THE ASSESSMENT OF LEARNING PROGRAMMES FOR THE SENIOR PHASE AT ENVIRONMENTAL EDUCATION CENTRES IN MPUMALANGA.

by

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SUMMARY.

The researcher thinks that there is a need to assess learning programmes for the Senior Phase learners at Environmental Education Centres (EEC's) in Mpumalanga in order to ensure that resources provided by the Department of Agriculture Conservation and Environment in Mpumalanga (DACEM) are utilized for what they are intended. Thus the dissertation investigation is about whether learning programmes for the Senior Phase learners in Mpumalanga are assessed for their quality, namely, effectiveness and relevancy within the Outcomes-Based Education (OBE) system.

Each directorate or section of the Mpumalanga’s Department of Agriculture Conservation and Environment is obliged to ensure that appropriate policy guidelines are put in place to assist Environmental Officers (EO’s) to implement the Core Functions of the Environmental Education (EE) Directorate. Sometimes EO’s need assistance in implementing policy guidelines. In this investigation EO’s were provided with an opportunity to translate policy into action by participating in the workshops conducted by the researcher.

The participation of the EO’s meant that they had to learn how to develop learning programmes that are strongly guided by the EE Directorate’s policy guidelines and Core Functions.

KEY TERMS OF THE DISSERTATION:

Environmental Education
Assessment
Learning programmes
Senior phase learners
Environmental Education Centres
Outcomes-Based Education
Action Research
Active learning Questionnaires
Observation techniques
Learning outcomes
DEDICATION.

This research study is dedicated to my wife Nancy- Nomhle, my late parents, Jane- Dandane and Petrus Mndawe, and my children Nomhle (Bo), Bhekumuzi (Bheki) and Siphiwe (Phiwe).
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CHAPTER 1

RESEARCH DESIGN

1.1 AIM AND RATIONALE

Environmental Education Centres (EEC's) in Mpumalanga are presently managed by the provincial Department of Agriculture Conservation and Environment. Until 30 September 1999, these EECs' environmental education (EE) programmes offered to learners of the senior phase (Grades 7-9), had not yet been evaluated and assessed for the purpose of quality assurance, namely, effectiveness and relevancy.

The fact that the EE Policy Document of the EE Directorate (1998) in the DACEM does not provide Environmental Officers (EO's) working in the EEC's with clear guidelines of how to evaluate and assess environmental learning programmes stated in its Core Functions (Appendix 1.1) makes it imperative to seek ways of assessing these programmes in order to ensure that they remain effective and of a high quality.

The Curriculum 2005, Lifelong Learning for the 21st Century (1997a) has general guiding principles for teaching and learning within the Outcomes-Based Education (OBE) framework. Features of these principles are critical outcomes; specific outcomes; learning areas; assessment criteria; range statements; phase descriptors; performance indicators and learning programmes. According to the Report of the Review Committee on Curriculum 2005 (SA: 2000:21) recommendations are made that a streamlined National Curriculum Statement should be developed which should include

- critical outcomes and learning area statements comprised of learning outcomes and assessment standards, ... dropping the 66 specific outcomes, assessment criteria, phase and programme organisers, range statements, performance indicators and expected levels of performance.

However, this research study will only consider all Curriculum 2005's recommendations made before July 2000 by the National Education Department as policy for implementation.

The White Paper on Education and Training proposes to involve EE in an interdisciplinary and integrated manner, 'as a vital element of all levels and programmes of the education and training system' (SA: 1995c:22). It is therefore essential that EEC's base environmental learning on Curriculum 2005 principles envisaged for schools in order to ensure quality, effectiveness and relevance of environmental learning. In this way the EECs' support to teachers and learners in regard to environmental learning about, in and for the environment (O'Donoghue 2000:06) will meaningfully improve the quality of their education in general.

1.2 PHILOSOPHICAL BACKGROUND OF ENVIRONMENTAL EDUCATION IN SOUTH AFRICA

Janse van Rensburg (1993:03) supports the view held by the global community that environmental problems facing humanity can be minimized and even resolved through well researched educational policies, EE strategies and actions coupled with appropriate strategies for
implementation. However it is essential to note that environmental problems were always there in the past (Taylor 1997:12), they are not new. What is new is their rapid increase and complexity (Rhodes: 1995:070). It is therefore important to know and understand the historical background of educational theories, that is suppositions or systematic ideas that assume that education is capable of bringing change to the lives of people and the environment. Though this view of education is perceived as both functionalist and instrumentalist, Taylor and Janse van Rensburg (1993:03) agree that such an approach to education must be based on a relevant educational framework.

The White Paper on Education and Training (SA: 1995c:25) provides such an education framework when it says that 'it is designed as an integrated, coherent socio-economic policy framework.' According to this policy principle, education can contribute to the reconstruction and development of society, in all levels and aspects of peoples' lives (as communities), in an integrated and coherent manner. This view concurs with the Reconstruction and Development Programme (RDP) statement which says that environmental consciousness among the youth, environmental policy coordination at all levels and the empowerment of communities 'to act on environmental issues and to promote an environmental ethic' should be promoted (SA: 1994:40). It indicates that educational processes can enable people to acquire the necessary knowledge, skills, values and attitudes in order to participate at all levels of human life. This view to socio-economic, cultural and political life is a shift from the old apartheid era's 'commonly held values and beliefs' (SA:1995a:02; SA:1995b:07).

Traditionally, education paradigms (approaches) were generally employed in the distribution of knowledge and the ecological paradigm was concerned with the construction of knowledge (Hart in Mrazek, 1993:117; Bodner 1986:873). This educational view seems to propose an instrumentalist view of education. If this perspective is employed in a narrow manner, it can be very limiting. For example, most of the 'EE programmes' in the seventies and eighties were based on the assumption that learners should visit the EEC's and be 'informed and made aware of' the importance of loving and caring for the environment. EO's were to construct necessary knowledge in their minds and then transfer it to the minds of the learners who were assumed to be empty vessels (Locke 1632-1704). However, Bodner argues that all human-beings construct knowledge based on their perceptions on reality (1986:875).

The constructivist model for teaching and learning does not only suggest that learning is the making of meaning, but also that knowledge is meaning that has been socially negotiated (Rhodes: 2001:6; Bodner 1986:875). The view that knowledge is constructed in a social context suggests that whilst individuals construct knowledge based on their social context, they also do so in a group. The Rhodes course in EE (2001:15) concurs with this notion that 'meaning is socially constructed amongst groups of people, providing us with a learning theory that is based more on social interactions, language and other cultural symbolic systems.'

With the New Curriculum Framework legalised since 1995, OBE has become the guiding framework for all educational processes in South Africa within formal education and training. Within this framework educators are expected to

\textit{define what outcomes they have in mind for the educational process, and administer assessment processes to establish what learning outcomes learners have achieved at the}
OBE as an educational process involves changes in perceiving teaching and learning as just being concerned with the transfer of 'content' (EO's, educators and textbooks) to more interactive, constructivist orientations to learning (Rhodes 2001: 18). EO's, who are stationed at the EEC's are better positioned to support educators with this new education orientations when they visit the EEC's with their learners. It is assumed that if these EEC's who are financed by the DACEM (salaries, transport, etc.) want to impact on the quality of education in South Africa, they need to engage schools in environmental learning programmes that are relevant to the New Curriculum Framework.

The researcher shares the view that

*relevant answers to environmental problems (sought through education orientations) are not only a matter of quantitative changes (less consumption of resources, less transport by car, etc.), but also (and maybe so) of qualitative changes*.

This view suggests that learners need to be involved in environmental learning that seeks to develop proficiency in environmental learning, application of knowledge and concepts in a meaningful manner in all learning areas.

### 1.3 STATEMENT OF PROBLEM

#### 1.3.1 Historical background of Environmental Education Centres in the Mpumalanga Province.

Before 1994 the EEC's were managed by the Transvaal Education Department (TED), and were known as the 'Veldskole'. Various learning activities were carried out for visiting schools. The main goal was to develop good citizenship skills in the learners. This goal is embedded in the educational science of Fundamental Pedagogics which was based on the Christian and Nationalist orientations (Ashly 1989:7-11&23), which viewed and proposed that education should promote good citizenship.

Prior to 1993 TED had a separate budget to run the activities of these 'Veldskole' and also to pay staff salaries. Teachers and learners were normally subsidized when attending. However, the management of these 'Veldskole' changed after 1994.

During 1995-1996, all TED 'Veldskole' in the Mpumalanga Province were handed over to the Provincial Department of Environmental Affairs and Tourism (DEA&T). Presently (2000) this provincial department is called the Department of Agriculture Conservation and Environment (DACEM). Within the DEA&T they were to be managed and supported by the EE Directorate and their main function was to conduct environmental awareness programmes, through environmental campaigns and environmental days celebrations. These activities were initially not driven by an EE policy, but, EO's were doing any activity which they felt addressed environmental problems.
In 1998 the Mpumalanga DEA&T (then) through its EE Directorate developed an EE Policy Guide. It stated the vision, mission and objectives of EE for the Directorate. It also gave a list of Core Functions (see 1.1) to be carried out. This policy guide was in line with the vision, mission and objectives of the provincial DEA&T. There was a great shift towards environmental learning. But, teaching and learning methods employed were used in a narrow manner because they mostly encouraged the transfer of knowledge from the EO to the learner, without encouraging learners to critically view the way they construct knowledge.

It is within this context that the researcher thought that this situation needed to be changed. EEC’s need to capacitate teachers and learners with more social critical methods and social constructivist methods in order to learn to critically respond to environmental issues. It is not enough that EEC’s provide teachers and learners with a variety of opportunities to enjoy fauna and flora. This observation led to the conviction that environmental programmes in use, have to be evaluated for effectiveness and relevance.

1.3.2 The problem

The research problem to be investigated is whether the EEC’s in the Mpumalanga Province do provide effective and relevant learning programmes to teachers and learners in the senior phase who visit the centres. Learning programmes at EEC’s must also be provided within the OBE curriculum framework (see 1.2). It is also imperative that all stakeholders in education should support what National Education policies envisage to achieve by bringing their learning programmes in line with Curriculum 2005.

The White Paper on Education and Training (SA:1995c:18) agrees with the notion of an integrated and active learning approach to environmental learning when 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,…*

The Draft Curriculum Framework for General and Further Education and Training (SA:1996a) specified that the Environment as phase organiser should be used in all learning programmes. This gave EEC’s an opportunity to develop environmental learning programmes for schools, consistent with the OBE curriculum framework. The Minister of National Education (Sunday Times July 2, 2000) attested to this crucial position of OBE when he says that the new education curriculum is explicit in its post apartheid era focus; that of outcomes-based education as an actively based result oriented approach’.

EEC’s are therefore well positioned and equipped to engage both teachers and learners in active environmental learning so that learners can face challenges of action-taking in and for the environment in their communities with more critically oriented strategies.

1.4 SCOPE OF RESEARCH

This investigation started in February 1999. It was the period during which EO’s were faced with questions of evaluation or judgement of their previous year programmes. They had to evaluate
and assess the value of their programmes, that is, ‘... judgement of the value of the worth of that program’ (Wickham 1998:01).

Unfortunately with no guidelines on how to seek answers for such questions in the EE policy document, many EO’s are left with no option but to continue with their usual unquestioned andunchallenging work. Officials changing positions in management within the DEA&T from time to time and changing the focus of Core Functions, contributed to the fact that programmes end up not being evaluated. Nonetheless the fact that a ‘comfortable zone’ is always enjoyed by people who do not want change to impact on their practice.

The researcher himself struggled with these questions. EE programmes and those of co-workers were not monitored, evaluated and assessed. Therefore this investigation tries to seek for some answers through learning programmes in order to change existing practices for the better, by involving other EO’s too. A structured questionnaire was sent to EEC’s Managers to complete and return back to the researcher (see Appendix 4.1 B). The focus of the questionnaire was on the knowledge and understanding of the OBE curriculum framework and resource materials in active environmental learning. In this way an EE process of learning was started.

Three workshops were conducted in three different venues in the Mpumalanga Province for EO’s (see chapter 4). The focus was the new education curriculum (SA:1997a) and environmental learning programmes of the EEC’s. The research investigation was expected to be completed in 2000, provided all workshops, focussed interviews and questionnaires were conducted, and data gathered in a satisfactory manner. The time frame was not rigid. But it could be revisited if a need arises. It was only a guide to encourage the researcher and co-workers to remain focussed, committed and intentionally search for better ways of improving the quality of their work in the EEC’s.

The DACEM has two kinds of EEC’s. Residential EEC’s and Non-residential EEC’s. Residential EEC’s are easy to work with in this type of study because they provide sleeping accommodation for visiting schools which wants to spend more than one day at the centre. EO’s, teachers and learners work during weekends and their daily environmental learning activities end at about 22h00. This gives them enough time to involve learners in environmental learning activities. These EO’s are well placed in the EEC’s to seek some answers to their work. On the other hand non-residential EEC’s do not have accommodation for learners for over-night visits, and therefore do not receive learners in their centres, but EO’s visit schools to conduct environmental learning programmes which teachers think their learners need. Environmental learning is greatly influenced in such situations. For example, the class timetable, the teacher’s participation and enthusiasm, and the general school’s times for starting, breaks and end of learning. It is therefore important to note that EEC’s enhance and support school environmental learning.

Although the research has been focussed on the effectiveness and relevancy of environmental learning programmes for senior phase learners in the Mpumalanga Province, it must be noted that some schools who visit EEC’s in Mpumalanga are not necessarily from Mpumalanga only. In such instances the researcher will indicate such information in chapter 4.

EEC’s should provide an active learning environment in which learners will be able to find out
about environmental issues and be encouraged to examine and explore these issues with a view of
taking critical action for a better environment and developing opportunities which bring local or
theme issues into learning programmes (O'Donoghue 200:5-6). It is important to note that 'active
learning' does not imply just doing activities with learners for the sake of doing them, but that the
content and quality of learning be enriched. According to Magonare and her co-workers
(Magonare et al 2000:03) not only should learners be provided with such opportunities, but they
should also be provided with appropriate learning resources which can stimulate their critical
thinking skills.

1.5 RESEARCH STRATEGIES AND METHODS

This research investigation is a qualitative one. It aims at assessing environmental learning
programmes offered by EEC's to senior phase learners in the Mpumalanga Province (see
1.3.2). Research techniques such as focus group interviews, structured questionnaires and
interactive workshops with EO's (see 4.5) will be used to carry out the investigation. Action
Research according to Mahlangu (1987:130) focuses on the immediate application and not on the
development of the theory. It places its emphasis on a real problem, here and now in a local
setting. It is important to note that a real problem, like the one researched in this study, can allow
coopration in finding a solution without only theorizing about the problem but also taking action
in and for the environment.

According to McNiff (1997:13) researchers should be critical of the notion that "theory
determines practice.' This traditional approach to theory has been a problem for some researchers,
in that practice was expected to be fitted into a mode in order to acknowledge the findings as
reasoned justifications of scientific knowledge. It is also not appropriate to perceive practice as
determining theory. According to Zuber-Skerritt (1996:24-25) 'theory and practice are not two
distinct entities, but two different and yet interdependent and complementary phases of the change
process.' This view points to the fact that theory provides a research framework within which the
researcher can question the reflective base upon which the practical actions are carried out. But
practice can also question the theoretical framework guiding the actions'.

Action Research is also problem posing rather than providing answers to problems. Commenting
on Action Research, Magonare and her co-workers (Magonare et al 2000:15) state that it
involves 'a search for the right questions appropriate to educational situations as well as their
answers,' for example, the following questions could be asked:

- Why was the researcher dissatisfied with the EEC's environmental learning problems?
- What must be changed or improved?
- How should the learning programmes be changed and developed to be effective and
  relevant?
- How should the researcher observe the change?

Lotz (1996:37) and Zuber-Skerritt (1996:66) support the view that Action Research encourages
the involvement of a participatory and reflective orientation to practice, which in this case is
essential for the participants to question their practice with the aim of bringing change into their
work. McNiff et al (1996) and Mrazek (1993) re-affirms this view of Action Research being a
practical, collaborative and reflective inquiry method. The stages of Action Research are indicated
Aspects of this method are that it is

- action-based and that assessment should be continuous and be part of the process.
- based on dialogue, conversation and critical reflection of participants

This means that the EO’s and researcher should dialogue on their work and continue to question the way they facilitate, develop their learning programmes and how they are making EE policy issues relevant to their practice.

Action Research is also flexible and systematic (McNiff 1997, Lotz 1996). Thus, unpredictable elements of the research process can be accommodated. It therefore makes it an appropriate method for this specific study. Government Departments have a lot of changes taking place from time to time. Therefore the investigation will be carried out systematically. The focus will be on the research process rather than looking at research methods as modes.

According to McNiff (1997:08) Action Research also 'possesses within itself the ability to incorporate previous approaches'. By 'previous' McNiff is of the opinion that any method that has been used previously by other researchers can be used to complement an Action Research strategy. For example, in this research investigation, the quantitative orientation will be used only when quantifying the number of schools, EEC’s, EO’s and educators participating in the research process.
This research also requires an active voice of the researcher. When the data process and data gathered are analysed and interpreted, there will be a need for the researcher to perceive his practical work as the central focus of his research through critical reflection and self study (Lotz, 1996: 17) and this will certainly be more explicitly described and interpreted and owned by the use of the personal pronoun indicating the active voice. It is therefore, the researcher's intention to use the active voice approach in chapters 4 & 5.

