to plan with each school what the environment focus would be.

5.4.2.2 Interviews

Before the start of the meeting the researcher requested the TA to lead an interview session with Subject Advisor E who had arrived during this meeting. (A focus group interview had been scheduled for the day before the start of the meeting, unfortunately all the participants arrived late except Subject Advisor E. The researcher thought that it would be preferable for the TA to conduct the interview. He would then record the questions and responses himself).

It must be noted that subject advisors' working relationships should be improved. Most of the subject advisors feel that they were not acknowledged for their contribution to teaching and learning. They sometimes work during weekends (attending workshops) and are overloaded (5.4.2.1). The interview entailed the following questions and responses.

G TA: What keeps subject advisors from attending scheduled and agreed upon NEEP-GET meetings?

Subject Advisor E's response was that during November subject advisors are involved in the marking of matric scripts. They are exhausted and they 'switch-off' as they are about to go on leave in December.

G TA: How can they not honour days that they decided upon for meetings?

Subject Advisor E thought that subject advisors might not have thought these set days through when they agreed on them right from the start.

G TA: If they are suddenly committed elsewhere, why don't they call and excuse themselves?

Subject Advisor E's responded by stating that they probably do not consult their diaries regularly. Perhaps they are kept busy by their work schedule which requires of them to respond urgently to what they are requested to do. Their work schedule includes: the delivery of matric examination question papers and collecting scripts after learners had written their papers, attending to continuous assessment task evaluation issues and the marking of matric scripts.

G TA: Is it advisable to look at ending the year programme earlier?

Subject Advisor E thought that ending the year programme of the project earlier during September might solve absenteeism from cluster meetings. The fourth quarter of the year should be excluded as a cluster meeting period.

G TA: How can we plan effectively for next year?

Subject Advisor E thought that advocacy was crucial for the project. The second critical issue was macro planning, if possible, with three schools. Work with other subject advisors to strengthen support for the selected schools is also essential. Dates to visit schools should be negotiated with each school, subject advisor and the TA. In that way the subject advisor and the project would support environment learning.

G TA: What are your plans for next year regarding environmental learning?

Subject Advisor E plans to implement environmental learning in schools that had not been visited by subject advisors yet for EE. He also intends to concentrate his efforts to Grades 4, 5 and 6 in order to encourage teachers in these grades to do lesson plans together so that they would know what is taught in the other grades regarding environment. He hopes

to look for opportunities in the macro planning of the school and then support the school with ideas to handle environmental issues in teaching and learning.

G TA: What did your work entail this year?

Subject Advisor E supported about 275 schools (Grades 4, 5 and 6) in Natural Science, Technology and Mathematics with much needed knowledge and skills. He marked matric examination scripts and supervised the marking thereof, besides the fact that he had to deliver examination question papers to schools and collect written examination scripts. He also attended some of the NEEP-GET subject advisors' workshops.

G TA: What other projects support teachers in this province?

Subject Advisor E indicated the following projects:

The READ organisation

Kgatelopele Project

The Tlhatlhelelo Science Project

Shuma Computer Project

G TA: How can the TA support the implementation of what has been learnt in NEEP-GET workshops?

Subject Advisor E feels that the TA should visit schools regularly for visibility and support schools in EE related issues in order to ensure success in environmental learning.

G TA: What is the role of subject advisors in education in this province?

Subject Advisor E thought that on paper their role was to support teachers with the teaching of the learning areas they specialise in. They aught to support teachers with learning programme development and the implementation thereof. But reality on the ground dictates otherwise.

They workshop teachers (though it is not their function). CS staff should do this function since they develop curriculum. It is the function of the Curriculum Development Unit to develop all curriculum and thereafter to train subject advisors in implementing the developed curriculum.

They are trained by the curriculum staff (that is subject advisors are trained by CS staff in the Curriculum Development Unit).

They are the 'errand boys' of education departments.

According to Subject Advisor E subject advisors should be allowed to attend training together with curriculum staff pertaining to curriculum matters, so that they can become competent in supporting teachers with curriculum matters. Cascading the training is not a good option according to Subject Advisor E. He also feels that subject advisors should be informed of all educational matters because these matters in one way or another normally impact on the work of subject advisors.

5.4.2.3 Documentation collected

A resource file called the *Department of Water and Forestry – The 2020 Vision for Water Education Programme: Resource Materials Review and Alignment Pilot Project. Cape Town: DWAF* was received. This resource file is significant for the NEEP-GET project since the 2020 Water Vision project might be extended to other parts of the North West Province.

5.4.3 Third workshop

The third cluster meeting attended by the researcher took place on the 4th of June 2003 at the Mokatsane Teacher Centre in Potchefstroom. This was a teacher cluster meeting. Five schools participated in this cluster. However, on that day only three teachers were present. The others were absent because they were attending a memorial service for one of their colleagues.

5.4.3.1 Contents of workshop

G Work together tasks

The first activity was based on a poster of animals. Participants were asked to think of learning experiences they could plan for the Foundation Phase in their schools. The activity of this poster was complemented with a series of books about animals. Each participant was given an opportunity to tell the others what (s)he thought (s)he would teach about animals.

The second activity was also based on the theme – animals. Participants were asked to plan learning programme units for the Foundation Phase (Grades 1 – 3). The participants were provided with resources on animals. They planned a learning experience for each grade in the Foundation Phase. They divided the theme animals into:

- **kinds of animals,**
- **habitat of animals,**
- **what they eat,**

- **reproduction,**
- **movement,**
- **migration.**

They also planned the degree of understanding and knowledge for each grade. In other words, activities were planned in such a manner that the next grade would build on the previous grade's learning experiences. Teachers struggled to differentiate the content level for each grade. They also neglected the intended outcomes of their learning experiences. Working as a group, the three participants gained meaningful insights into the task at hand. The strategy of the TA working directly with the teachers was aimed at accelerating school-based environmental learning. However, a shortcoming was the inability to reach all teachers, probably because of the unavailability of resource materials.

G Work away tasks

Participants were expected to implement the learning experiences they had developed during the workshop in their own classroom teaching and learning contexts. Whilst doing that they were to observe whether they had planned adequately for each grade in terms of content and knowledge construction differentiation between the levels.

5.4.3.2 Observations of and reflection on cluster meeting, events and activities

Working with teachers during a hands-on activity such as the design of learning experiences, can provide an answer to subject advisors who always think that they must be given 'things' by the project staff so that they can in turn support the teachers in the schools. They want 'things' that can enhance teaching and learning in the classroom. They seem to be reluctant to attend workshops which enable them to support teachers with the theoretical background of environmental learning.

5.4.3.3 Documentation collected during the cluster meeting

A poster about animals and a series of books on animals were selected by the teachers. The reason for the selection of these resources was based on the view that they are easy to use and reproduce for learners. However, this is difficult for those schools which do not have photocopy machines. It was suggested that the Makatsane Teacher Centre could be of help to such schools by allowing them the use of their photocopy machine.

5.4.4 Learning support materials

The NEEP-GET has diverse LSMs which are developed by the staff of the project and their partners. Partners are also invited to resource the project within given guidelines (Umgeni LSMs Workshop – February 2002; Pretoria Botanical Gardens LSMs Workshop – October 2002). It is therefore critical in this research to explore the role of LSMs in enhancing the outputs of the project since LSMs are pivotal to the implementation of environmental learning in schools (Lotz-Sisitka & Raven 2001: 47; South Africa 2000a: 62; South Africa 2000b: viii-ix; Du Toit & Sguazzin 1999: 2; Taylor 1997: ii; Lotz 1996: 290).

5.4.4.1 Documents

The following documents play an important role in the implementation of the NEEP-GET project.

G The *NEEP-GET Start up Pack*

The Start up Pack (see 5.4.1.2) contains several start up packs. Each one has its own name and table of contents, and all provide guidelines for cluster-based professional development and environmental learning in OBE. Their provision is intended for the project staff, EE coordinators and other interested partners in EE. It is hoped that these guidelines will enable the users to plan and implement school-based environmental learning meaningfully by considering all the envisaged aspects of environmental learning. These guidelines include information on:

- **setting up clusters,**
- **introducing environment in education,**
- **introducing professional development processes,**
- **starting up school-based environmental activities,**
- **exploring environment in local context,**
- **activity packs. Enviro Picture Pack explores environments and contexts using picture. Enviro Audit Pack plans and conducts an environmental audit,**
- **school Environmental Policy and Management Plan,**
- **environment and active learning in OBE (booklet),**
- **making an active learning planner.**

5.4.4.2 Charts

In this research inquiry two types of charts are distinguished and briefly discussed.

G Posters

A number of posters have been developed by the NEEP-GET project for advocacy and use in implementing environmental learning. Some of these posters were developed for the Johannesburg Earth Summit in 2002 and the Portugal 2003 World Conference on Environmental Education. The following are examples of the NEEP-GET posters:

- **Learning Areas**

Five posters were developed for five learning areas with the focus on environmental learning.

- **Professional development framework**

This poster focuses on the spiral model as a framework used for professional development in the NEEP-GET project.

- **The NEEP-GET processes**

The intention of this poster is advocacy for environmental learning.

- **Environment and biodiversity**

The focus is on the interelatedness of the bio-physical, political, social and economic dimensions of the environment.

- **Indigenous knowledge systems**

The interelatedness of environment and Indigenous Knowledge Systems is the focus. The intention of the NEEP-GET project was to use this poster in the Limpopo province where one of the TA's was carrying out research on this topic.

G Pamphlets

All the posters or charts are supposed to have flyers complementing their data or information. However, at this point these are not available.

5.5 FORMATIVE MONITORING AND EVALUATION FINDINGS AS DATA

The NEEP-GET FM&E team comprised of researchers from five South African universities: University of Natal – one member; University of Free State – one member; University of Venda – one member; Rhodes University – two members and University of South Africa – three members. The objectives of the FM&E team are to provide the NEEP-GET project with:

- **in-depth, ongoing reflective assessment of the context and assumptions relevant to project objectives and outputs,**

- **formative evaluation and developmental monitoring of the project outputs and indicators,**
- **documented evidence of the relevance of project outcomes to environmental learning and professional development in South Africa,**
- **assistance to the project management group (PMG) and project steering committee (PSC) to carry out evaluation research in identified areas,**
- **assistance to project staff in the following areas: resource development and resource-based learning and action research and research-based implementation,**
- **professional guidance and support in the accreditation of project programmes,**
- **opportunities for DANCED and the Department of Education to learn from the project.**

These objectives are intended to be achieved through undertaking types of activities such as:

- **information collection,**
- **fieldwork,**
- **conceptual and critical (analysis) work on key issues.**

The FM&E reports contain data that have been gathered through the three types of activities indicated above. The data collected is based on the data collection framework for field-based monitoring (NEEP-GET Formative Monitoring and Evaluation 2002). This framework entails a 'menu' of questions that are possible to be asked in the data collection process for the FM&E process.

Before discussing the report data of the Potchefstroom/Klerksdorp subject advisors and teacher clusters, it is imperative to highlight the importance of noting ethical issues in fieldwork. The sites on which the data is gathered tend to be fields with numerous contestation issues. Thus, investigating the research site(s) entails being confronted with ethical issues. Permission had to be secured and the participants had to consent. To accept the Potchefstroom/Klerksdorp fieldnotes as trustworthy and valuable data, certain validity issues had to be implemented. One such issue was that all fieldnotes collected had to be returned to the participants (TA) for reflection and comments. Whilst ethical considerations of research ensure that research is undertaken in an accountable and responsible manner by the researcher(s) and respondent(s), the rigour, authenticity, credibility and reflexive application of the study is not to be compromised.

For the purpose of this research inquiry only data concerning the Potchefstroom/Klerksdorp subject advisors and teacher clusters in North West province is explored.

5.5.1 First Report of the Formative Monitoring and Evaluation team

This report covers data collected during the initial stages of the project from October 2001 to January 2002. The strategy of information collecting included baseline data, site-based profiles, and other contextually relevant data. For the purpose of this research data gathered through this process are explored and not the process of collecting the data. The data are explicated within two main categories: environmental learning in the curriculum and issues and challenges encountered in environmental learning.

5.5.1.1 Environmental learning in the curriculum

The report indicates that subject advisors are trying to support teachers to implement environment as a phase organiser, but at the same time to assist them to embrace the latest policy issue that state that environment should be an integral focus of learning in each learning area in the RNCS. The NEEP-GET project seem to be 'flowing with the tide of training educators and teachers in the use of the RNCS. The aim of the NEEP-GET in the DoE's training is to ensure that environment is not lost in the process of developing learning programmes. In order that the NEEP-GET project can inform its implementation process accordingly, an appraisal of the project's role in the RNCS training is underway (August 2003 to January 2004). Thus, subject advisors and teachers are grappling with the process of integrating environmental learning in the curriculum for the GET band. Through this process it is hoped that the professional development of educators and teachers will be successful. The educators and teachers seem to be in dire need of relevant resources that could provide them with guidelines to accomplish the NEEP-GET outcomes. However, there seem to be numerous issues and challenges that educators and teachers should overcome in order to contribute meaningfully to environmental learning.

5.5.1.2 Issues and challenges encountered in environmental learning

Issues and challenges noted by the FM&E NEEP-GET processes are professional development of subject advisors and teachers, guidelines to effective and meaningful environmental learning, integrating environmental learning in the curriculum through the RNCS and ethical issues pertaining to fieldwork. A brief discussion of these issues and challenges ensues.

G Professional development of subject advisors

A major concern for subject advisors is whether their professional development training will be accredited by the education providers and be recognised by their employer, the DoE. A challenge for the NEEP-GET project is to ensure that institutions of higher education are included in so that

they can accredit CS staff who participate in the NEEP-GET on different levels of the NQF framework depending on the participants' prior qualification(s).

G Professional development of teachers

The document *Norms and Standards for Educators* policy (South Africa 1998a) stipulates the qualification level of all teachers. If the teacher is under-qualified, then the teacher is expected to undertake 80 hours of compulsory INSET during each year. The *Norms and Standards for Educators* also state that any training in which teachers participate must be accredited. The professional development processes in the NEEP-GET have therefore been a challenge in ensuring that teachers are accredited for the hours and learning experiences they acquire and for which they can show evidence.

G Guidelines for effective and meaningful environmental learning

Crucial guideline documents urgently needed are those intended to guide the partnership of the NEEP-GET with all interested stakeholders or partners and guideline documents for start up activities. Without these guidelines the NEEP-GET activities seem to lack direction and support. The NEEP-GET participants are inundated with proposals from persons who want to offer 'something' to the NEEP. Start up activities will also ensure that there is uniformity in the implementation of the NEEP-GET programme in the different provinces. A challenge will be how the project staff develop

these materials and still keep pace with their normal project activities.

G Integrating environmental learning in the curriculum through the RNCS

Transitional measures and mechanisms seem to be sought by the NEEP-GET to ensure an appropriate 'transition' of environment as a phase organiser to the RNCS's focus of environment as integral in each learning area. How this is to be achieved still remains a challenge for the NEEP-GET staff, especially in ensuring that the project staff participate in all teacher professional development training sessions aimed at assisting teachers understand the RNCS (see 5.5.1.1).

5.5.2 Second Report of the Formative Monitoring and Evaluation team

This report encompasses data gathered for the period February 2002 to July 2002. For the purpose of this research inquiry, only issues pertaining to environmental learning in the curriculum and issues and challenges faced with in environmental learning will be examined briefly.

5.5.2.1 Environmental learning in the curriculum

Environmental learning initiatives in the school curriculum (that is environment as phase organiser) and environment as focus of learning in the learning areas (that is environment as integral to learning areas) are seen as critical issues in school-based environmental learning. The ensuing discussion illustrates this.

G Active environmental learning

It appears that this issue should be reviewed in the NEEP-GET project. Active learning in OBE can probably provide the NEEP-GET project with learning programme units exemplars. Thus the involvement of learners in their learning is essential. The active learning model *Environment and Active Learning in OBE: NEEP-GET Guidelines for Facilitating and Assessing Active Learning in OBE* (O'Donoghue 2001), seems to be a better instrument to guide and achieve this goal.

G Environment as focus in each learning area

The TA has not been invited yet to a provincial DoE training in the RNCS for the Foundation Phase. Other TAs and EE Coordinators have been invited to such training organised by the provincial DoE. The role of the TAs and EE Coordinators in such training sessions is to ensure that in each learning area focus for environmental learning is created.

5.5.2.2 Subject Advisors professional development

The subject advisors were involved in environmental learning activities which oriented them to the professional development programme, encompassing the learning tree, the spiral model and cluster approach. However, it should be noted that the spiral model does cascade as the learn, plan, act, reflect process unfolds in the different levels of the subject advisors' training and the subject advisors' training of a cluster of teachers. Using the camera and context activities subject advisors explored context learning in the environment. Through these activities they were assisted in processes of constructing environmental knowledge.

Other activities for the subject advisors included:

- **G orientation to the School Environmental Policy pack,**
- **G establishing teacher clusters (as a work away task),**
- **G orientation to the NEEP-GET professional development approach,**
- **G involvement in active learning processes in OBE,**
- **G implementation of environmental policy,**
- **G critical analysis of environmental issues,**
- **G development of learning programme unit,**

G development of school environmental policy.

5.5.2.3 Teacher professional development

The TA designed and used activities that would enable subject advisors to apply the activities in their teacher clusters. For example the enviro-picture building game enabled the subject advisors to use these in school contexts in order to elicit responses for environmental problems and risks. The camera activities gave opportunities for critical analysis and the 'think beyond the visible' activities. In the process of establishing and working with teacher clusters, subject advisors have been using three main themes, namely,

G orienting teachers to the NEEP-GET teacher professional development,

G introducing the School Environmental Policy pack,

G camera and context activities.

There are 12 school-based clusters in the Potchefstroom/Klerksdorp districts. Six in the Potchefstroom district and six in Klerksdorp district (this refers to the initial arrangement before subject advisors were reduced to fifteen throughout the province). Subject advisors are responsible for organising and managing the meetings with schools. They seek permission from their supervisors and arrange for all the logistic issues. Subject advisors had to reassure teachers who were worried that the NEEP-GET project was an addition to their already huge workload that the NEEP-GET activities strengthened their core-business – environment as a phase organiser of teaching and learning. However, teachers seem to have a number of concerns about their involvement in the clusters. Some of these issues are discussed below.

5.5.2.4 Issues and challenges encountered in environmental learning

Some of the issues and challenges encountered in school-based environmental learning are explicated below.

G Reduction of subject advisors from the project

The reduction of subject advisors from the project negatively impacted on the activities of the project. Some teacher clusters had to be reorganised and be assigned new subject advisors to support them. This process created disturbance in terms of the ground covered by the original cluster. On the part of the subject advisors this action caused uncertainty whether the project was at any stage going to be re-established beyond the 15 subject advisors, and how the project was envisaging its continuation in the province. On the other hand, project staff were worried about the severed relationships between some subject advisors and the TA.

G Subject advisors commitments to 'other' projects

Subject advisors suggested in one of the cluster meetings that teacher coordinators should be identified and be allowed to attend the subject advisors meeting with them since they are often committed to other tasks. Teacher coordinators would then work with school-based clusters when subject advisors are not available. This suggestion seemed unpopular because of its link to the cascading model of professional development. This issue was not resolved and no one challenged the subject advisors' perceived narrow understanding of their job description.

G A guiding policy on accreditation in the project

Development of a policy in the provinces was uneven and inconsistencies regarding the handling of this matter existed. One of the FM&E team members was tasked to appraise the accreditation of the NEEP-GET professional development for educators and teachers. What came out of this appraisal was that all the NEEP-GET project staff and participants (subject advisors and teachers) were to compile portfolios of their continuing professional development in the NEEP-GET project. Clear evidence of professional growth and development had to be shown. Educators and teachers would then decide on options available to them on how to accredit their learning. The *NEEP-GET Certification and Accreditation of Professional Development in the NEEP-GET (2002)* and the *NEEP-GET Professional Development Portfolios* (2003: 4-7) suggest four channels through which learners could achieve this: options within SAQA structures and processes, the recognition of prior learning, options within the Workplace Skills Plan, and options within and linked to the Department of Education's professional development and appraisal system.

Options within the NQF via the SAQA structures and processes is possible only if all requirements are met. It should be noted that these options are time-consuming (NEEP-GET 2003: 4-5). Recognition of prior learning can be accredited only if the project can apply to Higher Education Institutions (HEIs) recognised as accredited providers. Individuals could then be awarded certain credits within qualifications offered by the HEIs (NEEP-GET 2003: 5). Options within the Workplace Skills Plan demand that the NEEP-GET project be located within the Provincial Skills Development Plans in order through the accreditation of professional development programmes and processes be able to access the skills levy fund. This process would also ensure that the project's processes of professional development are institutionalised within the DoE's structures and processes (NEEP-GET 2003: 5-6). Both the Development Appraisal System (DAS) of the DoE and the professional development initiatives of the South African Council for Educators (SACE) are focussed on ongoing personal and professional development of educators (and teachers). It is noted that the "principles underlying these processes appear to be closely linked to those underlying the professional development programmes and processes of the NEEP-GET project". Therefore "it was decided

... that rather than emphasising the accreditation of the programme, attention should be given to seeking accreditable options for the participants in the project" (NEEP-GET 2003: 6).

G Criteria for schools' selection

This issue was a concern to those schools who were selected to participate in the project. They saw themselves as 'unhealthy schools' environmentally. In future selectors of schools should be transparent regarding the criteria they use for selecting schools.

G The 'add-on' status of the project

Teachers do not want to remain after school for project activities, especially because some teachers view the NEEP-GET project as an 'add-on' to their core business of teaching and learning. They do not understand that the NEEP-GET project is trying to implement education policy that seeks to focus environmental issues in teaching and learning. Teachers are also dubious about the accreditation of this project's professional development. The *Norms and Standards Policy* document (South Africa 1998a) has enshrined teachers' rights by ensuring that their professional development is accredited accordingly. Moreover, all underqualified teachers are compelled to attend INSET in order to upgrade themselves to level five or six in the NQF. Thus they allege it is just an 'add-on' which will not contribute to their need to be accredited in professional development.

G The role of subject advisors in developing learning programme units

Subject advisors think that it is not their brief to support teachers with contextualised curriculum development. They seem to think that their job is only to support teachers with teaching practice. To them "to support", seems to mean "to bring resources" to the teachers. There is therefore a need for the job descriptions of subject advisors to be interrogated in order to ensure similar understanding and to identify whereby the subject advisors' job description can be fulfilled.

G Context/content perspectives in curriculum development

Subject advisors see themselves as integral to curriculum support activities, but not to curriculum development. Therefore, they think that they should attend training in curriculum development programmes. But the Curriculum Development Unit has staff who only develop curriculum, but do not implement the curriculum. On the other hand subject advisors are expected by the Curriculum Development Unit to implement already developed curriculum.

G The role of partners in strengthening the project's activities

In the Potchefstroom/Klerksdorp cluster it appears that there are no partners for the NEEP-GET except for the Climate Change project and Delta Environmental Centre in Johannesburg. Some of the cluster teachers attended workshops on growing food gardens at the Delta Environmental Centre. Partners are therefore needed to strengthen the activities of the project and CS staff and teachers with resources and environmental skills and knowledge.

G The role of the EE coordinator in supporting environmental learning

The EE Coordinator in North West was appointed in June 2002. It is regrettable that in the early stages of the project she was not present to grasp the issues and challenges that are encountered in the environmental learning process in the province. She is supposed to support all environmental learning activities in the province. With the reduction of subject advisors from the NEEP-GET project she would have assumed the responsibility of supporting some of the subject advisors clusters and supported the teacher clusters in collaboration with the subject advisors. However, task descriptions will have to be negotiated and clarified between the TA and the EE Coordinator in the province in order to speed up collaboration efforts.