1.6 PROGRESS OF RESEARCH

The research study is divided into five chapters, dealing with the following issues:

Chapter 1 deals with the introduction to the research process and methodologies. It also gives an overview of the plan of action and philosophical background to the research. The chapter is concluded with the terminology list.

Chapter 2 introduces EEC's policy and the relationship between this policy and the major events and principles shaping EE practice in the national and international environmental education arena. This is done in order to reflect on the EECs' policy, and to bring this into focus as a guiding framework for the work of the EO's in EEC's.

Chapter 3 deals with EECs' existing environmental learning programmes. These programmes are discussed with reference to OBE.

Chapter 4 is concerned with the data gathering process, the data itself and the interpretation thereof. Methods and techniques used are also discussed.

Chapter 5 deals with the recommendations and conclusions of this research investigation. An open-ended approach to claims and recommendations made is maintained with an aim of encouraging EECs' staff and other interested persons to continue with people-work-centred research.

1.7 TERMINOLOGY

A democratic society refers to a society building on the principles of human rights and human dignity.

Active learning refers to an open-framework process that encourages educators to plan curriculum activities using different methods of investigation, finding information and taking action

Active learning orientation refers to an education approach, which encourages learners to be actively involved in critically constructing knowledge which will enable them to address and respond to environmental issues.
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Areas of learning</td>
<td>refers to the knowledge areas (contexts) in which specific learning outcomes are demonstrated.</td>
</tr>
<tr>
<td>Action Research</td>
<td>refers to a research method that involves the investigation of professional experience linked to practice.</td>
</tr>
<tr>
<td>Continuous assessment</td>
<td>refers to assessment carried out from the start of the teaching and learning practice until the learning activities are completed.</td>
</tr>
<tr>
<td>Core Functions</td>
<td>refers to the Mpumalanga DEA&amp;T, EE Directorate's specified tasks to be performed by the EEC's.</td>
</tr>
<tr>
<td>Curriculum</td>
<td>refers to all aspects of teaching and learning, such as the intended outcomes of learning, the development of learning programmes and assessment strategies.</td>
</tr>
<tr>
<td>Curriculum design</td>
<td>refers to the features and characteristics of the Curriculum decided on in terms of agreed principles.</td>
</tr>
<tr>
<td>Curriculum Framework</td>
<td>refers to a set of principles and guidelines, which provide both a philosophical base and an organisational structure for a curriculum development at all levels of education.</td>
</tr>
<tr>
<td>Curriculum principles</td>
<td>refers to the key features of the curriculum framework.</td>
</tr>
<tr>
<td>Environmental Education</td>
<td>refers to educational processes leading, or enabling environmental learning about, in and for the environment.</td>
</tr>
<tr>
<td>Environmental learning</td>
<td>refers to learning processes about, in and for the environment. This include knowledge, understanding, skills, attitudes, values as well as responsible behaviour towards the environment.</td>
</tr>
<tr>
<td>Environmental learning programmes</td>
<td>refers to a set of structured activities to guide learning about, in and for the environment.</td>
</tr>
<tr>
<td>Essential (critical) outcomes</td>
<td>refers to generic, cross curricular learning outcomes, which underpin the unit standards qualifications on the National Qualifications Framework (NQF) and inform the formulation of specific outcomes.</td>
</tr>
<tr>
<td>Focus group interview</td>
<td>refers to small groups of participants involved in the interactive discussion of a set of questions.</td>
</tr>
</tbody>
</table>
Functionalist view of education refers to the notion that education is a function to be performed only.

Interactive workshops refers to workshops focused on the involvement of the participants in discussions.

Instrumentalist view of education refers to the notion that education is an instrument to be used for social change.

Learning outcomes refers to the results or achievements of teaching and learning. Outcomes are of two kinds, viz. essential and specific outcomes.

Learning programmes refers to programmes designed to help learners meet outcomes.

Lifelong Learning refers to the idea that all people can continue with learning through various formal and non-formal programmes throughout their lives.

National Curriculum Statement refers to the guiding principles of the National Curriculum in Education and Training.

National Qualifications Framework refers to the Education and Training qualifications framework based on the OBE system. It provides a system on which all learning standards, levels and qualifications will be regarded for national recognition.

Outcomes-based education (OBE) refers to learning shaped by outcomes, knowledge, integration and formative assessment.

Quantitative research refers to a research technique which relies heavily on statistical data. The data gathered is the focal point of the research.

Qualitative research refers to a research technique with the researcher as principal focus and aiming at gathering data that promote the discovery and emergence of new ideas/data for practice.

Reconstruction and development programme (RDP) refers to the South African Government’s principles and guidelines on how the South African transformed.

Senior Phase

refers to a developmental phase within the General and Training Band, for learners in Grades 7-9.

Sustainable living

refers to living that enables the capacity of the environment to maintain and support life now and not compromise that of future generation.

Structured questionnaire

refers to a set of formulated questions which respondents need to answer.

Specific outcomes

refers to the learning outcomes specified for individual areas of learning at different levels of complexities.

Teaching

refers to the concept of teaching, educating, training and developing learners through the delivery of a programme of learning.
CHAPTER 2

ENVIRONMENTAL EDUCATION CENTRES IN MPUMALANGA

2.1 INTRODUCTION

The origin of EEC's in Mpumalanga has already been indicated in chapter 1. In this chapter the focus will be on the DACEMs EE Directorate Policy Framework and how this policy framework has been shaped and influenced by some of the International and National events in education, about, in through and for the environment and EE guiding policies. The chapter will then end with a brief discussion of the strengths and weaknesses of the DACEMs policy framework for EE learning programmes, their development and practice.

Furthermore, the discussion in this chapter will enable the reader and the EO's to understand the functioning of the EEC's in the province and will include development of their Core Functions and learning programmes. The environmental learning programmes of the EEC's will then be assessed in regard to their effectiveness and relevancy.

2.2 DEPARTMENT OF AGRICULTURE, CONSERVATION AND THE ENVIRONMENT IN MPUMALANGA

Figure 2.1 indicates the position of the EEC's within the structure and policy framework of the DACEM (1998). It is important to understand that government policy frameworks of different departments are reviewed from time to time because policies in a democratic society are not only formulated for people, but, are also formulated by the people in a participatory, collaborative manner to ensure that people own and commit themselves to the policies.

Figure 2.1 The position of the EEC's within the policy framework of the DACEM
The EECs' policy is formulated within and in line with the EE Directorate's vision, mission and objectives (see Figure 2.2). According to Gough (1993:33) a policy is 'a set of principles which guide action,' and the English Penguin Dictionary (1986:627) defines policy as 'a definite course of action selected from among alternatives to guide and determine present and future decisions,' or 'an overall plan embracing general goals and procedures, especially of a government body.' For the purpose of this study policy is perceived as a course of action guided by an overall plan of goals, principles and procedures to determine the present and future decisions within the DACEMs' EE Directorate.

Figure 2.2 The EE Directorate's Policy Framework in the Department of Agriculture, Conservation and Environment

VISION

The vision of the Directorate is to strive towards an environmentally literate society in which an ecologically balanced, sustainable environment is ensured, where everyone enjoys an improved quality of life.

MISSION

The mission of the Directorate is to develop and co-ordinate EE initiatives to ensure lifestyles that reflect commitments to sustain living through cross-sectoral activities.

DEFINITION

The 1997 Tbilisi Conference arrived at the following definition:

Environmental Education is a process of developing a world population that is aware of, and concerned about the total environment and its associated problems and which has the knowledge, skills, motivation and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones.

Continue on page 14
EE DIRECTORATE CORE FUNCTIONS

Core Function 1
Promote and increase the environmental awareness of civil society, and assist in developing the knowledge, values and commitment necessary to achieve sustainable development.

Objective 1
Develop courses, programmes and projects to foster a clear understanding of interrelationships between the socio-economic, political, cultural and biological issues, in local, national and global spheres.

Objective 2
To integrate EE in all programmes, levels, curricula and disciplines of formal and non-formal education.

Objective 3
To promote capacity building programmes and projects that assist people in developing social and organisational skills and to employ local and other knowledge in assessing environmental concerns of specific groups.

Objective 4
To encourage and support the involvement of special interest groups in the design, planning and implementation of EE and capacity building programmes and projects

Core Function 2
Promote equitable access to sustainable use of natural and cultural resources, and promote environmental sustainable lifestyles.

Objective 1
Promote sustainable natural resource use.

Objective 2
Promote sustainable lifestyles.

Core Function 3
Develop and sustain enabling processes for EE.

Objective 1
Establish and support environmental structures.

Objective 2
To compile and co-ordinate the dissemination of environmental related information through relevant structures.

Objective 3
To map avenues of communication for the dissemination of information about environment.

Core Function 4
Initiate and support research and development processes that will assist in the implementation of EE.

Objective 1
To identify appropriate research priorities for the implementation of EE policy.

Objective 2
To initiate appropriate research in addressing environmental problems.

Objective 3
To initiate appropriate research to address the EO’s own capacity.

Core Function 5
Co-ordinating enabling environmental public awareness campaigns.

Objective 1
Though the EEC's in the DACEM EECs' managed to indicate the broad Core Functions, they failed in mentioning their strategies of implementing the Core Functions and what the EEC's were about. The lack of the EEC's in this area is reiterated by Gough (1992) when he argues that policies should be able to

- outline the broad goals of the centre in its different areas of operation;
- outline how the centre intends to accomplish these goals and
- communicate 'what the centre stands for' to its community.

The EE Directorate Core Functions (see page 14) were not developed with possible strategies of how they were to be carried out. This shortcoming opened a door for EO's to come up with what they thought might help. For example in trying to address Core Function 2 they taught communities how to make baskets and mats using grass (incema). However, Core Function 3 which deals with developing and sustaining 'enabling processes for EE' was not considered in the making of the artefacts.

The development of the Core Functions was influenced by the International and National environmental events and guiding principles in EE implementation, globally and nationally (see 2.3 and 2.4).

2.3 POLICY FRAMEWORK FOR EEC'S IN THE DEPARTMENT OF AGRICULTURE, CONSERVATION AND THE ENVIRONMENT

Figure 2.2 indicates the broad set of policy objectives and policies which guide the EECs' activities in the DACEM at present. From these Core Functions it is clear that environmental practice in the EE Directorate is shaped by the international and national environmental events and guiding principles in EE (see Appendices 2.1; 2.2; 2.3 and 2.4). For examples in this regard see 2.4.3.

2.3.1 Definitions of Environmental Education

There are numerous and varied definitions of EE which are the result of the various situations in which they are formulated. Thus, sometimes there is a dangerous tendency by environmental educators and EO's to randomly 'pick' a definition and 'implant' it in their practice, without critically looking at whether such a definition will assist or enable them to perceive their work in a better and constructive manner. This must be avoided. Therefore the acceptability of any definition will depend on its capacity to define the environmental situation or context clearly, relevantly and comprehensively with those who are in that situation. This goes without saying that a 'complete or once-for-all' definition about, in and for EE is not valuable for EE practice. It will drive EE practice into a rigid, uncritical, unchallenging mode of EE practice. Even if it were possible, it would not be an asset for EE, it would actually render EE processes narrow, irrelevant and ineffective. It is therefore imperative that environmental educators define the environment and environmental issues within their contexts, thus, making such definitions relevant and appropriate to their own practice.

Various concepts are used as broad themes in EE definitions. Some of these concepts appear in the following definitions:
EE is a process; a lifelong learning process, which could be planned and it may occur in many different contexts. It is a two-way process in which everyone is a learner and a teacher.

- EE promotes a critical understanding of environmental issues and problems.
- EE entails practice in the decision-making and self-formulation of codes of behaviour about issues concerning environmental quality.
- EE is about sustainable environmental systems in their totality.
- EE promotes participation.
- EE is about learning; all aspects of learning are considered.
- EE is multi-disciplinary and it uses a broad range of learning methodologies.
- EE promotes working individually and collectively towards the goals of sustainable living.
- EE strives to develop responsible and action oriented environmentally literate citizens.


2.3.2 Rationale / Legal mandate for Environmental Education programmes in the Department of Agriculture, Conservation and the Environment in Mpumalanga

In the discussion of the International and National EE principles guiding practice (see 2.4) an indication shall be made of the rationale or legal mandate of EE about, in through and for environment practice locally, continentally and globally. However, it is appropriate to indicate the following policy documents that refer to EE as an important function of the South African government in partnership with civil society.

- The Constitution of South Africa (1996b) in its Bill of Rights, section 24 clearly states the rights of all South Africans to a healthy environment. Thus, the importance of EE processes in education in order to realize a healthy environment ...
- The National Environmental Management Act, no. 107 of 1998 (SA: 1998) affirms the important role of EE in our society
- The White Paper on Environmental Management Policy (SA: 1997c) principles 5 and 6 affirms the role of EE:

  - Principle 5 (goal 5) states that environmental management policy should promote environmental literacy, education and empowerment of South Africa’s people. Increase their awareness of, and concern for environmental issues and assist in developing the knowledge, skills, values and commitment necessary to achieve sustainable development.

  - Principle 6 states that environmental management policy should develop and maintain information management systems to provide accessible information to interested parties ...

- The White Paper on Education and Training (1995c) 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, ...
2.3.3 Environmental Education Centres’ goals and objectives in the Department of Agriculture Conservation and Environment in Mpumalanga

Nosow and Clark (1976:05) in their management by objectives (MBO) strategy, define a goal as 'a clear statement of purpose (universally understood) which gives direction and purpose', whilst the Penguin English Dictionary (1986:355) defines a goal as 'an end towards which effort is directed.' From the two definitions, it is clear that a goal means to direct intended efforts towards what one wants to achieve.

Objectives are defined by the Shorter Oxford Dictionary ([ ] : 1426) as 'expression or denoting the objective of an action.' The Penguin English Dictionary (1986:553) defines objectives as 'something towards which efforts are directed.' These two definitions concur with the Rhodes course in EE (1995 :07) which states that an objective denotes the steps one takes in order to reach the goal, that is, the how of reaching the goal (see Figure 2.2). For the purpose of this investigation, the researcher will use the definition of the Rhodes course in EE.

2.3.4 Existing environmental learning activities in the Department of Agriculture, Conservation and Environment in Mpumalanga

According to Lotz (1998) and the Core Functions of the EE Directorate in the DACEM, some of the activities of environmental learning are the following:

- Development of appropriate environmental learning programmes, developed posters, news- paper articles, fact sheets, radio-talks and celebration of Commemorative days.
- Planning of programmes for the celebration of Commemorative days.
- Development of environmental learning programmes on socio-economic, political, cultural and bio- physical environmental issues.
- Conducting capacity building programmes for EO’s.
- Development of resource materials.
- Development of knowledge and understanding of active learning in the environment.

2.3.5 Schools visiting Environmental Education Centres in Mpumalanga

The schools visiting the residential EEC’s in Mpumalanga are from all the provinces in South Africa. Of course, those provinces which are closer in proximity to Mpumalanga are frequent visitors to the EEC’s.

2.3.6 Ways of evaluating / assessing the Environmental Education Centres environmental learning programmes

The term ‘monitor(ing)’ is defined by the Penguin English Dictionary (1986:532) as 'to regulate or control the operations of e.g a machine or process' and the term 'evaluate' (Penguin English Dictionary 1986:282) as 'to determine the amount, value or significance of' Assess is defined as 'to determine the importance, size or value of' (Penguin English Dictionary 1986:143). From these definitions it seems that evaluating and assessing can mean the same thing, that is, determining the importance, the value and the amount or size of what one is evaluating or
assessing. Monitoring and assessing EE learning programmes can therefore mean the checking or controlling of programmes and at the same time determining the importance and value of the EECs’ EE guiding principles.

The Southern Development Community (SADC) policy document on EE developed by the Regional Environmental Education Centre (REEC) at Umgeni-Howick (1999: 10) says that monitoring and evaluation (assessment, own emphasis) should inform and shape policy and constantly feed into the policy cycle to enable ongoing improvement to policy strategy.

Monitoring can be self-assessment done routinely and evaluation could be done by all participants involved and is an ongoing process of reflecting on what is happening. The point emphasised here is that monitoring and assessment are necessary in EE. Some of the aspects which will be used in gathering, reflecting on, collating and analysing the research data in the assessment process of environmental learning are

- achievement of goals, objectives and outcomes.
- teaching and learning strategies
- the use of resource materials.
- EO’s capacity building service.
- learner responses and involvement.

The following strategies or methods will be used in the monitoring and assessment of environmental learning programmes at the EEC’s:

- Observation
- Questionnaires
- Participatory workshops
- Record keeping
- Photos
- Newspaper cuttings
- Focus group interview

2.4 INTERNATIONAL AND NATIONAL ENVIRONMENTAL EDUCATION PRINCIPLES GUIDING ENVIRONMENTAL EDUCATION PRACTICE

O’Donoghue, R. (1983: 03) argues that:

_The struggle for education reform must address the deepening socio-ecological crisis and economic ‘development’ failure apparent in increasing environmental degradation and poverty. Its current emphasis on science, technology and vocational education is unlikely to achieve this unless the environment, development and environmental education are placed at the centre of the policy and curriculum debate._

It is this kind of thinking that the International world embraced and sought way of ensuring that education becomes the vehicle for the implementation of environmental learning programmes and strategies which lead to the transformation of societies towards sustainable living standards.
Fien, J. (1993: 01) concurs with the above-mentioned view when he says that:

*The nineties will be more about finding answers to our problems than about continuing to highlight those problems. Whatever the nature of the changes required, Education is of paramount importance. The well-being of all future generations depend on the knowledge base and values of those currently in our schools and colleges. The challenge is daunting, in as much as each and every delay in bringing about the necessary transformation will cost us dear in the future.*

It is precisely the urgency in transforming education in South Africa that prompted the National Education Department (1995c) to strive towards the integration of EE processes in all levels of the General Education and Training Band. Thus, the Department of Education and Training responded decisively to the call of the global community that education should construct and change the social fabric of societies to enable them to live sustainable lifestyles.