G Continuous support for the development of learning programme units

Problems exist for subject advisors in supporting teachers with learning programme unit development. Subject advisors have not mastered this task themselves. So they do not feel comfortable in their efforts to train teachers. The challenge therefore would be for the TA to continue re-training subject advisors in order to deepen their understanding of learning programme unit development and eliminate poor correspondence and inconsistencies between outcomes, learning activities and assessment criteria. Issues of scope and depth therefore need attention, but time might not be available to provide this attention.

5.5.3 Third Report of the Formative Monitoring and Evaluation team

Lastly, this research study investigates relevant FM&E data gathered from August 2002 to January 2003. The two main focus areas, environmental learning in the curriculum and issues and challenges confronted with environmental learning are briefly illuminated.

5.5.3.1 Environmental learning in the curriculum

The TA struggled to negotiate the 'work together' times with the subject advisors. They seem to be very committed to other activities during this time of the year (July to December). Besides, the subject advisors afford the NEEP-GET project low status. Cluster meetings are poorly attended with very little progress made. Most of the time reasons are not given for absenteeism from 'work

together' sessions. This aspect of learning therefore, suffers. The TA has decided to work with one school with an aim of probing school-based environmental learning. This decision is, however, not consistent with the earlier decision of working with six schools as indicated in the 'Profile and setting up of the Pitchefstroom/Klerksdorp subject advisors cluster' period. (See 5.3. 2).

5.5.3.2 Professional development of subject advisors

A major concern is whether subject advisors' professional development programmes for this cluster sustains and extends (progress) the integration of environmental learning in the schools. Because the subject advisors do not attend their cluster meetings regularly, there seems to be no coherence in their professional development programmes' activities. Currently the subject advisors are hoping to link the TA to teachers in the participating schools. The TA will then establish teacher clusters to work with. Their reasons for not attending are that they are:

- **overloaded with other work,**
- **involved in OBE and FET training,**
- **involved in the moderation of continuous assessment tasks,**
- **delivering, collecting, invigilating and marking matric examination papers and scripts.**

5.5.3.3 Teacher professional development

After the reduction of the number of the subject advisors in the clusters, the teacher clusters also came to a standstill. The TA then started working with one school in Klerksdorp. She supported this school in extending its environmental learning programme within the whole school. This was a major challenge as teachers struggled to develop contextually appropriate environmental learning experiences. Language teachers encountered the greatest difficulty. The School Environmental Policy pack was used as a guiding framework for this school. Some of the activities undertaken by this school after much struggle were an environmental audit of the school and planning an overall environmental school policy for the whole school.

5.5.3.4 Issues and challenges encountered in environmental learning

The following issues pose a major challenge for the effectiveness of the NEEP-GET project in the Potchefstroom/Klerksdorp subject advisors and teachers clusters. These aspects are briefly deliberated below.

G Reduction in number of subject advisors in the project

This aspect has already been alluded to above (see 5.5.2.4). It severely hampered the effectiveness of the project in the Potchefstroom/Klerksdorp districts. Re-establishing the project's activities took time and faltering relationships are still a challenge that need to be mended.

G Commitments of subject advisors to 'other' projects

Subject advisors are overcommitted with other projects and other work. A challenge is how to audit this issue and how to find a way of allocating work in such a way that subject advisors are not overwhelmed. Their job description will be an important guide in this regard.

G Role of the EE Coordinator in supporting environmental learning

The EE coordinator seems to have a different view than the TA on how EE activities in the province should be supported. The EE Coordinator thinks that her role is to support all environmental learning activities in the province, with Potchefstroom/Klerksdorp included. The TA thinks that the EE Coordinator should have her own clusters and support them. The EE Coordinator is supported by the staff at the Curriculum Development Unit. They believe that when the NEEP-GET life span is over, the EE Coordinator must continue with environmental learning activities initiated by the project.

G A workable strategy for sustaining school-base environmental learning

The TA seems to have struggled to re-establish teacher clusters that are progressive and effective. The poor attendance of subject advisors in cluster activities has demotivated the TA. She now seems unsure of what she must do in order to return to the original plan.

G The 'add-on' status of the NEEP-GET as perceived by teachers

This aspect has been briefly explored above (see 5.5.2.4). What needs to be emphasised now, is that this issue persisted throughout the researcher's observation period. Both subject advisors and teachers seem to fail to understand environment is a phase organiser in teaching and learning or that environmental learning is integral to the RNCS. It is therefore strange that subject advisors and teachers see environmental learning as an 'add-on',although it should be their core business.

5.6 CLOSING COMMENTS

The NEEP-GET project's intention of providing subject advisors and teachers with skills, knowledge and opportunities to develop professionally is notable. However, it is more difficult to determine whether this endeavour has been successful. What is obvious, is that subject advisors and teacher professional development ventures are riddled with issues and challenges which need to be overcome.

This observation does not mean that the NEEP-GET project in the Potchefstroom/Klerksdorp clusters (subject advisors and teachers) has been a failure. It does however, point to serious challenges. For example the NEEP-GET project hoped to support subject advisors and teachers with resources, knowledge, skills and experiences in environmental learning. But to achieve this outcome, all the interested stakeholders must collaborate in achieving the intended outcomes.

The findings, recommendations and concluding comments of both the SOP Vryheid case study and the NEEP-GET Potchefstroom/Klerksdorp case study are explored in Chapter 6.

CHAPTER 6

ISSUES AND CHALLENGES PERTINENT TO THE IMPLEMENTATION OF ENVIRONMENTAL LEARNING IN FORMAL EDUCATION: FINDINGS, RECOMMENDATIONS AND CONCLUSIONS

> *Qualitative research that frames its purpose in the context of critical theoretical concerns still produces, in our view, undeniably dangerous knowledge, the kind of information and insight that upsets institutions and threatens to overturn sovereign regimes of truth (Kincheloe & McLaren 1998: 260).*

6.1 INTRODUCTION

Transforming the education system through curriculum innovations requires from the Education Ministry decisive policy plans and implementation strategies focussed on the development of the whole school (see 2.2.1 & 2.2.2). If decisive policy plans are not met with decisive action plans the policy plans are likely to remain non-functional or 'policy on paper' only. Data gathered in this research inquiry attest to both these views whilst illustrating that the aim and objectives of this research inquiry (see 1.3) have been accomplished.

Although this research investigation has certain limitations as expounded in 6.5, it is hoped that the strengths and benefits of the study will provide the study with the trustworthiness and credibility it deserves. The issues and challenges that teachers and educators encounter in the process of EE implementation will provide educationists with valuable information to ponder over and use in improving school-based environmental learning and facilitate the implementation of education policy.

School-based environmental learning is a serious challenge for teachers and educators. Numerous issues and challenges are seen as stumbling blocks for including meaningful environmental learning in schools. Schools should be commended for their endeavours while faced with this challenge.

The SOP and NEEP-GET case studies are complementary to each other in terms of the findings, recommendations and issues of further research. They both occur in different contexts with different role players. However, both case studies show evidence of enthusiasm for environmental learning initiatives of teachers and educators.

The findings of the inquiry are analysed according to themes that emerged from the collected data, and are related to the research question, sub-questions and research objectives.

6.2 ISSUES AND CHALLENGES IN IMPLEMENTING EE POLICY: THE SOP VRYHEID CASE STUDY

The success of environmental learning in schools does not only depend on an open process framework for school-based environmental learning, but also depends on the objectives of EE both nationally and internationally (see 2.3.1 & 2.3.2) and in this case the SOP objectives (4.2),

guiding environmental learning, are imperative. Coupled with the afore-mentioned imperatives are the issues and challenges that are encountered by teachers and educators.

The discussion of the issues and challenges encountered in the implementation of environmental learning in schools (see1.3) are expounded as the SOP initiatives in environmental learning and, other pertinent issues and challenges to environmental learning.

6.2.1 The SOP initiatives in environmental learning

Three critical objectives of the SOP project (see 4.2) which guided the activities of the SOP are: to empower teachers to address recent developments in environmental education in their teaching, to empower these teachers to teach in the new outcome-based education system and to raise the standard of teaching. The SOP findings below attest to the intentions of the SOP to achieve these objectives.

6.2.1.1 EE INSET for educators

G EE INSET expectations

Participants felt that their expectations regarding the workshop outcomes were not attended to (see 4.2.2.1.b & c). If their expectations were discussed they could have shared valuable information as a group. Gaps in understanding what was learned could have been filled. Participants also felt that time was insufficient for them to discuss issues of importance to them (see 4.2.2.1.b). They felt that what the facilitators wanted to teach dominated the workshops.

G Monitoring environmental learning in schools after the training of teachers

During the workshops teachers promised to implement environmental learning in their schools (see 4.2.2.2.c). When the researcher visited teachers who attended the workshops at their schools, (s)he found out that some of the teachers had not started implementing what they learned at the workshops (see 4.2.4.2). They cited various reasons why they failed to do so.

6.2.1.2 Human resources for environmental learning

G School managers

Some school principals are perceived by their teachers as unenthusiastic about environmental learning. They are reluctant to participate (see 4.2.1.2.E.1) in school-based environmental learning initiatives. They give various reasons (see 4.2.3 & 4.2.4) for their lack of support in/for environmental learning. Without the support of principals, teachers are bound to fail in

implementing environmental learning. Some of these school managers equate environmental learning to learning about the wild animals and wild plants, and therefore learning in the school pond and excursions to the game reserves (see 4.2.3 & 4.2.4.1) are seen as evidence of environmental activities for learners. In schools where workshop participants share their learning experiences, some principals feel that the information shared might not be 'complete' (the teacher might withhold some of the information). They therefore feel that the depth of the information reported by the teachers is not the same in all the schools (different teachers reporting). This problem creates uncertainty about what action to take for environmental learning in schools (see 4.2.4.1).

G Teachers

The support of colleagues (see 2.4.1; 4.2.1.1 & 4.2.4.2) in environmental learning is viewed by most of the teachers as critical. Most of the teachers seem to lack skills and knowledge in encouraging their colleagues to cooperate (see 4.2.1.2) in school-based environmental learning. Most of the participants (teachers) do not teach Grades 8 and 9 in which OBE has been implemented (see 2.2.2; 2.2.3; 4.2.1.2 & 4.2.4.2). This is a problem for these teachers who are expected to implement what they have learnt in the other grades that have not started to implement OBE (Grades 10-12). The result is that they do not even attempt to implement what they have learnt during the course of the workshops. One of these teachers who had not started with the implementation of what has been learnt in SOP, indicated that "I have an English First Language Grade 12 class, which involves a great deal of work and time, but I will certainly make use of this learning in junior classes in future" (see 4.2.1.2 & 4.2.3) . Some teachers change learning areas or subjects almost every year. As soon as they take a learning area or subject other than geography or biology they tend to relinquish EE (see 4.2.3 & 4.2.4.2). Having subjects in matric also compels a teacher to drop environmental learning (see 2.3.1; 2.3.2; 2.3.3; 2.3.4 & 4.2.4.2). Teachers also need training in how to integrate environment in the curriculum and how to develop environmental learning programme units (see 4.2.1.2 & 4.2.4.1). They do not see environmental learning as an integral part of teaching and learning. The huge numbers in classrooms and redeployment (see 4.2.4.2) of some of the teachers seems to be a burden on the teachers. "They feel trapped in an environment that seems not to care whether they succeed or fail in their teaching".

G Learners

Learners are not involved when it comes to environmental learning (see 4.2.1.2; 4.2.4.1 & 4.2.4.2). They see themselves as being punished when asked to do any environment related activity, for example, if asked to clean their school premises or asked to plant trees. Teaching multi-graded learners (see 4.2.2.1) is a major challenge for most of the farm schools. Because of the 'small number' of learners which does not compare favourably on the post provisioning norm for

teachers, farms schools have multi-graded classes. The post provisioning norm for schools is 1: 40 primary schools and 1: 35 in the secondary/high schools (South Africa 1998). Teachers feel that environmental learning will'add' an extra load of work whereas they perceive themselves as being already overloaded.

G Partners

Contacting other government departments (as partners) in endeavours that seek to resource environmental learning, seems to be a challenge (see 4.2.1.2; 4.2.2.1.a & 4.2.5) for most of the schools. Some of the government departments that are seen as accessible are the DWAF (see 4.2.2.1.b). These departments have sections that support teachers with their own products which they want to get into the schools. Within the school districts or schools themselves there is no coordination of the partner support. Thus other schools are over-supported whilst others are poorly supported.