### 2.4.1 International events and principles guiding Environmental Education practice

In this section some of the International events and principles guiding EE practice will be indicated. However, only those events and principles which shaped or influenced the EE Core Functions in the DACEM will be indicated. Concluding 2.4.1 & 2.4.2 sections, will be a brief discussion of how these events and guiding principles have influenced the environmental learning programmes in the EEC's in Mpumalanga.

1972 The Stockholm Conference on Environment (UNESCO-UNEP, 1976) produced the Belgrade Charter which was launched in 1975. The purpose of this Charter was to launch a solid foundation for a worldwide environmental education programme.

1978 The UNESCO-UNEP (1978) Declaration in Tbilisi (Russia) focussed on Education for the environment, "...environmental education should ...further the development of conduct compatible with the preservation and improvement of the environment." The adoption of the 12 guiding principles for effective environmental education programmes was a major step for the world nations taking *action in and for* the environment. See Appendix 2.1.

1987 The Brundtland Report (1987) Our Common Future (WCED). This Report (1987:xiv) clearly emphasised the role of teachers when it stated that "...the world’s teachers ... have a crucial role to play in helping to bring about the extensive social changes needed for sustainable development", for example poverty, growth, population growth, socio-economic and other issues.

1991 Recommendations of the Caring for the Earth publication (Yeld 1997). Principles for sustainable lifestyles introduced a new dimension to the environmental field namely, that communities were encouraged to care for the earth by ensuring that their lifestyles were sustainable (see Appendix 2.2).

1992 The Rio Summit (UNCED 1992b) emphasised capacity building. That is small groups of people taking action *for* the environment. It also took an integrated approach towards
people taking action for the environment. It also took an integrated approach towards addressing environmental issues through the use of culture and traditions in and for the environment.

1992 Agenda 21 Chapter 36 (UNCED 1992a). It emphasised the importance of education in promoting sustainable development.

1992 NGO Forum (Non-Governmental Organisation): Took place concurrently with the Earth Summit (UNCED 1992). It focussed on principles for Environmental Education for Sustainable Societies and Global Responsibility (NGO Forum 1992). It also encouraged groups of people (youth, women, environmental educators, ecologists, farmers, etc.) to take action in and for the environment. The Principles for Equitable and Sustainable Societies were grounded on the view of value based EE as an act for social transformation (see Appendix 2.3).

1997 The Rio+ Five Conference (Earth Summit + 5) reviewed its programme after five years from the Rio Summit commitments and called for action in environmental sustainable development. Twenty-seven principles were recommended for action in the environment (Earth Summit + 5, 1997).

There is no doubt that International events in, and for the environment produced important policies, principles and objectives on EE implementation. It is therefore not surprising that South Africa need to be guided by these International policies, principles and objectives promoting and encouraging the implementation of EE.

EE guiding policies, principles and objectives are either used as they are implanted or changed to meet local needs. In the DACMs' EE Directorate, the International EE policies, principles and objectives have been integrated into some kind of new principles called Core Functions (see Figure 2.1). It is clear that most of these Core Functions have been influenced by the Tbilisi Principles (Guiding Principles for Effective Environmental Education adopted at the Tbilisi Inter-Governmental Conference on EE held in Tbilisi, Russia in 1997). For example, Core Function 1 deals with issues of developing sources, projects or programmes which would foster clear understanding of interrelationships between political, socio-economic, cultural and biophysical issues in local, continental and global settings. Core Function 1 is directly influenced by the guiding Principles for Effective Environmental Education (1978). Actually, almost all the Core Functions are based on the Tbilisi Principles. This is so because the Tbilisi principles were developed before the other principles or objectives mentioned in this discussion (see Appendices 2.2, 2.3 & 2.4).

The NGO Forum which took place concurrently with the Earth Summit (UNCED 1992) developed EE principles for Sustainable Societies (NGO Forum 1992). In these principles nations of the world are encouraged to take responsibility in encouraging the youth, women, environmental educators, ecologists, farmers and other groups of people to take action in and for the environment. This view is seen in the Core Functions of the EE Directorate. For example, Core Function 5 & 6 are partly based on Some Principles of EE for Equitable and Sustainable Societies. Partly because they are probably also based on the UNESCO-UNEP Categories of Environmental Education Objectives (Appendix 2.4).
2.4.2 National events and policies guiding Environmental Education practice

The researcher will first indicate the relevant National events and policies about, in through and for the environment guiding EE practice in South Africa and then briefly discuss how these events and policies have influenced and shaped the EE Objectives found within the Core Functions of the DACEMs EE Directorate.

1989 The adoption of the White Paper on Environmental Education (1989). Though this was an expert driven document (RDDA approach) it provided South Africa with a policy framework to guide EE programmes both in the formal and non-formal education settings. However, this document was not acceptable to the majority of the South Africans on the grounds that they did not contribute to its contents.

1993 The Dikhololo Environmental Education workshop at Brits (O’Donoghue 1983:02). The delegates of this workshop ‘tasked the Environmental Education Policy Initiative (EEPI) to foster broader EE processes through consultation within the regions and through participation in policy and curriculum initiatives in formal education’(O’Donoghue [ed.] 1983:02).

1995 The White Paper on Education and Training (SA:1995c:15) states that EE should be involved with the

... interdisciplinary integrated and active approach to learning, must (also) 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 ensuring that all South Africans present and future enjoy a decent quality of life through the sustainable use of resources.

1996 The Constitution of South Africa (1996b) included an environmental clause in the Bill of Rights, section 24, which states that:

Everyone has the right (a) to an environment that is not harmful to their health or well-being; and (b) to have the environment protected for the benefit of present and future generations, through reasonable legislative and other measures that (i) prevent pollution and ecological destruction; (ii) promote conservation; and (iii) secure the ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.


1997 The New Education and Training Curriculum 2005 (SA:1997a) contains the following guidelines for EE:
EE is to be integrated in all learning areas
The environment is stated as one of the six phase organisers of learning programmes
The National Environmental Education Programme (NEEP) has been put in place to precisely implement an EE programme in all levels and all bands of the education system.

2.4.3 Implications of the International and National events and policies guiding environmental practices

Only one EE policy document was formulated prior to 1990. This was the White Paper on Environmental Education (1989). This document was never widely circulated. Though it provided South Africans with a policy framework to guide EE programmes in formal and non-formal education. The majority of the South Africans felt that it was not appropriate because it excluded their participation in its formulation stages. However, the researcher feels that this White Paper did point out that EE could be conducted in both formal and nonformal education.

It was the Dikhololo Environmental Education Workshop at Brits that came up with suggestions of taking EE concerns forward in South Africa. It was attended by delegates from various stakeholders. Thus, it was a national workshop representing the views of different people of South Africa.

According to O'Donoghue (1993:02) the Dikhololo workshop

*tasked an EEPI working group with fostering environmental education through broader consultation within the regions and through participation in policy and curriculum initiatives in formal education.*

The EEPI Task Group and other EE action groups (stakeholders for and in the environment) were later in the 1990s involved in various Government policy consultation ventures. The impact of these EE policy and guiding documents is seen in the Constitution of South Africa (1996b), Bill of Rights, section 24, which emphasises the rights of all South Africans in regard to the environment. Needless to state that the Constitution has also influenced the Core Functions of the EE Directorate in the DACEM, for example, Core Function 2 which deals with equitable access to natural resources and their sustainable use.

The White Paper for Education and Training (1995c) and the Green Paper on Environment (1996c) are both indicating to environmental learning as an integral part of formal education. These policy issues are an indication of the Government's commitment to adopting a holistic approach to addressing environmental problems by empowering and involving all South Africans in environmental learning. Some of the Core Functions of the DACEMs EE Directorate are also based on these South African policies on the environment. For example, all the Core Functions are about education.

Though the Core Functions of the EE Directorate in the DACEM are based and influenced by the International and National EE policies, principles and objectives, it is clear that these Core Functions are not clearly, relevantly and comprehensively formulated.
Firstly, they are not clear because most of the objectives seem to be ambiguous. For example, Core Function 2 and objectives 1 and 2 mean the same thing. Core Function 4 and objectives 1 and 2 also mean the same thing. Instead of the EE Directorate using the UNESCO’s Categories of Environmental Education Objectives, the EE Directorate decided to develop its own objectives. The researcher thinks that it would have enhanced their EE practice if the UNESCOs’ Objectives were integrated with those of the EE Directorate.

Secondly, the Core Functions are not relevant because they have omitted important principles and objectives (see Appendices 2.1; 2.2; 2.3 and 2.4) which should have been part of the Core Functions. For example the point of teachers and learners is not indicated in uncertain terms. The researcher thinks that these Core Functions should emphasise the importance of teaching and learning in, for and about the environment as stated for example in the Brundtland Report (1987); the Rio Summit (UNCED 1992b) and the White Paper on Education and Training (1995c).

Thirdly, the Core Functions are not comprehensive because they exclude some of the most important environmental policy issues which are a must to cover the 21st Century. The development of human-beings as resource for the country is a shortcoming on the part of the EE Directorate in the DACEM. The NGO Forum EE Principle states that ‘... we are all learners and educators,’ when reaffirming the importance of people participating in their right to education.

Though these shortcomings are supposed to be an indication of what the learning programmes lack, the researcher is of the opinion that the EE Core Functions in the DACEM, are actually not guiding what the EEC’s are doing. EEC’s are performing some of the functions indicated in the International and National principles and objectives, for example, all the EEC’s who participated in the research study do conduct learning activities for teachers and learners (see chapters 4 & 5).

It is clear from this discussion in this chapter that there are strengths and weaknesses in the EE Directorates’ Core Functions in the DACEM. The weaknesses have been pointed out and an indication made of the impact these shortcomings have on the EE guiding policies in the EEC’s. For example, some of the EEC’s are complementing the Core Functions with their own Core Functions which they perceive as clear, relevant and comprehensive. In these EEC’s learning programmes designed for teachers and learners are found and conducted by the EECs’ EO’s. However, this cannot be seen as a norm. Any policy that government put for use in its departments is for a purpose. Of course, in this case the problem is that the EE policy in question does not fully address the needs of the people.

2.5 CONCLUSION

Notwithstanding the fact that EE guiding principles and policies are an obligation for EEC’s if they are to achieve the set ’objectives,’ it must be stated that at present (2000) there is no government policy that obliges EEC’s to do so except policy formulated by individual provincial departments. Thus the EE Directorate in the DACEM formulated its own EE Objectives to inform EE practice through its Core Functions.
always be reasons why some aspects of the policy frameworks are challenged or expected to be re-visited for further research.

It is for that reason that these EE Core Functions guiding policy of the EEC’s in the DACEM is included in this research study. Aspects of the policy framework can be assessed and its worth be judged. But this should be done within the context of these ‘aspects.’

Unfortunately, government departments in a transition society do not function like NGO’s in regard to keeping policy frameworks for some years before reviewing them and implementing recommendations made. Government policy in South Africa is constantly revisited due to the fact that we are a nation in transition. It is surprising therefore that our EEC’s EE policy is evaluated every year or so, because of the political changes taking place within departments.

The International and National events about, in through and for the environment and EE guiding principles have been discussed in this chapter in order that we may understand how they impact on the EE Core Functions which guide learning programmes developed and conducted by EEC’s in the DACEM, why these programmes have to be evaluated and how they could be improved.

Though there are some shortcomings in the EE Core Functions, it is clear that the DACEM has a vision of addressing environmental issues not only through formal education (the Brundtland Report, 1987) but, also through non-formal and informal ways (Yeld 1997) as long as these organs of state and NGO’s make a meaningful contribution towards a safe environment for the present generation without compromising the needs of the future generation (Yeld 1997:12).
CHAPTER 3

ENVIRONMENTAL LEARNING IN OUTCOMES-BASED EDUCATION

3.1 INTRODUCTION

In chapter 2 'Environmental Education Centres in Mpumalanga' were discussed by looking specifically at those International and National events, policies and principles which have a direct influence or impact on the EE policies in South Africa in general and EEC's in the DACEM in particular. In chapter 3 the discussion will be on 'Environmental learning in Outcomes-Based Education.'

There is a strong belief among EO's that environmental learning programmes in EEC's should not shift away from the idea that they be guided by aims and objectives (2.4.3) in order to render nature enjoyment to their clients. However, the approach of this research investigation is that EEC's environmental programmes should be guided by the present National Education Curriculum framework, which recommends the need for changes in education and training in South Africa. One of the major changes suggested by the National Qualifications Framework (NQF) is that the traditional aims-and-objectives approach should be dropped and be replaced by the OBE framework (EDUFAC-N/301: 1999) which emphasises learning outcomes.

The OBE curriculum framework is the prerequisite for the achievement of the ultimate vision of education in South Africa, which is:

*A prosperous, truly united democratic and internationally competitive country with literate, creative and critical citizens leading productive, self-fulfilled lives in a country free of violence, discrimination and prejudice (SA: J996a: 01).*

This is a broad education vision of the South African Education and Training Department. In order that it can be realized, all institutions of learning need to work towards implementing the vision. Because EEC’s are also institutions of learning, they need to contribute to this policy by ensuring that they address environmental issues through learning programmes that are based on the socio-economic, political and bio-physical dimensions of development. After-all, the EE policy in the DACEM is strongly shaped by the Tbilisi Environmental Education Principles as discussed in 2.4. It is therefore necessary that their environmental learning programmes be continuously assessed (see 3.7) so that they support the Department of Education and Training in its commitment to transform the lives of the South African people. Whether this Education and Training vision will ever be realized by the South Africans is another issue. What is essential is that South Africa has set out to work towards achieving this ideal.

It is this approach to the EEC’s environmental learning programmes which made it critical for this research study to explore some of the basic principles of the OBE curriculum framework and find out how they can enhance environmental learning programmes in the EEC’s in Mpumalanga. We need to know and understand the OBE curriculum framework in order to understand how environmental learning processes occur and enhance OBE learning about, in through and for the environment. In other words, EEC's guiding principles should be integrated and be in line with what the Education and Training Department in South Africa wants to accomplish.
3.2 THE NATIONAL CURRICULUM FRAMEWORK

3.2.1 Orientation

The National Education and Training Department has introduced Curriculum 2005 (SA: 1997a) as an alternative education system replacing the previous apartheid era one. Though Curriculum 2005 has been reviewed and recommendations made by the Report of the Review Committee on Curriculum 2005 to improve its principles and implementation (SA: 2000), its basic principles and guidelines which provide a philosophical base and organisational structure geared towards transforming the old national education system, have not changed.

According to the Curriculum Framework for General and Further Education and Training (SA: 1996a: 05), the National Curriculum Framework (NCF) wants to establish 'a just and equitable education and training system, which is relevant, of high quality and is accessible to all.' Though it is not in the scope of this investigation to assess the accessibility of EEC’s to all learners in Mpumalanga, it would actually be interesting to know the answer to this issue. Unfortunately this research study will not come up with an answer.

The EDUFAC-N/301 (2000: 03) lists the following as principles of the NCF which the Education and Training Department wants to achieve through the education and training system:

• integrate education and training;
• promote lifelong learning for all South Africans;
• equip all learners with knowledge, competencies and orientations needed to be successful after completing their studies;
• encompass a culture of human rights, multilingualism, multiculturalism, and a sensitivity to the values of reconciliation and nation building, aiming at producing competent thinking citizens.

The above-mentioned principles of the NCF relate to the UNESCO’s Categories of Environmental Education Objectives, some of the Tbilisi Principles and the Principles of Environmental Education for Equitable and Sustainable Societies (see 2.4). However, to clarify this view, the following examples are stated in relation to the Core Functions of the EE Directorate in the DACEM.

The EE Directorate, through its Core Functions envisages to engage learners and teachers in learning programmes that will enable them to develop skills in dealing with various environmental issues in their local communities. These programmes should be planned for all learners irrespective of their socio-economic background. This view is reiterated by Pretorius and Lemmer (1998:04) when they state that:

All individuals, including street children, out-of-school youth, the disabled, citizens with special educational needs, illiterate people, rural communities, squatter communities, and communities damaged by violence, must have access to, and succeed in lifelong education and training of good quality.

The above-mentioned quotation embraces all the participants in society which must benefit from
the education system in general and in environmental education programmes in particular. They need to acquire knowledge, understanding, skills and be aware of those cultural and traditional aspects of society that would enable them to be better citizens. Principles of democracy, peace, conservation, sustainability and productivity are encouraged in all the stated principles, objectives and core functions.

Some of the most valuable critical cross-field outcomes which can be used with the integration of EE principles, objectives and Core Functions of environmental learning within OBE learning are the following:

Critical Outcome (CO):
CO 1. Identify and solve problems and make decisions using critical and creative thinking.
CO 2. Work effectively with others as members of a team, group, organisation and community.
CO 4. Collect, analyse, organise and critically analyse information.
CO 6. Use science and technology effectively and critically by showing responsibility towards the environment and the health of others.
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.

How some of these cross-field critical outcomes may be used by EO’s, see examples given in Figure 3.3 and Figure 3.4.

The Enviro-Feature (1997: 03) describes the NQF as a qualifications framework aimed at creating a new system of qualifications for education and training in South Africa. It is based on the OBE system.

Besides stipulating the predetermined and acceptable outcomes, which must be adhered to, the NQF also indicates the levels, bands and types of qualifications and certificates expected (see Figure 3.1). Its principles are

- integrating education and training;
- giving emphasis to economic, social and political developments;
- promoting flexibility in education and training to allow multiple pathways in achieving the same outcomes;
- promoting quality in terms of agreed national norms and standards;
- promoting portability by allowing learners to transfer credits they have accumulated from one context to another;
- permitting accessibility to all learners to enter appropriate levels of education in a manner that facilitates progression;
- emphasising equal opportunity of all learners in respect of their specialised needs.

All learning programmes are therefore to be developed in such a way that they adhere to these NQF norms, if not so, they will possibly not be supporting what Education and Training wants to accomplish in South Africa. (See Figure 3.3 and Figure 3.4) of the suggestions given in this regard.
Figure 3.1 indicates the Structure of the National Qualifications Framework (SA: 1997b: 12)

<table>
<thead>
<tr>
<th>NQF LEVEL</th>
<th>Band</th>
<th>Types of Qualifications and certificates</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Higher</td>
<td>Doctorates</td>
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<tr>
<td></td>
<td></td>
<td>Further Research Degrees</td>
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<td>7</td>
<td>Education and</td>
<td>Higher Degrees</td>
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<td>Professional Qualifications</td>
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<td>6</td>
<td>Training</td>
<td>First Degrees</td>
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<td></td>
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<td>Higher Diplomas</td>
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<td>5</td>
<td>Band</td>
<td>Diplomas,</td>
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<td></td>
<td>Occupational Certificates</td>
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<tr>
<td>4</td>
<td>Further</td>
<td>School/College/Training Certificates</td>
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<td></td>
<td>Education and</td>
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<td>and Training</td>
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<td>Band</td>
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<td>(NGOs)</td>
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1 = General Education and Training Certificate

<table>
<thead>
<tr>
<th>General Education and Training Band</th>
<th>Senior Phase</th>
<th>ABET Level 4</th>
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<tbody>
<tr>
<td></td>
<td>Intermediate Phase</td>
<td>ABET Level 3</td>
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<tr>
<td></td>
<td>Foundation Phase</td>
<td>ABET Level 2</td>
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<tr>
<td></td>
<td>Pre-School</td>
<td>ABET Level 1</td>
</tr>
</tbody>
</table>
3.2.2 Outcomes-Based Education

The Curriculum 2005 framework requires that all teaching and learning be outcomes-based (OBE). This means that teaching and learning should be learner-centred, results oriented and be based on the notion that all individuals can learn (Lotz et al 1998:04). Whilst it is appreciated that the Education and Training Department is levelling the field for all learners, by working towards providing equal learning opportunities for all learners, it is believed that the environment in which learners find themselves in and their biological abilities will determine to what extent they will learn and acquire knowledge.

Commenting about the outcomes of the OBE system, the EDUFAC-N/301 (1999:04) states that 'the emphasis is not on what the teacher wants to achieve, but rather on what the learner should be able to do and become. Both EDUFAC-N/301 and Lotz (1998:04-05) agrees that OBE calls for:

— Changes in knowledge or content use

Learners are encouraged to explore content, which is localised, contextualised and relevant. They are encouraged not only to gain environmental knowledge, but, also to understand the gained knowledge (newly constructed knowledge) in order to develop caring attitudes, values and appropriate skills about and for the environment. Learners are also encouraged to critically explore their understanding of what they are learning about or what they are acting on (doing). It is important therefore, to note that EE is about learners taking some kind of appropriate action in their local environment, ensuring that their local environment is not degraded, but, is taken care of. Figure 3.3 and 3.4, which have been developed by the researcher, illustrate examples of environmental learning through the Active Learning Environments model / approach. These examples show how an Active Learning Environment model can be used by learners as they busy themselves in constructing meaning of their learning in the environment.

— Changes in teaching methods and processes

Teachers are expected to change their traditional ways of teaching, namely, 'talk-chalk' methods which are mainly directed towards content transmission to more interactive learning ways. This means that learners must be active participants in learning (see Figure 3.3 and 3.4). EO's and other environmental practitioners can assist learners with ways of how to get information with regard to learning content and also ensure that learners do not only explore and question the issue or problem investigation, but, that they also take action and report about what they know and understand about the issue and what they have achieved.

— Changes in assessment and practice

Learners will not be assessed terminally or by tests and examinations only, but will be assessed continuously. This will enable learners to work on their own pace and in different ways taking their individual abilities into consideration. EO's will therefore have to develop learning programmes and assess their learning throughout the learning process. This does not mean that what need to be assessed in active learning environments is behaviour only, but concepts and skills because as they are clarified in the learning process they emerge as competencies and value.
orientations necessary for learners’ development (O’Donoghue 2000:11). It is therefore important to gear continuous assessment in OBE towards the development of critical application of knowledge and skills as a key outcome.

— Changes in the curriculum development

An OBE curriculum is not pre-determined and provided to teachers in the form of syllabi. Curriculum 2005 and OBE requires that teachers and learners be actively involved in the development of learning programmes at a classroom level. EO’s in EEC’s can also develop their environmental learning programmes with the help of their visiting schools. Learners can be requested to indicate what they want to do about the issue. A curriculum can be developed using the active learning environments model.

These changes required in the OBE curriculum are a clear indication that the NQF wants to transform the National Education and Training system in South Africa.

3.2.3 Challenges within Outcomes-Based Education

3.2.3.1 ‘Nice policy, shame about capacity’ (Sunday Times June 4 2000: 22). This quotation indicates a criticism levelled against the Education and Training system of 1995 which stipulates that all learning activities should be based on Outcomes. The writer of this article is of the opinion that Curriculum 2005 will not succeed because there is little done in regard to supporting teachers at school level. The Report of the Review Committee on Curriculum 2005 reaffirms this shortcoming in OBE curriculum. This committee observed that there were shortcomings in the orientation, training and development of teachers for the implementation of Curriculum 2005, and that learning support materials were variable in quality and ‘often unavailable and not sufficiently used in classroom’ (2000:vii).

3.2.3.2 The reluctance of Environmental Officers to see Environmental Education within the Outcomes-Based Education Curriculum

In this investigation (chapters 1 & 2) it has been indicated that EE must be viewed as an integral part of the National Education and Training in South Africa. There is a purposeful lack in the recognition of environmental learning processes as the Core Function of Education. Though EO’s see themselves as doing a specialised function ‘outside’ education, it seems that they should support what education wants to achieve through OBE. After-all, environmental concerns can be best addressed in a coherent and holistic manner by all stakeholders in education.

3.2.3.3 The paradigm shift in Outcomes-Based Education, Teaching and Learning

In OBE teaching, teachers are challenged to move away from a ‘talk-chalk’ learning model, to a learner centred paradigm, which is compatible with the emerging issues in the millennium (Lotz, H., et al 1998:04) internationally. Thus learners are expected to be assisted to take an active part in their learning. The researcher has already alluded to the active learning model (see Figures 3.2) which encourages active participation of learners in their learning.

There is a strong recommendation (Report of the Review Committee on Curriculum 2005 2000)
that teachers should be oriented and trained in OBE. The fact that they were left on the peripheral when Curriculum 2005 and OBE were developed and that colleges of education were also not adequately included, makes it more compelling that teachers and lecturers from colleges of education be brought on board OBE training.

3.2.3.4 Special needs education

The term inclusion in this investigation refers to an education system which also provides for the educational needs of learners with barriers. It is called 'the inclusion approach towards formal education' (MEDEO3-R 1998:36). The National Education and Training policy stipulates that formal education should also accommodate learners with barriers in the regular school depending on the nature of the learner's disability. This Human Right obligation, commits all learners to some form of education irrespective of whatever barrier the learner might be suffering from. One can conclusively state that learners with barriers must also benefit and enjoy this right of receiving environmental learning about, in through and for the environment.

Through the use of the active learning environment approach, EEC’s are enabled to develop learning programmes for learners with barriers with opportunities to develop competences like skills, values and knowledge which will help them to be equipped in taking action in and for the environment.

Some of the aspects to consider when integrating environmental learning into the OBE curriculum of learners with special educational needs are:

— Careful long-term planning

Environmental learning programmes in OBE should be developed in such a way that the learner is encouraged and assisted to acquire the competences and skills set out in the critical cross-field outcomes through the use of the active learning environment approach. EEC’s are therefore expected to develop learning programmes for these learners.

— Accessibility of facilities for learners with special educational needs

This calls for the Education and Training Department to upgrade its educational facilities and other needed resources. EEC’s are not an exception. They too need to upgrade their physical facilities if they want to help all learners to access their facilities and resources.

— Teaching and learning strategies

A variety of teaching and learning strategies are essential in order ‘to meet the range of learners with disabilities’ (MEDEO3-R 1998:37). Specific aspects to note are:

- the educator must know the problems of individual learners. He will therefore have to group them in teams with similar problems so that they can support each other.

- the educator may have to adjust or, adapt the instructional procedures and methods. For example, he might bring all the resources the learner might need into the learning centre
before the start of learning.

- the actual learning activity may require restructuring or alternative experiences to be provided. For example, if the learners were expected to go on / undertake a field trip, the EO in charge of the learning might show them a field trip film for viewing and magazines on field trips before they (teacher and learners) go on a field trip.

— Content for learners with disabilities

Though the instructional procedures and methods may be adjusted or adapted, the content of environmental learning must be the same for all learners. In this way, learners with special educational needs will be afforded with valuable knowledge, skills and values to participate actively in addressing and improving the quality of the environment.

— Variation of disabilities

Learners with mild or moderate intellectual disabilities require more healthy structured teaching strategies and in-structural methods for learning. On the other hand, learners who are severely disabled, either physically, visually, intellectually or have multiple impairments, are to be catered for in special learning centres. Though learners with mild or moderate intellectual disabilities can benefit from environmental learning, those with severe disabilities might not.

3.2.4 Critical Outcomes

The NQF stipulates the critical cross-field outcomes. The development of Curriculum 2005 and OBE is based on them. They also guide all learning programmes within the GET band. At the other levels they guide understanding and other competences that enable learners to achieve them. It is important that 'critical outcomes should be considered when learning outcome statements are written and when environmental learning activities are planned and assessed during active learning in and for the environment (Lotz et al 1998:20).

Below is a list of critical cross-field outcomes, which are relevant to the OBE curriculum. According to these critical cross-field outcomes, learners should be able to demonstrate successfully, their ability to

• demonstrate an understanding of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation;
• use science and technology effectively and critically showing responsibility towards the environment and health of others;
• communicate effectively using visual, symbolic, and / or language skills in various models;
• collect, analyse, organise and critically evaluate information;
• work effectively with others as members of a team, group, organisation and community;
• identify and solve problems and make decisions using critical and creative thinking.

(SA: 1997b 06)
As in the first paragraph of this section (3.2.3), these critical cross-field outcomes should always be considered when environmental learning programmes are planned and developed in the EEC’s. Owing to the fact that these are critical guiding principles in education, EE processes in active learning can also be guided and be enhanced by these NQF principles.

3.2.5 Specific Outcomes versus Learning Area Statements

This research investigation will not explore or discuss the specific outcomes, described as 'the specific knowledge, understanding, skills, values and attitudes which should be demonstrated by learners in the context of each of the learning areas (EDUFAC-N/301/3:09), because the Report of the Review Committee on Curriculum 2005 has recommended that they be dropped (1.1) and that Learning Area Statements be introduced. However, from the observation made by the Sunday Times on June 4 (2000:06) on this issue when it stated that Learning Area Statements will 'pin down what a pupil should know and be able to do in each of the ... learning areas,' the researcher thinks that the difference in meaning will be minimal in these two guiding principles of OBE.

It is important to note that when this research study was started early in 1999, EO’s were workshopped in using both the critical and specific outcomes when planning their environmental learning programmes. Thus, EEC’s may use either or both of the outcomes mentioned during their workshops.

3.3 THE ACTIVE LEARNING ENVIRONMENTS MODEL

Initially Curriculum 2005 included the environment as one of the six phase organisers of learning within its structural design. However, the Report of the Review Committee on Curriculum 2005 has recommended that all the phase and programme organisers be dropped (2000). A new approach must therefore be sought to integrate EE processes in learning areas, that is, implementing EE in all levels and phases of the Education and Training system (SA: 1995c). The researcher is of the opinion that the aspect of the White Paper on Education and Training (SA: 1995c:22) policy which says that:

\[
\text{Environmental Education, involving an interdisciplinary, integrated and active approach (own emphasis) to learning, must be a vital element of all levels and programmes of the education and training system, ...}
\]

can be best implemented through learning programmes at the EEC’s based on the Active Learning Environments approach because it is an open-ended and interactive approach to learning. This will be clearly illustrated through the developed learning programme in Figure 3.3.

According to O’Donoghue (2000:02) the active learning model can be used in any learning area during active learning. It can also be used in EEC’s during environmental learning. The active learning environment model does not regard EE as something ‘there’ to be used as an instrument, but sees EE as involving ‘processes’ that can be realized through the facilitation of active environmental learning.
Figure 3.2 indicates an Active Learning Environments model about, in, through and for the environment. (Magonare et al 2000:6)

The EE process in active learning environments (Figure 3.2) can be implemented at any part of the model. For example, a teacher and her learners at Khumbula High School in White River, wanted to know more about the inadequate water supply at their school and started their investigation in their classroom (local environment) by telling their own experiences about this problem. They then invited a speaker from the Department of Water Affairs and Forestry, who gave them a talk on and resource materials of water in South Africa. After that they had a session on sharing their new experiences and information about the issue again. They ended up writing a report (for action-taking) to the Transitional Local Council requesting that this problem be attended as soon as possible. During the learning process, the teacher assisted the learners with information sources, asked simple probing questions that encouraged cooperative environmental learning and the sharing of the information and report with other teachers in the school.

It is also essential to note that the active learning environments model encourages teachers and EOs to develop environmental learning programmes using local or topical issues by

- sharing information and findings that raises more questions to be explored, reported and acted upon;
- exploring a problem and getting information before reporting on the issue or taking
action in some way;
• taking action by trying out an idea, exploring how it works and getting more information to make it work better. (O'Donoghue 2000:07).

Assessment in the Active Learning Environments model has been discussed in 3.3. In this section some competences which may be developed through this model are mentioned, namely,

• the designing of investigations, for example in class projects.
• the co-operative learning skills, for example in documenting and assessing how groups work together.
• an ability to handle complex problems, for example, how information is reported, organised and how technically accurate it is may be evidence of this skill.

Without developing knowledge and concepts, environmental learning will fail to accomplish the desired outcomes in continuous assessment. Assessment is therefore imperative in the Active Learning Environments model in order to continuously inquire whether learners are enabled to acquire knowledge, skills and values needed in and for the conservation and protection of the environment.

3.4 ENVIRONMENTAL LEARNING PROGRAMMES WITHIN THE OUTCOMES-BASED EDUCATION FRAMEWORK

3.4.1 Learning programmes for Senior Phase learners

Though, environmental learning programmes might be used for almost all learners in terms of their phases, with minor changes in regard to developmental characteristics, this study makes a purposeful attempt to look at environmental learning programmes for Senior Phase learners who attend or visit EEC's in the DACEM. According to the Government Gazette (SA: 1997b:09)

Senior Phase learners in this developmental stage need learning programmes which

should create opportunities ... to be informed about career and further learning opportunities about ways and means of realizing their expectations for their future, and about their rights and responsibilities as citizens in a democratic multi-cultural society.

In order that these learners be able to show evidence of realizing their expectations for their future, and about their rights and responsibilities they must be educated and trained in decision-making, thinking and problem solving, how to assimilate, retain and transfer knowledge (MEDEO3-R, 101 / 1998:27). This means that when EO’s develop learning programmes for the Senior Phase learners they should know and understand that these learners are

• increasingly able to reason independently of concrete materials and experiences
• able to engage in open arguments
• willing to accept multiple solutions to single problems.
(SA: 1997b:08)

Thus, environmental learning programmes that are more abstract and more area specific should be developed” (SA:1997b:08). The examples of environmental learning programmes (Figure 3.3
& Figure 3.4) and the templates of the same environmental learning programmes (Appendix 3.1 & Appendix 3.2) are based on the knowledge and understanding of the characteristics and developmental stage of the Senior Phase learners.

Figure 3.3 indicates an example of a learning programme about, in, through and the environment within the Active Learning Environments model for a Senior Phase learner. Developed by the researcher on the topic: Vegetable gardens.

3.4.2 General characteristics of a learning programme

It is also important to note that a learning programme should provide a plan of work, which includes:

- guidance for teaching within an outcomes-based framework;
- guidance on activities.
• guidance on assessment, and;
• the application of specific and critical outcomes.
(Lotz et al 1998:08).

EDUFAC-N/301 states that learning programmes refer to "the vehicles through which the curriculum is implemented at the various sites of learning and are comparable to the previous schools subjects, ..." and they further "consist of courses or units of learning (learning materials combine with methodology) by which learners can achieve the expected outcomes" (2000:19). Learning programmes are therefore important in ensuring the successful implementation of a curriculum. Needless to say that EEC's need environmental learning programmes that are in line with those in schools which will guide all the various aspects of these programmes, thus enabling learners not only to learn about the environment, but also to take action in and for the environment.