G Curriculum Support staff

Subject advisors are expected by the teachers to support them in all curriculum issues relating to classroom practice (see 4.2.1.2 & 4.2.2.1). In this regard more attention seems to be critically needed regarding some aspects of OBE, for example, COs and assessment of learning outcomes. Teachers feel that policy that guides environmental learning should be familiar to all teachers and educators and that subject advisors are better positioned to enable them to accomplish this objective. The subject advisor who is supposed to help teachers with environmental learning seems to be busy with other job related tasks (see 4.2.4.1 & 4.2.4.2). Thus teachers feel that they are overwhelmed by environmental learning and have to cope on their own.

6.2.1.3 Resource materials

Most schools need to be supported with resource materials (see 2.2.3.1; 2.2.3.2; 4.2.1.1& 4.2.4.1). These schools claim that some of them have limited resources (even for their libraries) (see 4.2.4.2), in which case they need more EE relevant resource materials (see 4.2.1.2; 4.2.2.2. (a) & 4.2.4.1). The LSMs provided to schools by the DoE, are themselves either seen as unsuitable and outdated or the process of acquiring them is questioned (see 2.2.3.1; 2.2.3.2; 4.2.1.1 & 4.2.4.1). For example, some schools feel that they are provided with obsolete textbooks (see 4.2.4.2). They think that if they were part of the book selection teams they would have ensured that such books are not requisitioned for their schools. With the schools battling to fund their basic needs, learners are left to continue struggling with their learning due to a lack of resource materials. Teachers also see OBE as a resource-based education approach that needs relevant resource materials in order to succeed in the classroom (see 4.2.1.2 & 4.2.2.1.3). A school with no photocopying machine

and electricity will probably be disadvantaged in presenting meaningful environmental learning programmes (see 4.2.4.1 & 4.2.4.2). However, other means can be sought to improve the situation. Some of these schools also need garden tools, water and electricity (see 4.2.4.1) for improving the quality of teaching, learning and well-being of teachers and learners. These resources would also enable schools to facilitate practical environmental learning.

The SOP also provides participants with resource materials used during the workshops, which participants can later use in their teaching (see 4.2.2.1(a) & 4.2.2.2(a). However, participants feel that these booklets are not enough and they need to be used with other LSMs in order to enhance the outcomes they envisage to achieve.

6.2.1.4 Policy implementation support processes

Both international and national policies in EE contributed to South Africa's environmental learning policies (see 2.2). Before 1994 EE was not included in the curriculum for formal education. In 1995 it was included in the White Paper on Education and Training document (see 2.2.2.3) and later this policy statement was articulated in the DNCS (see 2.2.3). Intending to implement environmental policy through one of the six phase organiser (see 2.2.3). However, the RNCS came into existence in 2001 as a streamlined version of the DRNCS (see 2.2.3), with the principles in the curriculum: social justice, a healthy environment, human rights and inclusivity (see 2.2.4.2). All these policy processes support(ed) environmental learning in South Africa.

G Systemic education context

The OBE curriculum is perceived as cumbersome by teachers. For example the management of learners' files and reporting of the learners' progress presents teachers with a demanding task (see 4.2.1.2 & 6.2.1.4). The implementation of the OBE approach to education parallel to the 'old examination focussed' system, is disenabling to most of the teachers teaching Grades 10 to 12. They are expected by the DoE to 'produce' excellent matric results (a minimum pass rate of over 40% is expected) (see 4.2.3). The OBE training requires time for implementation, a commodity which the DoE seems to lack (see 2.2.3.2). Thus some teachers feel that at the moment things are happening very fast and they struggle to keep up with the pace of understanding and implementing or teaching for environment within the OBE framework.

G School management ethos

Though a school's ethos encompasses all the DoE's policies intended to facilitate excellent teaching and learning practice, the school's healthy working relationships cannot be ignored in contributing to a conducive school environment (see 4.2.2.1). Some of the schools observed depict

rigid year programmes for staff meetings. The SMTs seem to be promoting their own agendas (what they want teachers to do) and teachers are not given opportunities to share their own learning experiences (see 4.2.1.1; 4.2.2.2(a) & 4.2.4.2). Some of the schools do not have an established reporting ethos. This causes problems for teachers who have been asked by the workshop presenter(s) to share their learning experiences with other teachers at their schools. Another issue is that the teachers are reluctant to support cooperative

classroom teaching (see 4.2.1.2). Probably the reason is that the latter requires teachers involved to plan together and share their knowledge and skills within the group.

G Timing of INSET workshops and other related issues

The timing (see 4.2.1.1) of workshops for teachers' professional development should be taken into consideration together with other activities intended to take place at the schools. For example, early in the school year, schools are engaged in athletics and around May to June with mid-year examinations, and during September matriculation trial examinations are written that culminate in the end of year examinations in October to November. Teachers find it inconvenient to attend workshops during these periods. It is therefore clear that the schools' year programmes can be 'too busy' (see 4.2.1.1) to accommodate other issues that arise as the year progresses. Adding to this issue of timing INSET workshops, are the numerous INSET cluster training sessions arranged by the DoE (see 4.2.1.2) for teachers at present. Teachers also feel that their expected workshop outcomes (see 4.2.2.1(b) & 4.2.2.1(c) should be reviewed and pertinent issues be discussed. Otherwise noting the expected workshop outcomes and not giving time to their discussion (see 4.2.2.1(b) and 4.2.2.1(c), means that they will leave the workshop with some concerns unanswered. This is exacerbated by the short duration of the workshop (see 4.2.2.1(c); 4.2.2.2(c); 4.2.2.3(b) & 4.2.4.2).

6.2.1.5 School-based environmental learning

G Perceptions and attitudes towards environmental education

The mind-set of some teachers, educators and parents must change if school-based environmental learning is to have a positive impact in the process of the transformation of the education system. Some of these education officials and parents perceive environmental learning as an add-on extra curricular activity (see 4.2.3) and not an integral focus of teaching and learning. Some teachers think that those teachers who attend environmental learning workshops should be the ones who are 'teaching' EE (see 4.2.4.1). The perception that certain schools were always (before 1994) taught in the OBE approach (see 4.2.4.1), and therefore environmental learning is not new, does foster the urgency with which environmental learning should be promoted and implemented in formal education.

G More training in some aspects of OBE

Teachers feel strongly that assessing learning outcomes is demanding and complex and that they need training in this regard. Trainers themselves cannot train teachers appropriately if they lack skills and knowledge in OBE assessment (see 2.2.4; 4.2.1.1; 4.2.2.1(b) & 4.2.2.2(c), otherwise they confuse teachers each time they take them through this process. They feel that they are becoming tired and bored when called to OBE workshops. A workshop on the entire OBE approach to education seems to be too much for the teachers. They also feel that they must be provided with more training in developing environmental learning programme units (see 4.2.2.1.2 & 4.2.2.2(c). The 'how' of teaching large numbers of learners within the OBE curriculum (see 4.2.1.2; 4.2.3 & 6.2.1.4) also seems to be a challenge to most teachers. So far the SOP has not responded to these challenges. Perhaps further workshops will be organised if a sponsor can be sought.

G Knowledge and understanding of EE

Some of the teachers need more assistance in EE knowledge and understanding (see 4.2.1.1). Teachers claim that they want to be assisted in understanding the theoretical aspects of EE, for example, methods and strategies in /for facilitating environmental learning. Coupled with this challenge, most teachers lack knowledge and understanding that environmental learning is not 'an add-on' extra-curricular activity, but is integral to teaching and learning (see 1.1; 1.2; 2.3.2 & 2.3.4).

6.2.2 Other issues pertinent to the SOP case study

The following two issues indicated below are related to environmental learning. Poverty and unemployment are amongst the most devastating environmental problems facing most communities of the world. Teachers learners are challenged to discuss these issues and seek solutions.

6.2.2.1 Poverty and unemployment

A major problem for most of the schools is the inability of parents to fund the schooling of their children. The major cause is the high rate of unemployment (see 4.2.1.1, 4.2.4.1 and 4.2.5) amongst rural parents. In most cases the children depend on the school's Feeding Scheme funded by the department of Social Services and Population Development (see 4.2.4.1). Learners from poor families seem not to go on educational excursions for environmental learning because of inability to pay the excursion fees.

6.2.2.2 Vandalism and burglaries

Some of the schools are vandalised (see 4.2.1.1; 4.2.4.1; 4.2.4.2 & 4.2.5) because they do not have caretakers or security during the night. People break into the schools to steal what they can sell and they vandalise the school property in the process. Teachers feel that vandalism and burglaries at their schools undermine teaching and learning, including environmental learning (see 4.2.4.2 and 4.2.5).

6.2.3 Recommendations

Most of the recommendations to address the issues and challenges encountered in implementing environmental learning in schools (see 1.1and 1.2) have been made by the participants. However, some recommendations, based on the results of the investigation have been made by the researcher.

6.2.3.1 EE INSET for teachers/educators

G INSET expectations

It is recommended that during all workshops it should be a priority to discuss participants' expectations regarding workshop outcomes (see 2.2.3.1; 2.2.3.2). This will ensure that learning opportunities are not missed where participants can share their learning experiences (see 4.2.2.1(b). They can also share why they think their workshop outcomes were met.

G Support environmental learning in schools after the training of teachers

Long term expectations of participants about environmental learning in their schools should be monitored after training has been provided. It is imperative to monitor the results of INSET in classroom practice.

6.2.3.2 Human resources for environmental learning

G The role of the school management ethos

The ethos for schools' management should be established based on the DoE's policies (4.2.2.1(b). These should ensure that standards are intended for the smooth running of the school and effective teaching and learning practice. An ethos of reporting back to the SMT and colleagues should be a norm. This process should not be left to individual teachers to decide whether to report or not, but should be an integral part of the school's policy, and implemented without failure. Such an endeavour will eliminate the notion that other school activities are more

important than workshop reportback. Joint decisions for action taking are better negotiated in reporting sessions where all the teachers participate (see 4.2.2.1(b) & 4.2.2.2(c).

G The role of school managers

School managers need to ensure that their schools ascribe to the whole school environmental learning programme. They need to know and understand that their school's core-business is about teaching and learning, and that learning is about empowering learners with skills, knowledge, attitudes, and understanding regarding taking responsible actions in/for and about the environment (not only in environment, but in general too) (see 4.2.3).

School managers are of the opinion that if they are invited to all workshop sessions where a project is introduced, it will enable them to inform all teachers at school level. Both the principal and the teachers attending the session would then report back to the other teachers at school (see 4.2.4.1), and decisions on what action to take in implementing environmental learning could be negotiated more easily.

G The role of teachers

An action plan embracing guidelines on how to encourage other teachers to focus on environment in general and in school-based environmental learning in particular should be developed and implemented by schools. These guidelines should also explicitly state how teachers can support each other in/for environmental learning. The focus should also be on combined commitment of staff to contribute and to subscribe to a transformed education system. Furthermore, teachers should embrace the OBE curriculum (see 2.3.3; 2.3.4; 2.4.1& 4.2.1.2), their occupational roles (or requirements) and generic standards and roles as stated in the *Norms and Standards for Educators* (South Africa 1998a: 59-60 and 160-161). All teachers in a school should also know and understand what EE is all about (see 4.2.3 & 4.2.4.1) in order to support each other, otherwise environmental issues could be marginalised. Teachers should endeavour to make it their responsibility to know and understand all DoE policy guiding environmental learning (see 2.3.1; 2.3.2; 2.3.3 & 2.3.4). Teachers should attend EE workshops in order to build a strong environmental learning foundation in each school. Not just one teacher from a school, but more than one teacher from each school (see 4.2.4.1 & 4.2.4.2) should attend these workshops. This will strengthen the impact and implementation potential of EE processes and programmes in schools.