3.4.3 Learning programmes in the Outcomes-Based system

In formal education it is expected that learning programmes be developed within and across the eight learning areas prescribed by Curriculum 2005 or the six learning areas recommended by the Report of the Review Committee on Curriculum 2005 (2000:106). EO's will therefore have to develop their environmental learning programmes either across or within the specific learning areas used in formal education. The six learning areas are

• language
• mathematics
• natural Sciences
• social Sciences
• arts and Culture
• life Orientation

Normally, a typical learning programme structure consists of

• a guide framework, which includes the phase: phase organiser, programme organiser, critical outcomes and specific outcomes
• activities, which include how teachers plan to engage the learners
• assessment guidelines, which include how assessment will take place

Owing to the fact that the Report of the Review Committee on Curriculum 2005 has recommended that all phase and programme organisers, assessment criteria, range statements, performance indicators be dropped (see 1.1), it seems that a structure of environmental learning programmes will have to change to a more learner-oriented structure. Such a structure will have to be "simple" and easy to use. Therefore, for the purpose of this research investigation, some aspects of the unreviewed Curriculum 2005 design structure and reviewed design structure, will form part of the criteria indicators for assessing the existing learning programmes of EEC's in the DACEM.

Two examples of environmental learning programmes developed by the researcher are given in Figure 3.3 and Figure 3.4. Together with the templates indicated in Appendix 3.1 and Appendix 37.
3.2, they provide examples of environmental learning about, in through and for the environment within the OBE curriculum, based on the unreviewed Curriculum 2005 design structure. Criteria indicating how existing and future environmental learning programmes in EEC’s may be assessed, will be discussed towards the last section of this chapter.

Details of the illustrated learning programme (Figure 3.2) are further discussed below: The aim of discussing this topic is to assist learners with skills that could enable them to start their own gardens at home. Thus alleviating their need for food in a minimal way.

Get information

Who can we contact to get information about this topic?

We can contact: 20/20 Vision for Water in Mpumalanga
Tony Poulter (013) 7642863
Department of Water and Forestry

Share-Net at Umgeni Valley Environmental Centre
033) 3303931

Rand Water (011) 6820911 or 0800113442

What information do we need from these people and organisations?

We need information about

- How to start vegetable gardens
- How to sustain vegetable gardens

What information do we have?

- Newspaper cuttings about vegetables gardens
- Lake Fundudzi Snakes and Ladder Game (EEASA Bulletin, 18)
- Map of South African Rain Patterns
- Map of South African Rivers
- Water and Health Poster (in Water Quality Booklet)
- Status of Water in South Africa (Department of Water and Forestry)
- Vegetable Gardens (File from Durban Solid Waste)

Explore and questions

What questions do we need to ask about vegetable gardens?

- How much vegetables do the learners use in their homes?
- How many learners have vegetables gardens at their homes?
- How much water do the learners use for vegetables in the school and their homes?
How are vegetables gardens started and managed in the school and the local community?

Act, Report and Reflect

During the time of investigating the topic, the learners might encounter a number of opportunities for projects they might want to undertake. Some of the examples of such projects are the following:

- Develop an action plan for community vegetable gardens
- Develop a fact sheet about vegetable gardens
- Write an article to the local newspaper and one national newspaper about the importance of vegetables
- Plan a vegetable stall at the gate of your school. Through the management of the school ask parents to volunteer running the stall. Profits are for the school.

Figure 3.4 indicates an example of a learning programme about, in through and for the environment within a cross-curricular framework of OBE for the Senior Phase learners. Developed by the researcher. Topic: Urbanisation
3.5 CRITERIA INDICATORS FOR ASSESSING ENVIRONMENTAL LEARNING PROGRAMMES

The perceptions of the EO’s and their Managers might not necessarily concur with the view of implementing environmental learning programmes within the OBE curriculum (see 3.2.2.2). However, the following criteria for assessing existing and developing environmental learning programmes developed by the researcher might be of help to EEC’s to strengthen their own environmental learning programmes. These criteria are based on those aspects of the environmental learning programmes and the shortcomings as discussed in 2.3.6 and 2.4.3 and, some aspects of the OBE system and Curriculum 2005.

3.5.1 Active Environmental Learning within Outcomes-Based Education

The focus in Active Environmental Learning within OBE is that learning should be actively based and results oriented (Sunday Times July 2 2000). Learners are expected to be involved in their environmental learning. EO’s are therefore to ensure that appropriate activities are provided in teaching and learning.

3.5.2 Critical Outcomes within Outcomes-Based Education

When learners are actively learning in the environment, their learning is expected to be results-oriented or outcomes-based. Through the process of environmental learning, learners should know which critical outcomes their learning is based on.

3.5.3 Specific Outcomes and Learning Area Statements

There are 66 Specific Outcomes from which EO’s can select and on which their teaching and learning activities can be based. They can also omit these Specific Outcomes and base their learning activities on Learning Area Statements for each learning activity the learners are engaged in. However, EO’s need to find out from visiting schools what the Education policy stipulates in this regard.

3.5.4 Assessment within Outcomes-Based Education

Assessment in environmental learning should be an integral part of all learning processes. It should not only be conducted at the end of teaching and learning in the environmental learning programme unit, but be continuously conducted from the first activity throughout the the programme.

3.5.5 The design structure of Curriculum 2005

Though it is not yet government policy (Department of Education and Training), EO’s can simplify this framework by dropping all the phase and programme organisers, range statements and performance indicators as suggested by the Review Committee on Curriculum 2005 (see 1.1).
However, EO’s are to ensure that the issue of the ‘design structure’ does not compromise their actual learning activities in any way. For example, they should not see themselves as failing in their duty because of not understanding the curriculum language or concepts.

3.5.6 Action taking for the environment

The outcome of each environmental learning programme should be based on both gaining knowledge and insight about the issue and developing skills for decision-making and problem solving in order to take appropriate action for the environment and the improvement of the quality of life.

3.5.7 Resources for active learning about, in / through and for the environment

EO’s are expected to learn that success in environmental learning is based on whether resource materials are used effectively in the learning activities. Resource materials based on appropriate and relevant environmental issue(s) in a particular context, are an integral part of active learning.

3.5.8 Training of Environmental Officers in Curriculum 2005 and Outcomes-Based Education

Training of EO’s in Curriculum and OBE is crucial. EEC’s are institutions of environmental learning. They should therefore be staffed with EO’s who not only are environmentally skilled, but know about the South African Education system, so that they purposefully support the transformation of the South African society through quality environmental learning programmes.

3.5.9 Environmental Education policy guidelines

EEC’s should have clear, simple and relevant EE policy guidelines, which will enable them to function efficiently and effectively. If they lack a sound policy, they might be reactionary in their functions and ultimately fail to accomplish what they are expected to perform.

3.5.10 Partnerships for environmental learning

Most government departments have awareness programmes for communities based on environmental problems. EEC’s can form partnerships with such department so that they maximise the use of the resources. NGO’s can also be of great help in this regard.

3.6 CONCLUSION

In this chapter, some aspects of the EE policy guidelines indicated in the NCF have been discussed. Reference was made that this framework provides a broad vision of the Education and Training system. All institutions of learning are expected to work towards realizing this vision. Thus, the need for EEC’s to support this goal through their environmental learning programmes geared towards enabling teachers and educators to be better empowered in their environmental learning.

The NQF which was briefly discussed in 3.2 provides Education and Training in South Africa
The NQF which was briefly discussed in 3.2 provides Education and Training in South Africa with a qualifications framework. From Figure 3.1 it is clear that this is a comprehensive qualifications framework, enabling all learners to enter at different levels and qualify for different certificates, diplomas and degrees. It is therefore, not only essential that environmental learning programmes be made an integral part of learning in all levels of the National Education system, but, that all EEC’s also meaningfully contribute to this goal by ensuring that visiting schools are provided with relevant and appropriate environmental learning programmes.

There will probably always be challenges experienced in Curriculum 2005 and OBE Curriculum. However, these will be addressed only when EO’s are engaged in their active environmental learning programmes. If they stand aloof because there is no government policy that compels them to do so, then they will definitely miss on this vital opportunity of learning and supporting the Education and Training policy of South Africa. Needless to state that the conservation of our natural resources depend on environmental literate citizens.

Needless to say that if EO’s purpose themselves to engage teachers and learners in active learning programmes through the Active Learning Environments model, then they will be on a meaningful way to assist teachers and learners. EO’s can also use the assessment criteria provided in 3.5 to guide their environmental learning programmes within the OBE curriculum.

OBE curriculum is sometimes perceived as a rigid teaching and learning curriculum by some critics. Some of these critics stated that ‘Outcomes-based education focuses more on ... goals or outcomes, than inputs of subject units’ (Sunday Times July 23 2000). The researcher has already alluded to the necessity of OBE in the South African societal and environmental context. This does not mean that the researcher means that OBE does not have shortcomings. Just like any education system, OBE is bound to have strengths and weaknesses (see 3.2.1 and 3.2.2). EE is an integral part of the South African Education and Training system. EEC’s should therefore, support the endeavour of the National Education Department in providing a better quality of life for all South Africans through Curriculum 2005 and the integration of EE in the curriculum.
CHAPTER 4

EVALUATION OF ENVIRONMENTAL LEARNING PROGRAMMES IN ENVIRONMENTAL EDUCATION CENTRES OF THE DEPARTMENT OF AGRICULTURE, CONSERVATION AND ENVIRONMENT IN MPUMALANGA

4.1 INTRODUCTION

In this chapter data collected through the workshops and questionnaires will be discussed. A critical reflexive approach will be adopted. This will enable me not just to assess the environmental learning programmes, but also to state the facts about the assessment in a balanced, unbiased and holistic way that is critical, and that indicates possibilities for growth and professional development of the participants and myself. In collecting this data, a structural format and criteria for assessing environmental learning programmes in the EEC’s was used.

In chapter 1 (see 1.4) it was mentioned that three Interactive Workshops were held in the DACEM for EO’s and EEC’s Managers. These workshops were preceded by the First Structured Questionnaire (Appendix 4.1 B) which was completed by the EEC’s. The aim of this Structured Questionnaire was to find out what exactly the needs of the EEC’s were in terms of Curriculum 2005 and OBE and their environmental learning programmes. This process was important since it would be aligned with what had to be learned.

It is important to mention that the design structure, and thus, the context and contents of the research investigation changed over the past year (after September 1999). When the research study was started, the goal was to improve the quality of my practice and that of my co-workers (see 1.4). After September 1999, the focus became the insight, knowledge and understanding that would be gained in this research inquiry.

Initially, the researchers’ involvement in the tutoring of the Gold Fields / Rhodes Participatory Course in EE, exposed him to Action Research methods which he thought would enable them to improve the quality of their practice at the EEC’s.

Some of the challenges encountered during the process of the investigation, were that

- discussions with EEC’s were limited.
- resource accessibility was cut out.
- resource materials were not available anymore.
- a feeling of changed attitudes prevailed.
- there was reluctance from some of the participants to get fully involved in the research investigation.

These challenges forced me to use other communication strategies with EO’s. For example, the telephone and fax.

Around June 2000, the Report of the Review Committee on Curriculum 2005 (SA: 2000:21) made recommendations about the existing Curriculum 2005 and OBE to the Minister of Education and Training. These recommendations had to be considered in this research because
they were about the policy guidelines of the National Education and Training Department. Thus, adjustments had to be made in all the preceding chapters.

The Second Structured Questionnaire was formulated as follows:

- Environmental Officer’s Profile (Appendix 4.2)
- Teachers and Classroom Profile (Appendix 4.3)
- Assessment of the EEC’s Outcomes-Based learning programmes (Focus Group Interview Questionnaire Appendix 4.4)

4.2 FIRST STRUCTURED QUESTIONNAIRE AND ITS FINDINGS

The First Structured Questionnaire (Appendix 4.1 B) was sent to thirteen EEC’s in the DACEM. All EO’s completed and returned the questionnaire in March 1999. The aim of this questionnaire was to establish right from the start whether EO’s understood environmental learning within the OBE system. Thus, the workshops that I conducted after having received the questionnaire data, were specifically aimed at creating opportunities to learn with the EO’s.

However, data indicated in this investigation will be of those three EEC’s who continued participating in the research until the end of June 2000 as indicated in 4.1. Do note that data gathered will be mentioned first and then, comments will follow. A comparative approach was not appropriate for the collation of this data. The discussion that follows from 4.2.1 to 4.2.8 is about the questions that were asked in the First Structured Questionnaire.

4.2.1 Outcomes of environmental learning programmes

The outcomes of the existing environmental learning programmes were meant to support the activities of both the EO’s and learners in the EEC’s. Learners were expected to

- define their environment;
- understand the difference between nature conservation and EE;
- understand and explain the importance of an ecologically, balanced and sustainable environment and community;
- work towards solutions of problems in the environment;
- prevent further in the environment;
- establish community food gardens and learn the evaluation and pricing skills of the produce.

The outcomes are therefore aimed at creating lifestyles, which are in harmony with the vision and mission of the EE Directorate in the DACEM by concentrating on environmentally related knowledge and skills, which motivate learners to conserve, protect and cherish the environment for sustainability.

The EEC’s perceive their objectives as outcomes for their environmental learning programmes. All the EEC’s knew what they were expected to do in terms of their objectives. However, it seemed that these EEC’s regarded these objectives as what should ultimately be achieved. Only one of these EEC’s could translate the objectives into outcomes that could help them accomplish
certain skills. For example, establish food gardens, price the products, etc. During the workshops I therefore planned environmental learning programmes around the critical and specific outcomes mentioned in OBE curriculum. These activities were also linked to the DACEM objectives.

Another important point was that one of the EEC’s actually mentioned the importance of visiting groups and EO’s coming together (collaboratively) to compile an environmental learning programme for the learners which met their needs. It seems that most of the EEC’s have a ‘menu’ (see Appendix 4.5) which visiting schools or groups adopt on arrival.

4.2.2 Can outcomes mentioned in 4.2.1 above change or be improved?

Three EEC’s responded to this question as follows:

• Yes, there is always room for improvement. EO’s must be properly equipped and embowered with new knowledge and techniques to be able to face this challenge.
• Yes, they should be improved and Adult Based Education should also be included.
• Yes, outcomes can change, if the needs of the stakeholders or situation in the environment change. Time can also demand that they be changed.

It seems that the participating EEC’s were aware of the fact that knowledge changes and increases and that EO’s were expected to acknowledge this and prepare themselves to work effectively in such situations. This is important, because as environmental problems increase and become complex in nature, EO’s need to improve or change their outcomes within the determined critical outcomes (see 3.5.2) and specific outcomes (3.5.3). These two criteria are therefore a must for EO’s to use in their learning if they want to address environmental issues adequately within the Education and Training policy framework.

4.2.3 Methods the Environmental Education Centres use during the environmental learning programmes

The methods mentioned by the EEC’s are assessed within the criteria mentioned previously (see 3.4.6). These methods are the following:

• Experiential (Field work)
• Hands-on methods (that is, methods enabling you to get involved in action-taking activities)
• Methods for adventure courses
• Group activities
• Discussion
• Permaculture

Initially, it seemed that more than seven methods would be mentioned. However, what was interesting was that EO’s knew that not just one method is adequate in environmental learning. This point was to be discussed again in the workshops, to further emphasize the importance of appropriate methods in addressing environmental problems.
4.2.4 Resources used to achieve indicated outcomes

The EEC’s mentioned the following resources, which are assessed by means of criteria mentioned in 3.5.7:

- The natural environment, for example, rivers, forests, soil, etc.
- Food gardens
- Environmental Management materials
- People, for example, experts in certain fields of knowledge
- Schools, homes, museums, etc.
- Information books about the environment

From the list of resource materials mentioned above, it became clear that very little is being done towards EEC’s developing their own resource materials. It is therefore obvious that these EEC’s depend on other people and organisations to provide them with resource materials. This fact is in contrast with aspects mentioned previously in this research (see 2.3.4) which indicates that it is the EECs’ function to develop resource materials suitable for their situations.

4.2.5 Involvement of learners and teachers in their environmental learning programmes

The three EEC’s have different approaches to the involvement of visiting schools when it came to their curriculum development. The three statements given below represent the three different responses given by the EEC’s.

- Teachers are expected to ask for specific ‘lectures’ if they need them.
- On arrival, learners and teachers are expected to choose in which environmental programmes they would like to take part.
- From a pre-determined (fixed) programme, teachers are expected to choose topics, which are appropriate to the needs of teachers and learners. Learners are encouraged to evaluate / assess the environmental learning programme units at the end of their visit.

There is no uniformity in the way EEC’s involve learners and teachers in their environmental learning programmes. Looking at criteria given in 3.5.1, it is clear that each EEC has its own ways and policy guidelines (see 3.5.9), which enable it to achieve and implement environmental learning for visiting schools and groups. However, it seems that the three EEC’s all have existing environmental learning programmes, which are called ‘menus’ (Appendix 4.5). Visiting schools or groups choose from these ‘menus’ what the EEC’s must prepare for them to learn. The evaluation of the activities is only done at the end of the visiting days of the week.

4.2.6 Development of the environmental learning programmes by Environmental Education Centres themselves

The three EEC’s agreed as follows concerning the development of their own environmental learning programmes:

- Each EEC should develop its own environmental learning programmes
- EEC’s should have the same EE guiding policies.
Reasons given were that contextual situations of EEC’s differ and visiting schools or groups also have different needs, which must be fulfilled by EEC’s. They also think that such an approach will assist each EEC to use methods and knowledge appropriate to its situation. However, they all agreed that they should all use the same EE policy guidelines (see 3.5.9). By so doing the EEC’s would ensure that standards are maintain and focus is kept in responding to environmental problems.