G The role of learners

Learners are expected to contribute to their learning by becoming disciplined and self-regulated learners (see 2.2.1; 2.2.2; 4.2.1.2 & 4.2.4.1), so that they are able to enhance their individual

learning, and take responsibility for it. Through the schools' environmental clubs the learners are taught to be disciplined and responsible in their use of the environment (the use of natural resources). Thus promoting a culture that appreciates the environment. This tendency is further promoted by the fact that learners seem to learn better from their peers.

G The role of partners

Teachers recommend that each stakeholder involved in any school project or school programme should know what the other stakeholders are doing (see 2.2.3.2(b) & 4.2.2.1(a). The education department should provide all partners or service providers with guidelines on how they can provide service to their schools. They should monitor this process strictly in order to ensure that schools are properly serviced with minimal disruptions or confusion. It is strongly recommended that the Vryheid Environmental Club as one of the established and recognised partners should be more visible in assisting teachers with school-based environmental learning (see 4.2.4.2).

G The role of Curriculum Support staff

CS support staff are an integral component of support structures for environmental learning in schools (see 2.4.2 & 4.2.3). They should be purposely engaged in supporting school-based environmental learning activities. Therefore they should be willing to be trained through environmental learning workshops, otherwise they will not be in a position to assist teachers in their EE related curriculum issues.

6.2.3.3 The role of resource materials

More training in resource materials development is needed. Teaching and learning are not appropriately executed if resources are lacking. In facilitating environmental learning in formal education, resource materials are a necessity. Teachers are prepared to be trained to support their teaching with self-made resources in their classrooms (see 2.2.3.2; 4.2.1.1; 4.2.2.1(b) & 4.2.4.1). The active learning framework requires that teachers should view environmental learning as resource-based learning. This education framework allows learners to mobilise their prior knowledge and experiences in order to develop insights and competence for making better environmental management and lifestyle choices through finding out 'about', investigating 'in', and doing things 'for' the environment (O'Donoghue 2001).

The purchase of resource materials should involve the schools and subject advisors (see 2.2.3.2; 4.2.2.1(b); 4.2.2.1(c) & 4.2.2.2(a) in order to avoid the purchase of inappropriate LSMs. As a way to raise funds schools can also start food gardens in their premises and sell the produce to the community in order to buy resource materials for environmental learning (see 4.2.4.1). Schools

with no water need to look for ways of harvesting rain water. Those with no electricity need to seek guidance from Eskom about the possibility of producing their own solar electricity.

6.2.3.4 Policy implementation support processes

Issueslike the systemic education context, school management ethos and the timing of workshops are related to the processes within which EE policies are implemented in schools. In order to effectively implement environmental learning EE need to be autocratically included in school ethos and principles of teaching and learning (see). Though the policies guiding environmental learning in formal schools (see) seem to be explicitly calling for active learning in/for environment, educators and teachers seem to be either ill-informed or reluctant to implement these policies . Teaching and learning need to be focussed on these policies and principles. The integral nature of environmental learning in the RNCS and in the embodiment of the principle of 'a healthy environment' is intended to focus environmental learning. Whether educators and teachers will continue to marginalise environmental learning remains to be seen.

G Managing systemic education settings

Systemic education settings are normally embedded within static educational policies. For example, the SOP case study revealed that OBE is perceived as cumbersome by teachers, the 'old examination centred' education approach seems to be entrenched in the South African education system, and OBE training is moving too fast for teachers and learners (see 6.2.1.4). All of these issues cause concerns to teachers and educators, but they are unavoidable because education transformation is complex by nature. Taylor, Diphofa, Waghmarae, Vinjevold and Sedibe (1999: 114-15) attested that school reform is complex because its component parts are embedded within political values and policy as vehicles.

G Timing of workshops

The duration of the workshops and the number of days of the workshops should be prolonged (see 2.2.3.2; 4.2.2.1(b); 4.2.2.2(c) & 4.2.4.2) to ensure that teachers' expectations regarding outcomes are met. Workshop presenters should take it upon themselves to visit teachers (see 4.2.4.2) who participated in their workshops to review the progress of teaching and learning and support the teachers with on-site and contextualised school-based environmental learning. Not least, presenters should also provide theoretical background knowledge about EE.

6.2.3.5 School-based environmental learning

G Promoting healthy attitudes and perceptions about environmental education

Healthy attitudes can best be promoted by all who are involved in education and who claim to have vested interests in education (6.2.3.2; 6.2.1.2). They need to be convinced that facilitating environmental learning in schools is the right thing to do. Their actions should precede their words. Learners will emulate teachers and education officials. The reluctance of educators and teachers to participate fully in school-based environmental learning retards the development of a positive attitude towards the environment and towards environmental learning in formal schooling (6.2.1.2; 6.2.1.3 & 6.2.1.5).

G The 'what to' and 'how to' train of OBE

Teacher and educator professional development workshops should be based on the training of aspects of OBE (see 2.2.3.2; 4.2.2.1(b) & 4.2.2.2(c)) instead of focussing on the entire OBE education provision system. For example, the workshop can focus on assessment standards. This approach might strengthen the whole OBE approach to education. The inclusion of focussed environmental learning activities is seen as important in EE workshops.

G Ensuring sound knowledge and understanding of EE

In order to present sound environmental learning experiences based on sound knowledge and understanding, theory and practice (see 2.3.1; 2.3.2; 2.3.3; 2.3.4 & 4.2.4.2) must be integrated. Environmental issues need to be an integral focus of school-based environmental learning. Environmental learning policies guiding teaching and learning cannot be ignored and be shifted to the periphery.

6.2.3.6 Other pertinent issues and challenges to environmental learning

G Repudiating the frontiers of poverty and unemployment

Schools that are engaged in Poverty Alleviation projects, HIV/AIDS Education, Drug-abuse Education and Food Gardening projects seem to be effective in addressing poverty, especially hunger and unemployment. Schools (see 4.2.1.1; 4.2.1.2 & 4.2.2.1(b) should continue supporting their communities in such endeavours and those that are yet not participating should commence participating.

G Schools' defence against vandalism and burglaries

The DoE together with SGBs should establish strategies to manage school properties effectively. SGBs can also draw on the expertise of community members to design strategies to deter vandalism and burglaries. In most schools these structures are not used effectively. Alternatively

the DoE should employ a security company to guard its schools. Such a venture would probably be cheaper than the loss incurred due to vandalism and theft.

6.2.4 Issues that need further researching

This inquiry has revealed that the following issues regarding environmental learning implementation in formal education should be investigated through future research. These issues do not in any way suggest that this investigation has failed to accomplished what it set out to do (see 1.1; 1.2; 1.3; & 1.4). Any research study is bound to raise certain issues that need further study.

6.2.4.1 The role of teachers in the implementation of school-based environmental learning

Most schools have difficulty with the idea of involving more teachers in school-based environmental learning and supporting each other in/for environmental learning (see 4.2.2.1(b). Determining exactly what works and what does not work in this regard would benefit schools and the process of implementing EE policy.

6.2.4.2 The attitude of teachers to integrate environmental issues in their teaching

The tendency of some teachers and educators to perceive environmental learning as an 'add-on' extra-curricular activity should be investigated (see 4.2.1.2). Answers would provide educators and schools with a clear understanding of this question.

6.2.4.3 The equity and provisioning of teachers' education in public community schools and ex model C schools

Teachers allege that Public community schools and Ex model C schools receive different treatment when it comes to issues of equity and provisioning (see 4.2.2.1(b) as compared to independent and farm schools. Trustworthy findings about this question are essential in order to grasp the impact of this issue on teaching and learning.

6.2.4.4 Job performance of ill-qualified teacher and educators

Ill-qualified teachers lack confidence in their teaching practice and neglect to embrace transformation in education (see 4.2.2.1(b). Further clarification of this issue would benefit the DoE and its endeavour to advance teacher expertise through INSET.

6.2.4.5 Teacher re-deployment

It is not yet clear what effects re-deployment (see 4.2.2.1(c) & 4.2.4.2) has on the whole teaching profession. Investigating this issue would provide the planners of education with important information to consider before undertaking the re-deployment of teachers.

6.3 ISSUES AND CHALLENGES IN IMPLEMENTING EE POLICY: THE NEEP-GET POTCHEFSTROOM/KLERKSDORP CASE STUDY

The NEEP-GET case study will be discussed under similar headings to the SOP case study.

6.3.1 Human resources supporting environmental learning

In the NEEP-GET environmental learning is supported by subject advisors, partners and teachers. However, the success of the project also depends largely on the participation of the TA and EE coordinator in the province.

6.3.1.1 Subject Advisors/CS staff

Initially the challenge was whether the TA would manage to train the huge number of subject advisors attending the NEEP-GET INSET workshops (see 5.3.2). Although an EE Coordinator was later appointed and the number of subject advisors was reduced (see 5.3.2; 5.4.2.1; 5.5.2.4; 5.5.3.3 & 5.5.3.4) to 15, a large number of trainees can be cumbersome for one workshop presenter. However, their reduction did not help regarding their commitment to the NEEP-GET project. 'Other' work commitments (see 2.2.3.2; 5.3.2; 5.4.2.1; 5.5.2.4; 5.5.3.1 & 5.5.3.3) hindered the subject advisors from attending workshops and especially doing their 'work away' tasks. They also feel that they are overloaded with work (see 5.4.1.3; 5.4.2.1 & 5.4.2.2). Seemingly, the development of learning programme units (see 5.4.1.1) is a major challenge for the subject advisors. For them the challenge

is how to support teachers with learning programme units when they themselves are not yet at ease to do so. They do not see the development of learning programme units as part of their core-business (see 5.5.2.4), but as a task located in the Curriculum Development Unit of the North West DoE (see 5.5.2.4). Subject advisors also see themselves as overloaded with work and environmental learning was an extra burden (see 5.4.1.2 & 5.4.1.3) to their already heavy workload.

6.3.1.2 Partners

A number of projects in the North West province seem to exist (see 5.4.1.3; 5.4.2.2; & 5.5.2.4). All want to contribute to the transformation of education in this province. Ironically, sometimes tensions run high as projects vie for existence in the province. Subject advisors claim that projects take most of their work time (see 6.3.1.3). However, ways of working together for the same cause, which is environmental learning, are critical. Guidelines (see 5.5.1.2) intending to facilitate effective collaboration and 'work together' strategies are needed. Such guidelines should explicitly indicate what the NEEP-GET project focusses on. This will ensure uniformity in the provinces regarding partner participation in the project. The involvement of the provincial EE Coordinator cannot be overemphasised regarding the coordination of partner support in and for environmental learning activities (see 2.3.3; 2.3.4 & 5.5.2.4).

6.3.1.3 Teachers

Initially the establishment of teacher clusters was hampered by the imposed reduction of subject advisors (see 4.3.2). As soon as the teacher clusters were established, subject advisors were faced with a challenge of addressing the teachers' perceptions about environmental learning (see 2.3.1; 2.3.2; 2.3.3 and 2.3.4). To them environmental learning was an extra burden to their already heavy load of work. At the same time subject advisors were struggling to engage teachers in school-based environmental learning faster than they could (see 5.3.1.2). On the other hand, teachers lack an understanding of the complexity of learning activities (see 5.3.1.1 planned for the different grades of learners. Intended outcomes and the assessment of performed activities are also not understood (see 5.3.1.1., 5.3.3.

6.3.2 Resource materials supporting environmental learning

The use of resource materials in environmental learning is a challenge because teachers either ignore their use or they lack them (see 5.3.3). Though the NEEP-GET project has developed a

number of resource materials it seems that these are mostly used for advocacy by subject advisors and not classroom based environmental learning. Thus, they are inadequate for schools (see 2.2.3.2 & 5.5.1.1). Subject advisors need them to support teachers. The completion of certain 'work away' tasks within given time frames seem to be a problem because of the limited number of resources (see 5.3.1.1) available to them.

6.3.3 School-based environmental learning

Due to the numerous hurdles subject advisors are to contend with in their line of duty (see 6.3.1.3 & 6.3.4), the implementation of environmental learning in schools seems to be moving very slowly (see 5.4.1.2; 5.4.2.1 & 5.4.3.1). Numerous problems are encountered in the process of implementing school-based environmental learning, of which some are discussed in section 6.3.1. However, since the goal of the NEEP-GET is to implement school-based environmental learning successfully, the issue is how to effectively accomplish this. Some recommendations are provided in 6.3.2.

The following findings are related to the advancement or negation of school-based environmental learning.

6.3.3.1 More training on some aspects of OBE

The training of subject advisors and teachers in learning programme unit development remains an on-going process, otherwise teachers will not master this aspect of their profession. OBE involves active learning models, which support resource-based learning. It is therefore critical for both subject advisors and teachers to be trained in resource materials development. This will enable subject advisors not always to look for 'things' to take to teachers but to be able to develop 'things' with teachers.

6.3.3.2 Knowledge and understanding of EE

As indicated in 6.3.1.4 which deals with the fluidity of the education context in transformation, the integration of environment in all learning areas is a challenge for educators and teachers. For the NEEP-GET project the challenge is to ensure that environment as a phase organiser in learning and the environment focus is not lost during the training of the RNCS's and the learning programme units. Educators and teachers seem not to understand that environmental learning should be appropriately resourced in order to enhance school-based learning.

6.3.3.3 Perceptions about environmental learning

Some of the educators and teachers are not convinced that environmental learning is integral to teaching and learning (see 2.3.1; 2.3.2; 2.3.3; 2.3.4 & 5.4.1.2), and that they should support the implementation thereof (6.3.1.1 & 6.3.1.3). It is therefore not clear to subject advisors who are reluctant to attend workshops in environmental learning, especially environmental learning theory. They want to be given 'things' to take to the teachers (see 5.4.3.2). Schools participating in the NEEP-GET project seem uncertain or do not know what criteria were used for selection for participation. Thus, those that were selected perceived themselves as 'environmentally unhealthy' schools (see 5.4.1.3). Teachers were also worried that the NEEP-GET project was 'added-on' (see 5.4.1.2 & 5.5.2.3) to their already huge work load.

6.3.3.4 The 'add-on' status of environmental learning

Some teachers are reluctant to stay behind after school for NEEP-GET project activities (the teacher cluster meetings are supposed to take place after 13:00). They see the project as an 'add-on' workload to their teaching practice (see 2.3.2, 2.3.3, 5.4.1.2, 5.5.2.3, 5.5.2.4 and 5.5.3.4). Some of the subject advisors are also of this opinion (see 6.3.1.3). This feeling causes despondence and reluctance on the part of the educators and teachers to engage themselves in the NEEP-GET project and in environmental learning.

6.3.4 Support processes for policy implementation

The following support processes for EE policy implementation are essential for effective environmental learning.

6.3.4.1 Systemic education issues

School reform is complex. The cause is mainly the size of the public school sector and the interconnected nature of its numerous component parts (Taylor, et. al. 1999: 14). Though the Curriculum Development Unit and the Subject Advisory Services use subject advisors in implementing certain tasks (see 5.4.1.2), these components have a potential to cause problems for environmental learning policy implementation (see 5.4.2.1; 5.4.2.2; 5.5.2.4).

The education context in which subject advisors work is often seen as complex and dynamic, resulting in subject advisors reacting to changes most of the time. The subject advisors feel that they are forced to react rather than to follow their programmes of work consistently as planned (see 5.4.2.1). Thus, they are unable to follow their year work plans as intended. The location of the

subject advisors in the Subject Advisory Directorate and the location of the curriculum development functions in the Curriculum Development Unit, creates problems of functioning and reporting. Thus, the thinking is that subject advisors are to support teachers and assist them with curriculum planning issues (see 5.5.2.4).

6.3.4.2 Timing of INSET workshops

Due to the heavy workload of subject advisors (see 5.3.3; 5.4.1.2; 5.4.1.3; 5.4.2.1; 5.5.3.4) the TA seems unable to implement environmental learning in schools as expected (see 5.4.1.2). Subject advisors think that the NEEP-GET workshops are planed for days on which they are committed to other tasks. They seem to think that the NEEP-GET activities are not integral to their work.

The last quarter of the year is seen as inappropriate for subject advisors cluster meetings. During this period subject advisors are virtually "errands boys" of the DoE (see 5.4.2.2). It is not easy to negotiate appropriate times for cluster workshops with the subject advisors. They maintain they are too committed to other line function duties (5.4.1.2 & 5.5.2.3). Moreover, they feel that cluster meetings set for Fridays are bound to fail because Fridays are not ideal days for cluster meetings.

6.3.5 EE INSET for educators

The NEEP-GET project is intended to assist teachers and educators with the implementation of environmental learning in formal education. The project might claim success and failure in the different provinces (except in Limpopo province). The following issues pertaining to EE INSET have been revealed in the Potchefstroom/Klerksdorp region.

6.3.5.1 EE INSET Expectations

The expectations of the project staff seem to differ from the expectations of the subject advisors. The project wanted to equipt the subject advisors with environmental learning knowledge so that they can in turn support teachers effectively. To achieve this goal the NEEP-GET is guided by its principles (see 5.1) and its outputs, especially output number 1 (see 5.2.2). On the other hand, subject advisors wanted to be given 'things' to give to teachers (see 5.4.2.1; 5.4.3.2; 5.5.2.4). Subject advisors seem to think that acquiring theoretical knowledge in EE would not help them to support teachers in classroom environmental learning.

6.3.5.2 Spiral-cascade model of professional development

The issue of thinking that the spiral model of professional development is the best in the current education context, is problematic. The problem is assuming that the spiral model does not cascade in its process of CS staff and teacher professional development (see 2.2.4.3(a); .2.4.3(b); 5.3.3.2). The fact is that it cascade whilst spiralling. For example the TA trains subject advisors who in turn train teachers, who will then facilitate learning.

6.3.5.3 The low-status of the NEEP-GET project

There is a perception among the subject advisors that the NEEP-GET project is of low-status (see 2.3.2; 2.3.3; 5.4.1.2; 5.5.2.3; 5.5.2.4 & 5.5.3.4) because there are no benefits other than professional development. Reasons for this perception are the reduction of the subject advisors to 15 (see 6.3.1.3), and that it is not compulsory for all subject advisors to participate in the project (see 5.4.2.1).

6.3.5.4 Accreditation of the NEEP-GET INSET

Participants seem to be uncertain of the project and how their professional development will be accredited (see 5.5.1.2). Although an appraisal of this issue has been undertaken (6.3.2), it seems this issue remains a challenge for the NEEP-GET project (see 5.5.1.2). One of the reasons is that it is not clear whether the NEEP-GET professional development will be accredited according to the DoE strategy for INSET or the Recognition of Prior Learning strategy.

6.3.6 Recommendations

These recommendations are based on the sub-headings indicated under issues and challenges (see 6.3.1), which endeavours to provide answers to 1.2; 1.3 & 1.4, within the theoretical background of the study (see 2.3; 2.4 & 2.2.4).

6.3.6.1 Subject advisors

Some of the subject advisors think that the issue of their over-commitment to other job related tasks, can be overcome if a selected number of teachers could join them in their NEEP-GET cluster meetings (see 2.4.2; 5.4.1.3; 5.5.2.4 & 5.5.3.4). These teachers would then be expected to support their colleagues at their schools, and if possible support teacher clusters close to their schools. However, this thinking is not popular because of its inclination to the cascading model of professional development (see 5.3.3.2). Subject advisors are also encouraged to look for opportunities to 'hang/attach' environmental issues (see 5.4.2.1; 5.4.2.2 & 5.4.3.2) in the other

learning areas. They should also be part of the process of training in curriculum matters (see 5.4.2.2 & 5.5.2.4), to support teachers with curriculum issues. They should assist teachers with the development of learning programme units. In doing so they will support teachers with 'things' that they need for teaching and learning.

6.3.6.2 Partners

Subject advisors and teachers feel that the various projects supporting teaching and learning, need to be effectively coordinated and managed (see 5.4.1.3 & 5.5.2.4) to ensure maximum benefits for the schools. The DoE should develop and implement guiding policy for partner participation in schools. These guidelines should explicitly state what the focus of support should be. They should also ensure the right of each partner to support EE as long as guidelines are adhered to. The participating NGOs' projects should be monitored and evaluated continuously in order to ensure that the partners' level of understanding the NEEP-GET project's objectives is more or less the same. The support of the provincial EE coordinator to environmental learning cannot be overemphasised (see 2.3.4 & 5.5.2.4). To ensure that the support is well received and used, a document stipulating the role of the EE coordinator in the province should be developed by the provincial DoE.

6.3.6.3 Teachers

Regarding the selection of schools to participate in the NEEP-GET project or any other project for that matter, teachers should be informed about the criteria used in selecting schools for participation (see 5.4.1.3 & 5.5.2.4). There is a feeling among the subject advisors that the TA should support schools by visiting them regularly in order to ensure success in environmental learning (see 2.4.1; 2.4.2; 5.4.2.2; 5.4.3.1; 5.5.2.1 & 5.5.2.4). There is also a recommendation that the TA should directly train teachers instead of teachers being trained by subject advisors. In doing so, it is hoped that school-based environmental learning will progress faster. However, the limitation of this idea is that few teachers will be trained because the TA can only support a limited number of teachers (schools). Because some teachers feel that environmental learning is an 'add-on' to their already heavy load of teaching and learning, the subject advisors suggested that it be explained to them that NEEP-GET is trying to assist them to implement environmental learning policy which is integral to the teaching and learning.

6.3.6.4 Resource materials

There is a feeling that the NEEP-GET partnerships should still be enhanced and improved to ensure that partners are obliged to support environmental learning. They need to resource the NEEP-GET activities. The number of partners in North West does not seem to be satisfactory (see 5.4). This does not imply that quantity overrides quality. Resource materials must be mediated (reconciled) by both educators and teachers when intending to use them for/in teaching and learning. Since subject advisors normally train teachers in environmental learning, the resource materials that are made available to them should be mediated so that subject advisors can use them with confidence. It should also be easy to copy them, adapt them and use them in different teaching and learning contexts (see 2.2.3.2(b).

6.3.6.5 More training on some aspects of OBE

The TA should continue to support subject advisors whenever possible with the knowledge and skills in developing learning programme units with a focus in environmental learning. Since subject advisors claim not to have time to attend most of the NEEP-GET cluster meetings, the TA should assist them individually whenever an opportunity avails itself. The few teachers that the TA has contact with should also be assisted in developing environmental learning programme units with a focus in environment. TAs can also collaborate in efforts of training subject advisors and teachers in resource materials development. It is essential that teachers understand that meaningful and effective environmental learning must be resourced, otherwise environmental learning would tend to be superficial and lack meaning for the learners.

6.3.6.6 Knowledge and understanding of EE

There should be clear directives towards enabling educators and teachers to understand that environmental learning is integral to all learning areas and the development of learning programme units. Educators and teachers should be empowered through the use of the education policy document to integrate environmental learning in their own programmes. The TA and other service providers should ensure that the environment focus is not 'lost' during the training of the NCS. Knowledgeable persons like the NEEP-GET EE Coordinators and the TAs should be included in the training of the NCS. It is also critical that educators and teachers understand that meaningful school-based environmental learning must be resourced. To accomplish this objective they should be trained in resource materials development and they should collaborate with service providers who are either developers or trainers in resource materials.

6.3.6.7 Perceptions about environmental learning

The TA should train a few subject advisors who will in turn train a few teachers. One of the focus areas for the training sessions should be the implementation of environmental learning policy

indicated by the various policy documents. The negative perceptions will probably not change as long as teachers and educators are convinced that environmental learning is not integral to teaching and learning. They therefore should be aware and understand that the DoE is not only serious about the implementation of environmental learning but that it is integral to the transformation of the education system in South Africa.

6.3.6.8 The 'add-on' status of environmental learning

Environmental learning policies (see 2.3.1; 2.3.2; 2.3.4) should be integral to all teaching practise activities. Educators (and teachers) should be encouraged to relate EE policy to their teaching and learning activities. This will ensure that they understand the importance of education policy.