4.2.7 Assessment of the Environmental Education Centres’ environmental learning programmes

All the EEC’s agreed that their environmental learning programmes must be assessed. One of the EEC’s indicated that its environmental learning programmes were assessed throughout the year. This was done on the last day of the school visiting the EEC.

However, how this was done, was not explained. One EEC did not provide a clear description. But, two of the EEC’s indicated how their environmental learning programmes were assessed, namely that:

- Learners and teachers were engaged in an open discussion about these environmental learning programmes.
- Learners completed an evaluation form.

During the process of assessment (see 3.5.4), EO’s, learners and teachers are to engage themselves as partners (see 3.5.10). However, this could be achieved when assessment is perceived as learning and not as an end-of-the-week activity.

4.2.8 Problem solving or issue-based teaching and learning versus ‘syllabus’ teaching and learning

The intention with this topic was to present EEC’s with the difference in teaching in order to address environmental problems and teaching because of prescribed content that must be learned by the learners. Unfortunately, EEC’s responded quite differently to what the statement intended. For example, the EEC’s said that

- learners must first master the problem-solving techniques and that issue-based teaching should be encouraged,
- problem-solving or issue-based teaching and learning can empower learners to take action in their own local environment,
- problem-solving and issue-based teaching and learning and ‘syllabus’ teaching and learning are both the same. They are both related to problem solving.

4.3 INTERACTIVE WORKSHOPS HELD AT THREE DIFFERENT VENUES

The three workshops were held as indicated in Table 4.1.

There was suppose to be a workshop at Amsterdam EEC for the Amsterdam EEC, Elukwatini EEC and Ermelo EEC. Unfortunately this could not happen due to the postponement and
There was supposed to be a workshop at Amsterdam EEC for the Amsterdam EEC, Elukwatini EEC and Ermelo EEC. Unfortunately this could not happen due to the postponement and cancellation of the set date. Thus, the three Interactive Workshops that took place are referred to in this chapter.

4.3.1 Topics discussed during the Interactive Workshops

The following Table 4.1 indicates the three Interactive Workshop venues

<table>
<thead>
<tr>
<th>Venue</th>
<th>EEC's which attended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sommerreg EEC</td>
<td>Sommerreg EEC</td>
</tr>
<tr>
<td></td>
<td>Witbank EEC</td>
</tr>
<tr>
<td></td>
<td>KwaMhlannga EEC</td>
</tr>
<tr>
<td></td>
<td>Bethal EEC</td>
</tr>
<tr>
<td>Graskop EEC</td>
<td>Graskop EEC</td>
</tr>
<tr>
<td></td>
<td>Pilgrims Rest EEC</td>
</tr>
<tr>
<td></td>
<td>LYDENBURG EEC</td>
</tr>
<tr>
<td>Barberton EEC</td>
<td>Barberton EEC</td>
</tr>
<tr>
<td></td>
<td>Nelspruit EEC</td>
</tr>
<tr>
<td></td>
<td>Tonga EEC</td>
</tr>
</tbody>
</table>

In each of the Interactive Workshops, the following topics were discussed:

- Objectives of the DACEM and those of the EE Directorate.
- Objectives of the EEC's.
- Curriculum 2005 and OBE.
- Methods used in EE learning.
- Resource materials in EE learning.
- Assessment of the environmental learning programmes.
- The Provincial Curriculum Forum's Annual General Meeting contributions.

The First Structured Questionnaire findings' contributed to the direction of what topics to include for the interactive discussions. The purpose was to fill in the gaps in the EO’s knowledge and understanding knowledge about these issues.

4.3.2 Comments on the three Interactive Workshops

This section will start with the observations made by the EO’s during the workshops.
4.3.2.1 Observations made by the Environmental Officers

- They had the opportunity of developing their EECs' objectives in the workshop. However, they still had to work as a team at their respective EEC's and develop the objectives further.
- For each objective indicated, each EEC would workshop strategies or activities to be mentioned in their EECs' environmental learning programmes.
- Some EO's noted that OBE is a good education system, but with shortcomings too, just like any education system. However, they agreed that OBE is appropriate for the post-apartheid South Africa so that it can focus on re-addressing the inequalities in the South African society cost by the apartheid system (see 3.1 and 3.2).
- Some EO's perceived OBE as subjective, because everything is left to the teacher. But, they could not further substantiate this argument.
- Most of the EO's indicated the unavailability of resource materials as a serious problem for the success of environmental learning in EEC's.
- The EO's perceived OBE as a tool (instrument) to support Curriculum 2005.
- They argued that EECs' environmental learning programmes should support Curriculum 2005 whilst ensuring that the EE Directorate's objectives are met.

These comments will be referred to in the concluding chapter of this dissertation.

4.3.2.2 Outcomes-Based Education versus the Old Education System

The following points of comparison between OBE and the Old Education System were observed by the EO’s during the workshops. This comparison helped the EO’s reflect on their own practice and how they would improve the shortcomings, that is in their practice. The following sources were used: Enviro-Feature (October 1997:03); Lotz et al (1998:04-05); O’Donoghue (1993:01-03) and the White Paper on Education and Training (1995c).

<table>
<thead>
<tr>
<th>Outcomes-Based Education</th>
<th>Old Education System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is based on the achievement of outcomes</td>
<td>Is based on memorising facts.</td>
</tr>
<tr>
<td>Is flexible in regard to knowledge</td>
<td>Is based on fixed syllabus.</td>
</tr>
<tr>
<td>Content is determined by parents, teachers and learners</td>
<td>Content is prescribed.</td>
</tr>
<tr>
<td>Knowledge is relevant to context</td>
<td>Teachers and learners have to contextualise knowledge themselves.</td>
</tr>
<tr>
<td>There is minimum assistance in the discovery of knowledge</td>
<td>Learners are spoon-fed by teachers.</td>
</tr>
<tr>
<td>Learners are encouraged to interpret content and make their decisions.</td>
<td>The teacher interprets content for the learners by lecturing.</td>
</tr>
</tbody>
</table>

49
Learners are at the centre of learning, they are responsible and accountable for effective learning.

Teachers are at the centre of learning.

Learners are active and encouraged to be critical about what, why, of what they learn.

Learners are passive in the learning activities. They are expected to sit and listen to the teacher.

Learning is based on lifelong learning.

Is based on segmented learning.

The teacher is the facilitator of learning.

The teacher is the fountain of knowledge.

Methods are based on learner activities, which lead to the application of knowledge.

Learning is textbooks based and directed to the acquiring of knowledge.

Group work is encouraged.

Learning is individualistic in nature.

Learning is assessed continuously.

Learning is assessed through examinations.

Assessment is based on the development of skills, values, knowledge and attitudes.

Assessment is based on the reproduction of content.

Different strategies of assessment are used.

Two types of assessment are used, namely, tests examinations.

Learners are assessed against a set of criteria. Thus, they are enabled to progress at their own rate.

Learners are assessed on their individual performance on given content.

The process of achieving the outcomes is emphasised.

The emphasis is on the results.

4.3.3 My observations and findings concerning the three workshops

The three Interactive Workshops provided the participants with the opportunity to learn about OBE and, to grapple with ways of ensuring that our environmental learning programmes were developed within this framework. A set of pre-determined critical and specific outcomes were explored and ways sought of how these could guide environmental learning programmes in the EEC's.
The problem of assessment as a continuous process within OBE was not adequately addressed during the workshops. EO's need to develop learning programme units and then use these to explore ways of continuous assessment within such templates. This could be done with the critical outcomes and learning activity outcomes in mind. EEC's were encouraged to continue the exploration and implementation of active learning in the environment. All the participants realised the need to engage in Curriculum 2005 and OBE in order, not only to improve their own practice, but also to contribute to the goals and principles of OBE in South Africa.

4.4 THE SECOND STRUCTURED QUESTIONNAIRE

The Second Structured Questionnaire is composed of Appendix 4.2 (Environmental Officer’s Profile) and Appendix 4.3 (Teacher and Classroom Profile). These questionnaires were given personally to the EEC's. They then asked three visiting schools or schools they visited to complete them. Two of the schools asked to complete the questionnaires are, a primary school (Grade 7) and a high school (Grades 8 and 9). They had a month to complete the questionnaires. The aim of these questionnaires was to find out how much knowledge and understanding of OBE do EO’s at EEC’s and teachers at school level have.

The summary of the findings of the Second Structured Questionnaires are indicated and discussed in the following section.

4.4.1 The Environmental Officers’ Profile

4.4.1.1 Table illustrating workshop venues, Environmental Officers who participated, their qualifications, experience in education and current work.

The experiences of the EO in education might help in assessing whether the EO (who participated in the research study) is new in the education field or not. If new in the education field, he/she might have been trained at college in the OBE curriculum. Thus, that might perhaps help in the integration of environmental issues in learning programmes. What the EO is involved in at the EEC is also equally important to the inquiry because we can establish whether the EO is working with schools or community groups only. If he/she works with schools then probably he/she knows and understands that a particular curriculum, namely Curriculum 2005 and the OBE system is used in formal education in South Africa. This means that the EEC’s must probably support curriculum 2005 and the OBE system.

The qualifications of the EO’s are an indication of whether they have an educational qualification in EE or not. Of course, this assumption alone can not be perceived as accurate because some educators have qualified in diplomas and degrees which included a module in environmental education, notwithstanding the fact that, some diplomas (see Table 4.2) can be based on EE only as a full course and not as a module. Degrees can also be on EE alone.
Table 4.2 illustrates the profile of the EO’s.

<table>
<thead>
<tr>
<th>EEC</th>
<th>EO NUMBER</th>
<th>QUALIFICATION</th>
<th>EXPERIENCE</th>
<th>CURRENT WORK IN EDUCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Secondary Teacher</td>
<td>4 years</td>
<td>Work with visiting schools in:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Diploma (STD)</td>
<td></td>
<td>Encouraging and supporting participation in EE.</td>
</tr>
<tr>
<td>Graskop</td>
<td>01</td>
<td>EE Diploma</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Primary Teacher</td>
<td>23 years</td>
<td>Facilitate EE programmes with learners, teachers and community groups.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Certificate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pilgrims Rest</td>
<td>02</td>
<td>Higher Education Diploma</td>
<td>18 years</td>
<td>Manage Senior EO’s and EO’s in their work including: capacity building, coordination of EE projects and programmes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sommerreg</td>
<td>03</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.4.1.2 A clear job description and key performance areas

The respondents were expected to indicate whether they had a clear job description by stating Yes, and No if they did not. Then they had to mention their key performance areas. See Table 4.3

Table 4.3 The job descriptions and key performance areas of the respondents

<table>
<thead>
<tr>
<th>EO NO</th>
<th>YES/NO</th>
<th>KEY PERFORMANCE AREAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Yes</td>
<td>-Conduct awareness campaigns of the environment.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Promote EE for the basis of sustainable living.</td>
</tr>
<tr>
<td>02</td>
<td>Yes</td>
<td>-Conduct awareness campaigns of the environment.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Educate about the environment.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Coordinate development. (Not clear what the EO meant)</td>
</tr>
<tr>
<td>03</td>
<td>Yes</td>
<td>-Educate the general public, local community, schools, groups, NGO’s and local leaders about the environment.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-To strive for the existence of an effective and well-maintained EE service.</td>
</tr>
</tbody>
</table>

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It seems that the EO’s who participated in the research study, failed to see the link between their EECs’ objectives and their key performance areas. They also failed to see their professional growth being enhanced by the Interactive Workshops conducted earlier where the issue of EECs’ objectives was discussed.

4.4.1.3 Description of Environmental Officers’ experiences

— Environmental Education

EO 01 pointed out that EE is broad and that there are different definitions of EE, which make it imperative that EO’s should be critical in the use of EE. EO 02 only mentioned the experience he gained before joining the DACEM in 1996, and EO 03 mentioned certificates he obtained in various EE course without mentioning the actual EE knowledge, understanding and skills he has. It is therefore clear from the above mentioned information that this question was not adequately answered. Specific evidence of experiences in EE would have been appreciated.

— Curriculum Development

The EO’s mentioned situations in which they were involved in curriculum development without indicating what they were actually doing. EO 01 mentioned his involvement in the redesigning of their EECs’ curriculum so that it included all the learning areas. He further indicated that ‘curriculum development should address environmental issues through learning programme units in all the learning areas’.

— Professional development of the Environmental Officers

Two of the EO’s were not involved in any activities that contributed to their professional development. EO 02 mentioned the workshops conducted by the DACEM. These facts are an indication that the EO’s possibly did not understand the question. For example, I know that EO 01 studied for the EE Diploma whilst he was employed by the DACEM as an EO. EO 02 also studied for the Rhodes / Gold Fields Participatory Course in EE whilst employed by the DACEM. He also attended and obtained several certificates in EE related fields. It seems that they did not see these qualifications as contributing to their professional development.

— Resource materials development

Two of the EO’s stated that they had no experience in resource materials development. EO 02 mentioned that he gained some experience in materials development when he was studying through the Rhodes / Gold Fields Course in EE in 1999-2000. Though, this issue was discussed in the Interactive Workshops, it does need to be discussed again, probably with a more hands-on approach of developing some of the resource materials which can be used with certain learning programmes.

— Assessment

The EO’s responses varied for this question. EO 01 had no experience in assessing environmental learning. EO 02 had some experience gained during the Rhodes /Gold Fields Course in EE when
his colleagues assessed his work during the regional and national workshops. EO 03 mentioned assessment done for a rank promotion. This issue needs to be further discussed by the EO’s so that they know exactly how they should continuously assess their work within the OBE system.

4.4.1.4 The Environmental Officers’ brief reflection on the understanding of Outcomes-Based Education

The three EO’s had a fairly simple understanding of OBE. For example, they knew that OBE is learner-centred and that learners are encouraged to learn at their own pace/rate and are assessed on outcomes. EO 01 mentioned the change of the role of the teacher to that of a facilitator and EO 02 also mentioned that critical outcomes are critical in OBE. It is important therefore to note that EO’s are making an effort to engage themselves in OBE curriculum development. However, continuous support from other stakeholders is essential if EO’s are to continue in their endeavour to improve their environmental learning programmes within the OBE Curriculum.

4.4.1.5 The nature and extent of any Outcomes-Based Education training the Environmental Officers have received

Two of the EO’s received training in OBE. One of the EO’s received no training in OBE. This issue need to be further discussed by the EO’s in order to put in place ways of training EO’s in OBE curriculum.

4.4.1.6 Involvement of Environmental Officers in any other professional development programmes

In this question the EO’s were expected to indicate any other professional development experience not mentioned in 4.4.1.3. Two of the EO’s mentioned some kind of professional development, namely experience gained when assisting rural school teachers with OBE teaching and learning and experience gained when helping in the staff development programme of the EEC. The third EO had no other professional development experience.

4.4.1.7 Difficulties Environmental Officers experience in supporting teachers in environmental learning.

Two of the EO’s indicated that they had no difficulties in supporting teachers in environmental learning. One of the EO’s indicated his difficulties in supporting teachers as the allegation made by teachers that they are busy with their school work and they do not have time for EE. This perception that EE is an add-on need to change if EE processes are to be integrated into all learning areas with success.

4.4.1.8 Environmental Officers’ comments about Outcomes-Based Education

The EO’s were expected to indicate any concerns or relevant information about OBE in this question, whereas question 4.4.1.4 (the EO’s brief description / reflection on the understanding of OBE) expected the EO’s to reflect on their understanding of OBE. One EO stated that his opinion was that some rural schools are unable to implement OBE because of
overcrowding in classes, lack of resource materials and inadequate teaching personnel in the schools. It is interesting to note that the third EO perceived the EECs’ learning activities as OBE and that for many years EEC’s have been involved in hands-on education. The second EO did not answer this question.

4.4.2 The teacher and classroom profile

4.4.2.1 Teacher and classroom profile (teachers who participated in the research)

Table 4.4 indicates the Teacher and classroom profile

<table>
<thead>
<tr>
<th>SCHOOL</th>
<th>TEACHER</th>
<th>QUALIFICATION</th>
<th>SUBJECT</th>
<th>TEACHER EXPERIENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>01</td>
<td>STD; BA</td>
<td>Biology; English</td>
<td>7 years</td>
</tr>
<tr>
<td>B</td>
<td>02</td>
<td>STD</td>
<td>Biology; Maths</td>
<td>6 years</td>
</tr>
<tr>
<td>C</td>
<td>03</td>
<td>PTC; SEC; HED</td>
<td>English; Economics Arts &amp; Culture; Manag. Science</td>
<td>22 years</td>
</tr>
<tr>
<td>D</td>
<td>04</td>
<td>BA ED; HED Senior Primary</td>
<td>Geography</td>
<td>18 years</td>
</tr>
<tr>
<td>E</td>
<td>05</td>
<td>HED</td>
<td>Natural Science Life Orientation</td>
<td>17 years</td>
</tr>
</tbody>
</table>

This data was gathered in order to establish the level of education of the teacher and to establish whether the teacher was over-loaded with school work (school subjects or learning areas). Such teachers would probably perceive environmental learning as an extra task, especially if they teach large classes. Sometimes teachers who are adequately qualified in particular subjects / learning areas, with sufficient experience in teaching, are willing to go an extra mile for their learners.

4.4.2.2 A brief description of the teachers’ teaching styles

The teachers mentioned the following resources, which they stated that they were using in their teaching and learning situations: textbooks, chalkboard, models, worksheets, newspapers, magazines, periodicals, real objects(models like arte facts), community people and parents of the learners. The following methods were also mentioned: hands-on activities, class projects, peer teaching, excursions, information search, participation, group work and discussion.