6.3.6.9 Systemic education context

Systemic education contexts should be managed because they cannot be wished away. However, educators and teachers will be empowered if they understand and can relate to these issues. The provincial officials should understand these systemic education contexts so that they can support their colleagues who do not understand the changing contexts and are expected to be reactive to their tasks. Educators and teachers should understand the characteristics and nature of an education system as it tries to transform itself.

6.3.6.10 Timing of INSET workshops and other related issues

Subject advisors agree that holding cluster meetings during the last quarter of the year (see 5.4.2.2 & 5.5.3.1) is inappropriate. During this period subject advisors are busy with a number of tasks that need their urgent attention. Fridays should be avoided for

planning cluster meetings since most of the subject advisors fail to attend cluster meetings planned on Fridays.

6.3.6.11 Status of the NEEP-GET

Participants in the NEEP-GET project need to be continuously made aware of project' outcomes to eliminate misconceptions and misunderstandings (5.4.1.3; 5.4.2.1). To achieve that, the NEEP-GET implementation processes should have guiding 'tools'.

6.3.6.12 Accreditation of the teachers and Subject Advisors' INSET

A guiding policy document on accreditation needs for participants should be produced. An *Appraisal and Discussion Document, Certification and Accreditation of Professional Development in the NEEP-GET Contextual information informing decision making* (sic) (Parker & Sisitka 2002) was developed by the FM&E for the NEEP-GET processes. An in-depth study about the accredition of INSET provided by 'projects' like the NEEP-GET should be undertaken (see 5.5.2.4 & 5.5.1.2). The appraisal discussion document, Certification and Accreditation of Professional Development in the NEEP-GET, Contextual information informing decision making (Parker & Sisitka 2002), provides basic details of how CS staff and teachers' professional development can be supported. Probably, higher education institutions could also contribute to the success of the accreditation of the NEEP-GET project's professional development for teachers and educators. These institutions could investigate the possibility of accrediting participants of the NEEP-GET with a number of credits depending on the duration of the training for the cluster meetings (see 5.2; 5.3 & 5.4.1.3).

6.3.7 Issues that need further researching

The following issues emanating from this investigation warrant further research to provide information and clarification of the implementation of environmental learning.

6.3.7.1 Educator support of school-based environmental learning

This investigation explicates the complex nature of transformational education (see 5.5.3.4). A number of factors seem to play a role in how teaching and learning in/for/about the environment is realised in schools. An investigation aimed at revealing these factors is essential for the implementation of meaningful school-based environmental learning.

6.3.7.2 Accreditation of INSET in project related training contexts

Though the NEEP-GET is encouraging teachers and subject advisors participating in the training to record continuously their professional development in a portfolio format,this strategy is new to the participants. They have neither experience in nor knowledge of undertaking such an exercise. A research inquiry intending to explore this issue further is necessary for educationists involved in INSET processes and the accreditation thereof.

6.3.7.3 The commitment of subject advisors to 'other' projects

This issue should be investigated to determine whether subject advisors are too busy with other projects (see 5.5.3.4) in the province or not. The officials of the North West Education Department

would then be able to allocate work among the subject advisors evenly so that they are not overwhelmed by their responsibilities. In order to allocate responsibilities evenly among the subject advisors an investigation into the daily activities of subject advisors is critical.

6.3.7.4 The issue of subject advisors being overloaded with work

This issue needs to be investigated (see 5.5.3.4) to ensure that correct steps in addressing the matter are taken. This investigation could be undertaken with 6.3.3.3.

6.3.7.5 The impact of the resource materials used in the SOP and NEEP-GET projects

At the moment the resources used are evaluated in a piecemeal manner. For example the poster and series of books about animals referred to in 5.4.3.1, illustrate meaningful learning for the learners. But the value of these resources is not explicitly indicated. There are therefore a number of resource materials that are used in the NEEP-GET, but their effectiveness is not conclusively indicated. An inquiry of the effectiveness of the SOP and NEEP-GET resource materials would enable users of resource materials to utilise the resource materials optimally.

6.3.7.6 The job description of subject advisors regarding environmental learning

Though Mphaphuli, Sisitka and O'Donoghue (2003), undertook an investigation of the *Appraisal and Discussion Document on Perspectives on the role of Curriculum Support Staff* an inquiry based on rigour and depth is essential in order to provide educators and teachers with trustworthy in-depth answers with regard to the job description of subject advisors.

6.4 SALIENT FINDINGS OF THE TWO CASE STUDIES

It is not the aim of this research inquiry to compare the two case studies. However, in order to highlight the issues and challenges found and experienced by teachers (SOP predominately) and educators (NEEP-GET predominately) during the process of implementing environmental learning (see Chapter 4 and Chapter 5), it is useful to integrate the salient core findings of the two case studies.

6.4.1 Issues and challenges encountered by teachers and educators in implementing environmental learning

The following aspects are similar and therefore form the core of the salient findings of both case studies:

- **lack of adequate support for environmental learning from the school community,**
- **teachers' and educators' lack of skills and expertise in the use and development of EE resource materials,**
- **negative perceptions for environmental learning,**
- **unclear job descriptions of educators regarding their role in environmental learning,**
- **necessity of continuous support and monitoring of trained teachers and educators,**
- **need for managing systemic education context,**
- **timing of INSET workshops.**

However, the two case studies are not similar regarding some of the items in their objectives and approaches to INSET (see 4.2, 4.2.2, 5.1, 5.2, 5.3.1 and 5.3.2). These differences account for the different issues and challenges revealed in the study, of which the following are noted:

- **poverty and unemployment,**
- **vandalism and burglaries,**
- **accreditation of the teachers and educators INSET,**
- **the 'add-on' status of environmental learning.**

6.5 LIMITATIONS OF THE RESEARCH

This investigation was not intended to scrutinise the education system but to highlight issues and challenges embedded in the education system that are faced by teachers and educators in their endeavours to implement EE policy in formal education. As mentioned in Chapter 3 (see 3.6), any research inquiry has limitations that warrants further investigation of those issues which were raised but were not given attention in the research.

However, the limitations do not in any way suggest that the research study has failed to achieve what it set out to do. They only point out that certain research process(es) (see 3.5), data gathering methods, data collected and certain findings have not been as successful as intended to be in the study or manifested themselves as the research developed. In a limited manner (thus, the *limitation* notion) their inclusion is essential in the process of the research inquiry. Below are some of the noticeable limitations of this research investigation.

6.5.1 The dynamic research sites-context compromises consistency of events and therefore of data

The reduction of the subject advisors from 40 to 15 is a limitation. Besides this tendency, the 15 subject advisors later claimed to be too busy for cluster meetings at certain periods of the year, forcing the TA to resort to establishing teacher clusters herself. Though a qualitative research process does allow for such changes in research contexts, they nevertheless compromise the consistency of data to be collected.

In order to ensure that the data collected is not compromised due to the dynamic nature of the research sites, the researcher applied multi-data collecting methods, and fieldnotes were sent to the participants for their comments and further clarifications. This process ensured that data gathered are sufficient enough to render valid and reliable research judgements (Chapters 3, 4 and 5).

6.5.2 Unavailability of time to further develop and investigate certain issues

Subject advisors should continuously be (see 5.5.2.4) supported with knowledge, understanding and skills to ensure that they are comfortable with and confident in supporting teachers with learning programme units development. However, time might not be available for the TA to continue supporting subject advisors. Therefore, the EE Coordinator who is an integral part of the provincial curriculum support staff will probably support teachers in EE activities.

6.6 CONCLUDING AND CLOSING COMMENTS

In this chapter the findings regarding both the SOP and NEEP-GET case studies have been summarised and the issues and challenges pertinent to environmental learning implementation in schooling have been illuminated.

Findings of the two case studies indicate the serious issues and challenges educators and teachers encounter in the process of implementing environmental learning policy in the schools. Some of the issues are embedded within the 'structures' organising the education system, the negative perceptions of some educators and teachers about environmental learning, the perceived heavy work load of subject advisors and teachers, the 'add-on' perception of environmental learning, schools' vandalism and burglaries, unemployment and poverty.

Endeavours of some schools to face these challenges are commendable. But the provincial DoE still needs to cooperate with negatively affected schools and try to either manage or eradicate the concerns of the schools. This research study does not in any way claim to have exhausted the research question stated in 1.2, however, it is hoped that the issues highlighted will enable educators and teachers to tackle challenges in education with greater insight.

School-based environmental learning is a formidable challenge (for both educators and teachers). What presents these challenges seem to be reluctance of some educators and teachers to understand that the task of teaching and learning is effectively executed if policy issues are clearly understood and implemented.

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271

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274

APPENDICESAPPENDICES

APPENDIX 4.1 (a)

ENVIRONMENTAL EDUCATION CONTEXTUAL ISSUES AND OUTCOMES-BASED EDUCATION

QUESTIONNAIRE 01 (Conducted during workshop number 02) 14–15 JUNE VRYHEID

A. GENERAL QUESTIONS

NAME OF TEACHER:.....

NAME OF SCHOOL:.....

GRADE(S) TEACHING:.....

NUMBER OF LEARNERS PER GRADE: GRADE LEARNERS

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269

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B. OUTCOMES-BASED EDUCATION

B. 1 AFTER ATTENDING THE FIRST WORKSHOP ON THE 18–19 MAY 2001, DID YOU DISCUSS WHAT YOU LEARNED WITH YOUR **PRINCIPAL** AND / OR **SCHOOL MANAGEMENT TEAM (SMT)?**

.....

IF YES, BRIEFLY GIVE DETAILS OF YOUR DISCUSSION. IF POSSIBLE GIVE YOUR ACTION PLAN.

IF NO, BRIEFLY GIVE REASONS WHY YOU DID NOT. IF POSSIBLE INDICATE HOW AND WHEN THE DISCUSSION WITH THE PRINCIPAL AND SMT WILL TAKE PLACE.

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270

B. 2 DID YOU MANAGE TO DEVELOP YOUR OWN ENVIRONMENTAL LEARNING PROGRAMME(S)?

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B. 3 **IF APPLICABLE**, WHAT ENVIRONMENTAL ISSUES WERE YOUR LEARNERS ENGAGED IN?

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B. 4 GIVE DETAILS OF THE RESOURCE MATERIALS YOUR LEARNERS USED DURING THEIR LEARNING, MENTIONED IN B 2 & B 3.

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13

B. 5 WHAT KIND OF SUPPORT DO YOU NEED IN TERMS OF RESOURCE MATERIALS FOR ENVIRONMENTAL LEARNING?

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B. 6 WHAT OTHER ISSUES WOULD YOU WANT TO DISCUSS WITH THE RESEARCHER WITH REGARD TO ENVIRONMENTAL LEARNING?

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THANK YOU FOR TAKING YOUR TIME TO COMPLETE THIS QUESTIONNAIRE. I REALLY APPRECIATE YOUR HELP!!!!!!!!!!

MAILA M W (Mr) 012 429 4512 TEL 0827616832 Cell

14

NAME OF TEACHER	NAME OF SCHOOL	GRADE(S) TEACHING	NUMBER OF LEARNERS PER GRADE
A	A–C	7 8 9 10 11 12	30 59 50 30 30 12
B	B–H	8 10 12	225 54 32
C	C–Pl	R O	38 35
D	D–H	10 12	146 29
E	E–H	9 10 11 12	78 39 35 10
F	F–T	This participant is a lecturer at the Vryheid Technical College. Colleges do not classify learners (students) into grades	The modules or courses learners register for act as strategy for classification
G	G–H	10 11 12	34 29 28
H	H–P	6	112
I	I–H	8 9	250 172

APPENDIX 4.1 (b)

QUESTIONNAIRE NUMBER 1 (A. General Questions). **Teacher and school profile**

15

Continuation of data for A.. General Questions

J	J–H	8 9 10 11 12	46 41 57 57 17
K	K–H	10 11	64 173
L	L–P	4	78
M	A–C M-P	10 11 12 7	61 59 24
N (also known as teacher I in the research)	N–H	10 12	192 39

16

O	O–PH	7 8 10	17 44 33

APPENDIX 4.2 (a)

ENVIRONMENTAL EDUCATION CONTEXTUAL ISSUES AND SCHOOL-BASED ENVIRONMENTAL LEARNING

QUESTIONNAIRE 2 CONDUCTED AFTER WORKSHOP 3

VENUE: Vryheid Comprehensive High School DATE: 13-14 August 2001

A. GENERAL INFORMATION

NAME OF TEACHER.....