Though, the teachers did not describe how they use these methods during their teaching and learning activities, they indicated teaching resources, which referred to teaching styles they
grapple with. It would therefore, be easy to assist teachers to use these methods during environmental learning. It is also interesting to see that teachers are engaged with methods, which encourage and affirm democratic principles, for example, participation and discussion of environmental problems or issues.

4.4.2.3 The resources the teacher uses mostly in his /her teaching

In this question I wanted to establish whether the teacher did use resource materials in his / her teaching and learning and also to note which of the resources were commonly used by the teacher. If these resources did not include resources on environmental issues, then EO’s would have to assist teachers with the development of learning resources. The following resources were mentioned: textbooks, chalkboard, newspapers, magazines, periodicals, worksheets, real objects, library, laboratory, parents and community at large. These are resources which can be used by the teacher to enhance or help learners with their learning. However, what has been referred by the teachers as 'resources' is actually not conclusively true. Some of what has been mentioned above falls under the category of facilities and not necessarily resource materials. For example, the laboratory and library. Teachers will have to be assisted in this regard to successfully learn how to develop their own environmental learning resources.

4.4.2.4 Previous experience in teacher in-service training

Teacher 01 had no experience of teacher in-service training. It seems that Teacher 02 and teacher 04 did not understand the question. Teacher 03 and teacher 05 had some kind of teacher in-service training with regard to environmental learning. However, from what they all indicated, it was clear that they still need to be assisted with EE processes and OBE learning.

4.4.2.5 Issues the teacher is faced within teaching and learning

The teachers had different issues they are faced within teaching and learning. For example, they mentioned that enough time is needed in order that a teacher could adapt to OBE teaching and learning; the need for strategies to motivate learners to have an interest in Biology and Maths; helping Grade one learners’ parents with skills that could enable them to assist their children with school work and assisting learners to be competent in English. Of course, large classes can make OBE difficult to implement.

Most teachers are rendered ineffective in their EE teaching and learning work as a result of the limited time they have for EE and the large classes they teach. They lack skills that can enable them to handle such situations. Environmental learning through the Active Learning Environments model becomes crucial when faced with such situations.

4.4.3 Questions about Outcomes-Based Education

The participating teachers had to respond to the following question: Would you consider the EEC’s (environmental) learning programmes learners attended as outcomes-based or not? (Yes or No). If Yes, substantiate.

All the participating teachers agreed that the learning programmes their learners attended were
outcomes-based. However, I think specific results of each particular question asked will clarify this observation further.

4.4.3.1 What outcomes was learning focussed on? (When the school visited the Environmental Education Centres or when the Environmental Officers visited the school).

Only one teacher failed to respond to this question. The four teachers who answered this question mentioned the following reasons: group coordination; team work; hands-on activities to address environmental problems; understanding of environmental concepts; principles and knowledge; solving of environmental problems; integrating socio-economic, political and cultural issues in EE; construct and negotiate meaning in environmental issues; the implementation of EE for the sake of social progress and development, the development of citizenship and civil society.

In this question the teachers were expected to indicate their understanding of the critical and specific outcomes stipulated in the OBE Curriculum, but, mostly to note the extent in which the teachers are involved in active learning about, in through and for the environment. All the teachers, except teacher 05, showed evidence of grappling with outcomes-based learning.

4.4.3.2 Activities carried out by learners

Learners were involved in the following activities: hiking; identification of organisms; recycling; adventure courses; audits; stalk-the-lantern; water ecology; celebration of environmental days; shelter building; making something-out-of-nothing (from waste paper); raft building and information sessions about the environment, namely, animal behaviour, planets and trees.

The activities indicated, showed the involvement of learners in skills based learning and action taking in the environment. Four of the participants gave evidence of an action taking activity by means of making 'something-out-of-nothing (from waste paper). This is evidence that teachers understand that environmental learning could bring change for the better in our environment.

4.4.3.3 Assessment of the activities' outcomes

Four participants responded to this question. They all stated that the activities were assessed at the end of the learning process. In other words, the outcomes to be achieved were only to be observed after the completion of the activities. Learners were assessed as a group and also in small groups. Learners were thus, given points after each activity, that is, in discussions, model making, dramatisation of and writing about environmental problems.

Through this question it could be established whether the teachers taking part in this investigation were aware that assessment in OBE is an integral part of learning and therefore, assessment should be continuous. Each environmental activity should have its learning outcomes and its assessment strategies. From the teachers’ responses one could infer that this issue needs more time and discussions at the EEC’s and schools. Teachers perceives assessment as an 'after-teaching-a-lesson-activity.'
4.4.3.4 The role of the Environmental Officers during the learning process

The role of the EO's during the learning process is that of monitoring, advising, assisting, facilitating through instructions, asking questions, giving answers, together with teachers assessing the learners' activities, presenting talks and drawing up task lists.

Sometimes EO's are expected to facilitate environmental learning for visiting schools (groups) and also to help control / discipline the learners alone. However, my opinion is that there should be a collaborative effort made by both the EO and teacher(s) when environmental learning is in process. Teamwork is essential.

4.4.3.5 The role of teachers during the learning process

The participating teachers mentioned the following points as the role of teachers during the learning process: facilitating learning in all the learning activities, controlling and discipline, observing the teaching and learning process and ensuring that learners are attentive. Teachers also assisted the EO during group discussions, explained emerging problems in the discussions and helped the EO in the assessment of the activities.

All the responses show evidence of partnership between the EO and the teacher(s). Whilst the EO facilitated the learning activities, the teacher observed what was happening, but, also assisted the EO when the learners were divided in groups to further discuss some environmental issues. Only one participant indicated that he only observed the learning process and did not assist the EO when the learners were divided into groups.

4.4.4 Responses to whether the Environmental Education Centres' outcomes-based learning programmes enhanced teaching and learning in the classrooms

The teachers had to respond by stating that they Agree or Disagree to the questions asked. Two of the Five teachers did not respond to all the questions asked. Three answered all the questions. They all agreed that 3.3 (A) and 3.3 (D) are greatly enhanced by the EECs' OBE programmes. Only one respondent disagreed with 3.3 (B) and 3.3 (C). Two of the respondents disagreed with 3.3 (E) that teachers who attended EEC's had actually workshopped other teachers at their schools about the use of Environment as phase organiser. It is imperative that EEC's need to assist visiting teachers to gain confidence about environmental learning programme units, so that when they return to their schools they can discuss environmental learning programmes with their colleague.

4.4.5 Participation of learners, teachers and Environmental Officers during Outcomes-Based Learning

Teachers were expected to rate participation through the asked questions A - E, on a five point scale: excellent; good; satisfactory; fair and poor. Each response had to be substantiated. For the questions asked, see Appendix 4.3. The results of the questions asked are briefly discussed under each question.
4.4.5.1 Nature of participation

The teachers responded as follows: All Five teachers stated 'excellent' for 3.4 (B). Four stated 'excellent' for 3.4 (C) and One did not answer this question. Question 3.4 (D) had three varied answers. Three did not respond to the question, One stated 'satisfactory' and the other stated 'excellent.' This information indicates a great willingness of teachers to participate in environmental learning within the OBE Curriculum. However, decisive endeavours should be made to support teachers and EO's in outcomes-based learning.

4.4.5.2 Teachers' understanding of the concept 'environment'

Two of the respondents did not answer this question. The other three did. Their understanding of the concept 'environment' varied. Though, two of the respondents perceived the 'environment' as something that excludes human beings, the other one thought that 'people are part of the environment and have a role to play by using their skills and knowledge' (teacher 01). This view certainly includes human beings. It is therefore, important for EO's to engage teachers in activities that will enable them to view the environment in a holistic manner and to note the interrelatedness of the physical, biological, cultural, economical and political nature of the environment.

4.4.5.3 What the teachers understand by Outcomes-Based Education

Two of the Five teachers did not answer this question. The answers of the other Three respondents showed little understanding of what OBE Curriculum is and how it is suppose to change the way they facilitate learning in their schools. However, they mentioned facts about OBE, namely, that it is learner-centred, it involves active learning and that it focussed on the evidence of outcomes the learner managed to achieve.

4.4.5.4 Teachers' involvement in Environmental Education

Four of the respondents did not answer this question, but one did. He responded by stating that he is involved in a local environmental club. This state of affairs means that EO's perhaps need to assist teachers start environment projects that will enable them to meaningfully contribute to a better quality of life in their communities. In so doing, teachers will get involved in environmental issues that are pertinent to their contexts.

4.4.5.5 The teachers' comments about Outcomes-Based Education Curriculum

Two of the Five respondents did not answer the question. What is interesting is the fact that some teachers perceive OBE as not a new education system in South Africa, but, as a form of education that was used in the Apartheid-era (teacher 01). Teacher 05 did not substantiate his statement, which indicated that 'OBE is exciting and challenging.' Of course, I concur with him that OBE is challenging because it is a new education framework in South Africa (1995).

4.4.5.6 The teachers comments about the Schools Environmental Policy and the Schools' Management Plan

All the teachers who participated in the research study responded to this question. All of them
had not use the Schools Environmental Policy and the Schools Management Plan. The researcher had thought that if time allows them in one of the Interactive Workshops, he would open a discussion on this issue.

4.5 FOCUS GROUP INTERVIEWS

The Assessment of the EEC's Outcomes-Based learning programmes (Focus Group Interview Session was also structured, Appendix 4.4). The aim of this session was to further assess the environmental learning programmes using probing questions. Questions which were either not answered or not sufficiently answered by the EO's were to be further probed. Thus, the session would further provide insight into our environmental practice.

However, due to communication problems at the DACEM Head Office, I was unsuccessful in my endeavours to meet with the relevant EO's for the Assessment of the EEC's Outcomes-Based learning programmes (Focus Interview Session). This problem limited my findings to environmental learning programmes for learners for the Senior Phase learners in the DACEM. It is therefore, unfortunate that I can not provide answers to some of the questions in this study. Recommendations will be made in chapter 5 of how this problem can be avoided or overcome in future research inquiries.

4.6 CONCLUSION

The data collected in this research study will probably indicate that action about, in through and for the environment through research, is not a once-off endeavour that can be undertaken and never again be thought of. I think that research in a particular subject of study will always require a revisit to the subject. Thus, the changes that worked against this research investigation are all inevitable in a research investigation of this kind. Situations that encompasses the researcher’s data in a qualitative study will probably always change without any notice. As a researcher, I was therefore faced with such challenges and these, should be seen as part of the learning process.

The First Structured Questionnaire (see Appendix 4.1 B) was developed in such a way that it was to provide us (my colleagues and myself) in the EE directorate of the DACEM with an opportunity to reflect on our practice. The Second Structured Questionnaires which are made of the Environmental Officers’ Profile (see Appendix 4.2) and the Teacher and Classroom Profile (Appendix 4.3) were intended to give the EO’s an opportunity to reflect on their activities in environmental learning in the EEC’s and the Outcomes-Based Education, and to give teachers an opportunity to report on information pertaining to the issues asked respectively. This would then reveal what teachers were doing to meet the challenges of OBE Curriculum. On the other hand, the EEC’s that received schools that participated in the research will probably know what these schools’ needs are and how they can try to support them.

The questionnaires have provided my colleagues in the EE Directorate of the DACEM and myself with vital information about environmental learning programmes in, which will enable users to improve the quality of their practice and to see ways of investigating some of the issues which the scope of this study could not accommodate. Schools can also use some of the information to guide their teaching and learning and environmental learning in particular.
CHAPTER 5

CONCLUDING COMMENTS AND RECOMMENDATIONS

5.1 INTRODUCTION

In chapter 4 data collected through the Structured Questionnaires and Interactive Workshops were presented and discussed. In this chapter, a more reflexive approach to the findings of this research investigation will be discussed. The intention is to analyse and interpret these findings in terms of the research problem indicated in sections 1.3.2 and 1.4 of this dissertation.

An explanation of the meaning and implications of these findings is also discussed. This will be done by pointing out to what degree the findings obtained, improved the researcher’s practice in environmental learning and hopefully will improve the quality of practice of EO’s, teachers and other interested environmental practitioners about, in through and for the environment.

5.2 CONCLUDING COMMENTS

The concluding comments will be discussed under two sections, namely, action research within a government framework and environmental learning programmes within the OBE Curriculum.

5.2.1 Action research within a government framework

The strategies used in trying to improve the quality of practice of the researcher, EO’s, teachers and other environmental practitioners, were those of Action Research as indicated in chapter 1 (see 1.5.1). The ‘active voice’ to Action Research (see 1.5.2) is used in chapter 4 and chapter 5. This is because I feel that the findings and concluding comments to this inquiry can be best presented in such a strategy. The rest of the research study is written in the conventional strategy, that is, writing the report in the third person.

Owing to the fact that the South African Government policies are of a nation in transition, Action Research within a Government Framework is a challenge. Policies in terms of management and implementation of Core Functions within the DACEM are constantly changing. They are reviewed every year. This has been a major challenge for me. The research design needed to be constantly checked and necessary changes made in order to proceed smoothly with the research investigation. If not so, the research study would not been completed. Some of the examples in this regard are that the head of the EE Directorate left during the early stages of the research investigation (1999) and then it was not clear afterwards who would replace him. Transport policies changed and EO’s had it difficult to come to workshops.

Though Government policies changes from time to time, I think that they are actually geared towards improving the very management and implementation policies within the various departments (the DACEM included). To overcome such challenges, initial agreements of such research inquiries between me and the EE Directorate Manager should be binding irrespective of whether another person takes over his position if (s)he resigns or leaves the department.
5.2.2 Environmental learning programmes within the Outcomes-Based Education Curriculum

Environmental learning within the OBE Curriculum requires that all teaching and learning be outcomes-based. This means that the learner is expected to achieve certain results as he/she is engaged in learning (see 3.2.1). The learner is expected to understand and to do certain tasks with ease. Some teachers (see 4.4.5.3) and EO’s (see 4.4.1.8) claim that EE is actually OBE because it started earlier (even during the Apartheid years) teaching learners knowledge, understanding, skills, values, participation and attitudes to learners about, in through and for the environment. This allegation is based on the assumption that EE has long before the introduction of Curriculum 2005 been used through ‘hands-on’ methods. I am of the opinion that such an argument will probably be researched in the near future by interested researchers to find out whether this was the case or not.

5.2.2.1 Active environmental learning within the Outcomes-Based Education Curriculum

Active environmental learning within the OBE Curriculum means that environmental learning should be activity and outcomes-based. Though the EO’s who participated in the research study did not use the Active Learning Environments model in their teaching and learning, they certainly use some kind of ‘hands-on’ methods, especially in the ‘water ecology and something out of nothing’ (waste paper) activities, (see 4.2.3 and 4.2.4). It is important to note that the Active Learning Environments model can be an important method to enable the teacher and learner to engage in more meaningful EE processes (see 3.6.1). This was shown by the fact that, teachers who participated in the research study did not have problems with teaching methods (4.4.2.2) and the use of resources (4.4.2.3), but they seemed to have problems with active environmental learning within their learning areas. This is so perhaps, because the Active Learning Environments model is new to them. If they could be trained in this model they might found it very useful in their teaching and learning about, in through and for the environment.

In 4.4.2.5 one of the participating teachers mentioned that enough time was needed for a teacher to adapt to OBE Curriculum and the other one mentioned that large classes were a hindrance to the implementation of OBE Curriculum.

5.2.2.2 Critical outcomes within the Outcomes-Based Education Curriculum

In the OBE Curriculum, the learners are expected to know what critical outcomes competences they are expected to show evidence of. Though, the EO’s indicated commendable knowledge and understanding of OBE (4.4.1.4), they and the learners failed to know and understand the critical outcomes of the environmental learning activities. This was observed when they failed to mention the critical outcomes of the activities. This might be because learning within the OBE Curriculum is new to the teachers. If given training and consistent support, this might change for the better.

It also seemed that teachers were aware of the learning outcomes the environmental learning activities were focussed on (see 4.4.3.1). For example, they were aware that learners had to know and understand what they were involved in, in order to take action in and for their local environment.
5.2.2.3 Specific outcomes and Learning area statements within the Outcomes-Based Education Curriculum

Though the Second Structured Questionnaire (Appendices 4.2 and 4.3) did not have a specific direct question about Specific Outcomes and Learning area statements, the EO’s and teachers could have commented on this point, as explained in chapter 4.

It seems that both EO’s and teachers need to be trained in the use of specific outcomes in their learning programmes for learners. If these outcomes are dropped as stated (see 1.1.1.3.2), then learning area statements will be used as indicated in 3.5.

5.2.2.4 Assessment within the Outcomes-Based Education Curriculum

Assessment within the QBE Curriculum is an integral part of the environmental learning process (see 3.7.4). Each environmental learning activity should have strategies indicating how activities will be assessed. This process also applies to environmental learning programmes. Though the First Structured Questionnaire (Appendix 4.1 B) indicated that EEC’s were assessing their environmental learning programme units at the end of the week through evaluation forms (see 4.2.6), these EEC’s indicated the same results in the Second Structured Questionnaire (see 4.4.3.3). As far as this aspect is concerned, these findings are perhaps an indication that both the EO’s and teachers who participated in the research study need support in how to assess their environmental learning programmes and learning programmes in general. EEC’s need to arrange workshops of this kind for their EO’s and teachers. Qualified people in this field of education (some of which are universities and consultants) could be invited to conduct such workshops.