SUBJECTS YOU TEACH:.....

YOUR QUALIFICATIONS (ACADEMIC).....

(PROFESSIONAL).....

NUMBER OF YEARS IN TEACHING.....

17

NAME OF YOUR PRINCIPAL:.....

NAME OF YOUR CIRCUIT MANAGER:.....

HIS/HER POSTAL ADDRESS:.....

.....

NAME OF CIRCUIT:.....

NAME OF REGION:.....

B. OUTCOMES-BASED EDUCATION

B.1 Have you attended other OBE workshops before the Unisa workshops? If YES, can you indicate when and by whom the workshop(s) was/were presented.

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B. 2 Have your perceptions about OBE changed after attending the Unisa workshops? YES/NO. Support your answer

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B.3 After attending all three Unisa workshops do you think you know and understand OBE? (YES/NO). Briefly support your answer

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B.4 Which aspects of OBE do you think will need more attention at school level?

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Please give reasons

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B.5 Did you discuss what you learned in workshop 2 with your Principal and / or school management team (SMT)?

If YES, briefly give details of your discussion.
If NO, briefly give reasons why you did not. (If applicable indicate when and how the discussion with the Principal and/or SMT will take place).

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B.6 What successes and what problems have you achieved/encountered when implementing your own environmental learning programmes at your school? Please give reasons for your answer.

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C. TEACHING METHODS OR STRATEGIES

C.1 Which methods or strategies used by the workshop presenters do you think were appropriate? Give reasons for your answer.

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D. RESOURCE MATERIALS DEVELOPMENT

D.1 Would you be able to attend a course on the development of resource materials if organised in your region? YES/NO.

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Support your answer.

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D.2 Have you contacted the following departments in your area requesting resource materials from them? If YES, what was their response?

Department of Health.....

Department of Environment and Tourism.....

20

Department of Water and Forestry.....
Department of Labour.....
Local Town Council/Board.....

E. SUPPORT IN/ABOUT ENVIRONMENTAL LEARNING

E.1 Do the following individuals or groups support you in environmental learning at your school? (Tick the appropriate answer).

Colleagues.....

Principal .....

SMT.....

Subject advisor.....

Curriculum Implementer.....

Teacher Centre Manager.....

Circuit Manager.....

Vryheid Environmental Education Club

Any NGO/CBO (Give name)
.....

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.....

E.2 ANY OTHER ISSUE YOU WOULD WANT TO MENTION

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Thank you for taking time to complete this important questionnaire.

If you want to correspond with the researcher feel free to do so:

Maila M W (mr)
Department of Further Teacher Education

21

Unisa
PO Box 392

APPENDIX 4.2 (b)

Questionnaire number 2 (A. General Information). Complementary to teacher and classroom profile

22

Name of teacher	Subject(s)/Learning Area(s)	Qualification	Number of years in teaching	Name of: principal; circuit manager; circuit; region
A	absent	absent	absent	absent
B	EMS, Accounting & Economics	STD, FDE	9	Nxumalo AD; not given; Nkande; Vryheid
C	Pre-school and Creche	Not indicated	Not indicated	Mthembu HJ; Majola MV; Nkande; Vryheid
D	IsiZulu	BA, STD	12	Modise J; Dlamini T; Vryheid Central; Vryheid.
E	Biology; Geography	Not indicated	Not indicated	Mncwango SC; Mngomezulu DD; UMkhonjwane; Vryheid
F	Business studies	B Com	7	Van Vuuren LLL; Not indicated; Not indicated; Not indicated.
G	Biology	STD	11	Kubheka LPV; Vilakazi SE; Hlazakazi; Vryheid.
H	absent	absent	absent	absent
I	HSS	JPTD	10	Shange GM; Khanyile JM; Emondlo; Vryheid.

23

J	English, Afrikaans, LO	BA (Hons) Psychology, TED	21	Venter GP; Dlamini T; Vryheid Central; Vryheid.
K	Biology	STD	11	Thabede ST; Majola MV; Emondlo; Vryheid.
L	absent	absent	absent	absent
M (whilst at A-C)	Afrikaans, Physical Science	STD	Not indicated	Madi BJ; Not indicated; Utrecht; Vryheid.
N (also known as I)	Biology, General Science	Mathematics	10	Shange GM; Khanyile JM; Emondlo; Vryheid.
O	English, IsiZulu	BA, Music, UED	Not indicated	Steenkamp I; Dlamini T; Vryheid Central; Vryheid.MAPDKJFYRFNVMVNVNV

Continuation

24

APPENDIX 4.3

INTERVIEWING SCHEDULE USED DURING THE FIRST WORKSHOP

- ☐ Support from stakeholders
- ☐ Expected outcomes of the participants
- ☐ Report back after workshop
- ☐ Support needed for rural schools
- ☐ Communication in the region
- ☐ OBE related issues
- ☐ LSMs
- ☐ The impact of teachers and educators acting in positions
- ☐ Visits of Circuit Managers to schools
- ☐ Time for workshops
- ☐ Assumptions about OBE
- ☐ Ill-qualified teachers and the OBE curriculum
- ☐ Re-deployment and voluntary severance packages

25

APPENDIX 4.4

SCIENCE OUTREACH WORKSHOP

EVALUATION FORM [1]

DATE: ..... **CENTRE:** .....

Dear participant

Won't you please complete this evaluation form so that the presenters and compilers of the programmes can improve and enrich the programme for presentation to other groups like yourselves? Your inputs and suggestions will be very helpful to us. Your response is anonymous, so please express yourself freely.

1 Please **circle the name of the workshop** attended:

1	How well was the course **organised**?	1	2	3	4	5
2	Were the **aims and objectives** of the course clear?	1	2	3	4	5
3	How well the presenter **prepared** him/herself?	1	2	3	4	5
4	How good was the presenter's **knowledge and experience** of the topic?	1	2	3	4	5
5	How would you rate the **presenter's enthusiasm** regarding the presentation of the course?	1	2	3	4	5
6	How **effectively** was the **content communicated** to the group?	1	2	3	4	5
7	To what extent were course participants given the opportunity to become **actively involved** in the presentation?	1	2	3	4	5
8	What is the degree to which you will be able to **apply the course** content to your field of work?	1	2	3	4	5

Mathematics Science Technology Environmental Education

2 Please **indicate your response** on a scale of 1-5 (**1=satisfactory ➜5 most satisfactory**)

General evaluation:

Please indicate which **aspects** of the course you found most **useful.**

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Indicate which **aspects** of the course were found to be **unsatisfactory**.

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What would you **recommend** should be done to **improve** the programme?

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27

APPENDIX 4.5

SCIENCE OUTREACH WORKSHOP

EVALUATION FORM [2]

DATE: ..... **CENTRE: .....**

Dear participant

Won't you please complete this evaluation form so that the presenters and compilers of the programmes can improve and enrich the programme for presentation to other groups like yourselves? Your inputs and suggestions will be very helpful to us. Your response is anonymous, so please express yourself freely.

1 Please **circle the name of the workshop** attended:

Mathematics **Science** **Technology** **Environmental Education**

2 Please **indicate your response** on a scale of 1-5 (**1= unsatisfactory ➜ 5= most satisfactory**)

28

General evaluation:

Please indicate which **aspects** of the course you found most **useful**.

.....

.....

.....

Indicate which **aspects** of the course were found to be **unsatisfactory**.

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What would you **recommend** should be done to **improve** the programme?

.....

1	How well was the course **organised?**	1	2	3	4	5
2	Were the **aims and objectives** of the course clear?	1	2	3	4	5
3	How well had the presenter **prepared** him/herself?	1	2	3	4	5
4	How good was the presenter's **knowledge and experience** of the topic?	1	2	3	4	5
5	How would you rate the **presenter's enthusiasm** regarding the presentation of the course?	1	2	3	4	5
6	How **effectively** was the **content communicated** to the group?	1	2	3	4	5
7	To what extent were course participants given the opportunity to become **actively involved** in the presentation?	1	2	3	4	5
8	What is the degree to which you will be able to **apply the course** content to your field of work?	1	2	3	4	5

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29

APPENDIX 4.6

SCIENCE OUTREACH WORKSHOP

EVALUATION FORM [3]

Dear participant

Won't you please complete this evaluation form so that the presenters and compilers of the programmes can improve and enrich the programme for presentation to other groups like yourselves? Your inputs and suggestions will be very helpful to us. Your response is anonymous, so please express yourself freely.

1 Please **circle the name of the workshop** attended:

Mathematics **Science** **Technology** **E n v i r o n m e n t a l**

30

Education

2 Please **indicate your response** on a scale of 1-5 (**1=unsatisfactory ➜ 5+ satisfactory**)

General evaluation:

Please indicate which **aspects** of the workshop you found most **useful**.

.....

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1	How well was the course **organised**?	1	2	3	4	5
2	Were the **aims and objectives** of the course clear?	1	2	3	4	5
3	How well had the facilitator **prepare**d him/herself?	1	2	3	4	5
4	How good was the facilitator's **knowledge and experience** of the topic?	1	2	3	4	5
5	How would you rate the **facilitator's enthusiasm** regarding the presentation of the course?	1	2	3	4	5
6	How **effectively** was the **content communicated** to the group?	1	2	3	4	5
7	To what extent were course participants given the opportunity to become **actively involved** in the presentation?	1	2	3	4	5
8	What is the degree to which you will be able to **apply the course** content to your field of work?	1	2	3	4	5
9	To what extend will the **handouts/manuals** that you received be of use to you in your teaching situation?	1	2	3	4	5
10	How well were you able to **follow and understand** what the facilitator was saying?	1	2	3	4	5

Indicate which **aspects** of the workshop were found to be **unsatisfactory**.

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31

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What would you recommend should be done to improve the programme?

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would you like a follow-up on this workshop at a later date?

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If YES, what should be included in the follow-up workshop?.

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APPENDIX 4.7

FOCUS GROUP INTERVIEWING SCHEDULE

32

1) Institutionalisation of environmental learning

2) What happened after the series of SOP workshops?

3) Issues and challenges encountered in the process of implementing EE in schools

APPENDIX 4.8

286

SCHEDULE FOR INTERVIEWING PRINCIPALS

(1) Name of principal

Name of teacher who participated in the SOP (EE)

Name of Circuit

Name of Circuit Manger

Number of Learners

Number of Teachers

(2) Are there other projects that the school is involved? If yes, what are they?

(3) Was there any support needed by the teacher who attended the workshop in order to implement EE in the school? Explain your response.

(4) Principals were not briefed/workshopped in preparation of the SOP implementation. Do you think that had an impact on the success of the implementation of EE in the schools that participated? Explain your response.

(5) Do you think that the teacher who attended the EE workshops has been empowered adequately to implement environmental learning in the school? Explain.

(6) What are the problems in implementing environmental learning in this school?

(7) What are the challenges in implementing environmental learning in this school?

(8) If your teacher was to attend another series of EE workshops, what would you want to see covered (or covered broadly?).

(9) Has the teacher been given an opportunity to share learned information/knowledge/experiences with colleagues when returning from workshops? Explain.

(10) Are there any issues you think could enhance environmental learning? Explain.

287

APPENDIX 4.9

SCHEDULE FOR INTERVIEWING TEACHERS

(1) After attending the first or all three workshops, where/with what did you start implementing EE? Explain.

(2) What are the issues you are faced with in implementing environmental learning in your classes? Explain.

(3) What are challenges you are faced with in implementing environmental education? Explain.

(4) Do you have sufficient resources to support your teaching and learning in environmental learning? Explain your response.

(5) What support do you need?

(6) How supportive are other organisations outside the school?

(7) Do you think that EE policy issues are empowering in supporting environmental learning? Explain.

(8) Do you have an example of a learning programme with an environmental focus? If yes, can I have a copy?

(9) If possible can I also have the following documents:

- Environmental school policy
- Learning experience/programme unit with an environmental focus
- Environmental-related school photos

284

13

14