5.2.2.5 Action taking in and for the environment

Action taking in and for the environment depends on learners and teachers being involved in the environmental learning based on critical and specific outcomes. Of course, specific outcomes can be dropped and learning area statements be used. What the participating EO’s mentioned as outcomes (4.2.1), can neither be called as critical or specific outcomes, but, perhaps general outcomes of learning activities. What the researcher observed in this regard is that EEC’s are mostly interested in ‘getting the message across’ of environmental care and protection (4.4.3.2) rather than following environmental learning processes that involve teachers and learners to gain knowledge and understanding of environmental issues. Sometimes ‘getting the message across’ is not a useful thing to do because such an exercise does not provide the teachers and learners to engage themselves with the learning process. They are left out on the side line as passive participants. Environmental learning is meaningful when learning allows learners to find out the ‘what, why and how’ of learning. This happens when learners are not talked to only, but are also encouraged to talk and ask questions.

5.2.2.6 Resource materials for active learning in the environment

Active learning in the environment is resource materials based. There must be relevant and appropriate resource materials available for the learners so that so that active environmental learning can take place (3.7.7). However, this does not imply that learners are not to be involved in the finding of resource materials for their learning. Learners must be encouraged to look for
relevant resources for their learning because that is part of their learning. They develop and refine their information search skills when they are asked to do so.

Both the EO’s and teachers mentioned resources they usually use in environmental learning (see 4.2.4 and 4.4.2.3). However, these are mostly resources that must be requested from other stakeholders, like the Department of Water Affairs and Forestry (DWAF) and the Department of Environmental Affairs and Tourism (DEA&T). More of these resource materials can be developed by the EO’s and teachers themselves. Help can also be sought from the DWAF and DEA&T in terms of the development of resource materials. These departments normally have someone specializing in resources development.

5.2.2.7 Training for Environmental Officers and teachers in Curriculum 2005 and the Outcomes-Based Education Curriculum

Inadequate training in Curriculum 2005 and the OBE Curriculum was shown by the three EO’s who participated in the Second Structured Questionnaire (Appendix ) and teachers when they failed to indicate their training in Curriculum 2005 and OBE Curriculum (see 4.4.2). EEC’s and the Education and Training Department need to address those areas of Curriculum 2005 and OBE which are problematic to EO’s and teachers respectively.

5.2.2.8 Partnerships for environmental learning

Besides the Department of Health and DWAF, the Departments of Education and Training and DEA&T and other stakeholders (NGO’s and CBO’s) need to forge partnerships that will enable them to support each other in environmental learning activities. For example, they each produce resource materials based on different themes, namely, health risks like HIV / AIDS (Health), various water related borne-diseases (DWAF) and all environmental problems and concerns (DEA&T).

What each department would do with resource materials from other departments, would be to adapt them as much as possible or use them as they are, depending on what one wants to achieve. I am not sure whether these departments would agree that their materials be changed and be used in a different format, for example, cutting some pictures and photostating them. Perhaps whoever wants to do that need to find out from that particular department.

Partnerships are also essential for the sharing of knowledge and understanding on certain issues of concern. For example, the Department of Health could be of great value to the other departments in regard to the HIV / AIDS epidemic.

5.2.2.9 Environmental Education policy guidelines

In order to function effectively, EEC’s are expected to have clear, relevant and effective EE guidelines which are easy to follow and implement. This does not mean that the guidelines should just be easy to use and not be based on the International and National events and EE principles as discussed in chapter 2. In order to be nationally acceptable these EE guiding principles ( EE Core Functions, see chapter 2) must contribute to what the national community perceives as of paramount importance for the environment. I hope that certain changes and improvements will be
made to the EE Core Functions in the DACEM.

5.2.2.10 The design structure of Curriculum 2005

The EO's and teachers can use the present design structure for Curriculum 2005 (SA: 1997) or they can use the recommended one (see 3.7.5). This will enable EO's and teachers to incorporate those aspects of the Curriculum which are basic to the principles of the design structure. For example, some of the phase and programme organisers can be omitted and they can still use concepts that are not in contrast with the principles of the Curriculum.

It is necessary to continue with training in Curriculum 2005 and OBE in order to further support EO's and teachers in the general development of curriculum issues and the development of environmental learning programmes in particular.

5.3 FINAL RECOMMENDATIONS

Recommendations made in this research investigation acknowledge that EE processes usually involve environmental problems that are complex and numerous and which need appropriate approaches to address.

In this inquiry, the goal was to engage my colleagues and myself (before I left the DACEM in September 1999) to improve our quality of practice through a learning process which started with a number facts finding strategies (questionnaires) and workshops in three different venues in the DACEM's EEC's. The inquiry was accomplished through looking at the research problem mentioned in 1.3.2. Although I left the DACEM towards the end of the research investigation, the study was a worthwhile exercise as the recommendations will indicate.

5.3.1 The need for Environmental Education guidelines (principles) which are in line with the International and National Environmental Education principles and objectives

In chapter 2, I pointed out some of the shortcomings of the EE Core Functions used in the DACEM's EE Directorate. Shortcomings like the use of unfamiliar environmental concepts, like 'Core Functions,' when actually a concept like 'EE Principles' should have been used. The concept 'objective' in the Core Functions is also not appropriate when used in the place of 'principles' because it does not concur with the International and National principles. It should be purely used for objectives. A strong recommendation is that this discrepancy should be rectified by using the acceptable International and National concepts.

Some of the so-called Core Functions mentioned in chapter 2, Figure 2.2 are not in line with the International and National principles and objectives. I recommend that this issue be corrected by looking at a number of environmental problems in Mpumalanga and then look whether there are any International and National principles and /or objectives guiding EE that can be used to guide EE activities in the DACEM. The EE Directorate would then adopt such EE principles and objectives as its Core Functions. I am certain that such an approach would render the EE Directorate's EE principles more focussed and relevant to the local needs of South Africans. The EE Principles for Sustainable lifestyle (Yeld 1997) could also be a good source of reference in this regard (see Appendix 2.2).
5.3.2 Meaningful environmental learning within the Outcomes-Based Education Curriculum

The EEC's in the DACEM need to make a committed effort to develop environmental learning programmes for learners within the OBE Curriculum. If they do not have expertise within the DACEM, then they need to seek help from other government departments like the DWAF and the DEA&T. These departments are always willing to assist teachers. I am convinced that the EEC's can also get help form DWAF and DEA&T.

EEC's need to embrace the EE processes as an integral part of all learning areas that are stipulated by the SAQA (see 3.2.1.2). To achieve this, EO's need to establish good working relationships with teachers and other stakeholders in education.

Though, it is not government policy to oblige EEC's to plan and implement environmental learning within the OBE Curriculum, EEC's would make themselves more useful by supporting Curriculum 2005 and the OBE Curriculum through learning programmes based on the Active Learning Environments model. Both the teachers and learners would benefit from such learning. This does not mean that EEC's should abound the 'enjoy nature' aspect of their function. They can still integrate such activities with those learning activities that are more focussed on critical outcomes. Other learning and teaching models / approaches are not to be excluded on the expense of the Active Learning Environments model (see 5.2.2.4).

Some aspects of the Active Learning Environments model are mentioned in 4.4.3.1 and 4.4.3.2. However, these aspects need to be further developed. As already alluded to that the Active Learning Environments model is probably the best approach to environmental learning because it does not only focuses on learning about, in through the environment, but it also emphasises the need to learn for the environment. In other words learners should at the end or during their environmental learning plan activities that lead to action taking for improving the quality of life and the environment. In this way learners and teachers will be accorded a holistic approach to environment learning. They should focus their learning on all aspects of learning. The examples of learning programmes (Tables 3.1 and 3.2) and their templates (Appendix 3.1 and Appendix 3.2) are specifically developed to assist teachers and EO's with such examples of active learning about, in through and for the environment where all the learners and teachers are expected to be involved in the learning process.

5.3.3 Partnerships of Environmental Education Centres and schools and their participation within the Outcomes-Based Education Curriculum

Partnerships of EEC's and schools and their participation within the OBE Curriculum should be encouraged, not only in the teaching and learning process, but also in the development of the EECs' and schools' own environmental learning curriculum geared towards specific needs. Learners and teachers should also be partners in the learning process and continuous assessment. This does not imply that the teacher should be an equal of the learner because as a teacher he still has certain roles to fulfil in the learning process. However, they should both understand what they want to accomplish (in terms of the critical outcomes and learning content). Their partnership can also be seen when they are all involved in the development of the resource materials needed for the learning process.
Teachers and EO’s should collaborate in the facilitation of environmental learning programme units at the EEC’s or schools in order to eliminate the ‘them-teachers and us-EO’s’ tendency which if ignored might work against good relationships amongst teachers and EO’s. Both teachers and EO’s can assist each other in assessing the learners. They can then together discuss the outcomes accomplished by the learners. This will enable them to know and understand why their facilitation of such learning activities has been successful or not. It is therefore, advisable that assessment should not be an add-on activity at the end of a learning programme.

5.3.4 Resource materials in Outcomes-Based Education

Within the OBE Curriculum, resource materials are a necessity. Some of the essential information research skills that senior phase learners acquire become evident during the process of seeking and looking for sources of information relevant to what they are engaged in. This learning process is also mentioned in the Active Learning Environment model (see 5.3.4). Teachers and EO’s need to be supported in the development of resource materials by both Education and Training and the DEA&T Departments. If these departments lack the necessary expertise, then it would be appropriate to seek help from other stakeholders like NGO’s, CBO’s and institutions of higher learning. This could be done by EEC’s indicating to these institutions that they require such assistance.

I recommend that whenever training for teachers or EO’s is conducted, if possible, it should also include a session on developing research materials based on what was discussed. For example, if the training is about learning programmes in a particular theme, then the participants should be trained in developing resources for the learning programmes discussed. By so doing the competence and creativity of the participants might be accomplished and be boosted.

5.3.5 Further opportunities for environmental learning in the Environmental Education Centres

EEC’s are better positioned to provide teachers and learners with active environmental learning programmes, which could greatly enhance school results and learning in general in schools and community groups that visit them. This calls for both collaboration and commitment from the teachers and EO’s. Working in partnership (assisting one another in their learning programmes about, in through and for the environment) can make the learning of learners more outcomes-based and fruitful.

It is therefore, important that EEC’s should help schools (teachers and learners) visiting the EEC’s to gain the knowledge and understanding of EE processes in environmental learning programmes so that when they return to their schools, they not only share their knowledge and understanding of learning programmes within the OBE Curriculum, but that they too become models of good education and training practice in their own environments (schools).

A research question which could not be answered in this research investigation is whether the allegation that EEC’s were always (in the Apartheid era) using the QBE system, is true or not and also how accessible EEC’s are to all learners irrespective of their socio-economic background and disabilities. Coupled with these questions, is the constant view I had almost throughout this inquiry, that of no EE policy in government stating the role and obligations of
EEC's in South Africa and in the provincial governments. This question is probably asked by many environmental practitioners in South Africa.

5.3.6 Learning programmes rendered as 'menus' in some of the Environmental Education Centres

I would recommend that EEC's should develop learning programmes and present them as 'menus' to those schools which need the content and competences build into such programmes. However, for those schools which need something different than what is available in the form of 'menus' the EEC, together with the teachers of that particular school should develop a needed curriculum and learning programmes for the senior phase. Involvement of teachers in the learning of their students should always be encouraged. Such a learning process might start at the school when the learners and teacher decide on what they want to learn about at the EEC. They could then state why they want to learn about a specific topic, how they want to learn that, what outcomes do they want to show evidence of, who should do what, etcetera. This information could be communicated to the EEC so that both the school and the EEC prepare for this learning process. The EO can plan a tentative learning programme based on the coming school's needs. As soon as the visiting school arrives, they all assemble and finalise the learning programmes to ensure that they all agree on the learning activities, content, methods and assessment strategies, etcetera.

5.3.7 Action Research within a government structured framework

I am of the view that if this investigation was done outside a government structured setting, it would have yielded slightly different results than what is seen in this report. The context of the research problem was very dynamic. Individuals are also very 'careful' and cautious on what they discuss or they involve themselves in, especially if the researcher is not their co-worker. Some of the problems encountered are mentioned in 4.1. However, even if the research situation changed after the researcher had left the DACEM, good relationships are a must to maintain, otherwise, the research inquiry would fail completely. The success of Action Research depends on each stage of the process being planned, implemented, evaluated and re-planned again (see Figure 1.1). In my case, I could only plan, act and observe. I could not reflect and re-plan with my colleagues.

5.4 CONCLUSION

Environmental learning within the OBE Curriculum is one part or an aspect of the National Education and Training Department's policy (1.3.2). Though, teachers are obliged to make this policy succeed, their colleagues, the EO's in the EEC's are not yet expected to do their environmental practice within the OBE Curriculum. I would say that this kind of practice does not enhance the OBE curriculum to be known and understood by all South Africans involved in education.

To ensure success of the Education and Training policy (SA: 1995c 22) that 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*
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.

Both the teachers and EO's must collaborate on issues of interest like the content of environmental issues and environmental learning programmes. If not so, then the process of knowing and understanding the OBE Curriculum will drag for a long time unnecessarily.

EO's should also embrace environmental learning guided by the Education and Training policy (SA: 1995c) and not feel that they are 'trespassing' or are not after-all expected to organise their environmental learning programmes within the OBE Curriculum. In South Africa, education is for all people and a lifelong approach to learning has been adopted (SA: 1997b). Therefore, EO's should voluntarily support all efforts that seek to improve the quality of education in South Africa.

It is also imperative that EEC's policies guiding environmental learning should be based on well formulated EE policies, which are directed and shaped by the International and National EE principles and objectives. In the case of the EE Directorate in the DACEM, it has been discovered through this investigation that it is not so. I strongly recommend that the EE Directorate should review these Core Functions and reformulate them to be more consistent with those of the world community. Such reformulated EE policy guidelines will definitely be useful to the EEC's in their environmental practice. Learning programmes will then be focussing on not what is crucial to the South African community only, but, also to the global community. In other words, EEC's will contribute to the addressing of environmental issues in a local context and by so doing improve the quality of our planet for us and the future generations.

I am of the opinion that my knowledge, understanding and skills that I gained in investigating this problem have increased. I also believe that the research report will be of great help to teachers, EO's and other environmental practitioners.

There is a great possibility that EO's, teachers and other environmental practitioners will find the findings of this inquiry informative and challenging in regard to their environmental practice. Government EE practitioners in the EEC's will definitely have to review some of their environmental practices in order to improve the quality of their learning programmes.
APPENDIX 2.1

Tblisi Principles

Guiding principles for effective environmental education adopted at the Tblisi Inter-Governmental Conference on EE HELD IN Tblisi, Russia, in 1977.

Environmental education should:

1. consider the environment in its totality – natural and built, technological and social (economic political, cultural-historical, moral, aesthetic);

2. be a continuous lifelong process, beginning at the pre-school level and continuing through all formal and non-formal stages;

3. be interdisciplinary in its approach, drawing on the specific content of each discipline in making possible a holistic and balanced perspective;

4. examine major environmental issues from local, national, regional and international points of view so that students receive insights into environmental conditions in other geographical areas;

5. focus on current and potential environmental situations while taking into account the historical perspective;

6. promote the value and necessity of local, national and international cooperation in the prevention of environmental problems;

7. explicitly consider environmental aspects in plans for development and growth;

8. enable learners to have a role in planning their learning experiences and provide an opportunity for making decisions and accepting their consequences;

9. relate environmental sensitivity, knowledge, problem-solving skills and values clarification to every age, but with special emphasis on environmental sensitivity to the learners own community in early years;

10. help learners discover the symptoms and real causes of environmental problems;
11. emphasise the complexity of environmental problems and thus the need to develop critical thinking and problem-solving skills;

12. utilise diverse learning environments and a broad array of educational approaches to teaching / learning about and from the environment with due stress on practical activities and first-hand experience.

UNESCO-UNEP 1978
APPENDIX 2.2

<table>
<thead>
<tr>
<th>PRINCIPLES FOR SUSTAINABLE LIVING</th>
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<tbody>
<tr>
<td><strong>PRINCIPLE 1</strong></td>
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<tr>
<td>Respect and care for the community of life</td>
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<td><strong>PRINCIPLE 2</strong></td>
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<tr>
<td>Improve the quality of life</td>
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<td><strong>PRINCIPLE 3</strong></td>
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<tr>
<td>Conserve the Earth’s vitality and diversity</td>
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<td><strong>PRINCIPLE 4</strong></td>
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<td>Minimise the depletion of non-renewable resources.</td>
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<td><strong>PRINCIPLE 5</strong></td>
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<td>Keep within the Earth’s carrying capacity</td>
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<td><strong>PRINCIPLE 6</strong></td>
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<td>Change personal attitudes and practices.</td>
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<td><strong>PRINCIPLE 7</strong></td>
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<td>Enable communities to care for their own environments.</td>
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<td><strong>PRINCIPLE 8</strong></td>
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<tr>
<td>Provide a national framework for integrating development and conservation</td>
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<td><strong>PRINCIPLE 9</strong></td>
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<tr>
<td>Create a global alliance</td>
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</tbody>
</table>

Yield, J 1997
Some Principles of Environmental Education for Equitable and Sustainable Societies

1. Education is the right of all, we are all learners and educators.
2. Environmental education, whether formal, non-formal or informal, should be grounded in critical and innovative thinking in any place or time, promoting the transformation and construction of society.
3. Environmental education is both individual and collective. It aims to develop local and global citizenship with respect for self-determination and the sovereignty of nations.
4. Environmental education is not neutral but value-based. It is an act for social transformation.
5. Environmental education must involve a holistic approach and thus an interdisciplinary focus in the relation between human beings, nature and the universe.
6. Environmental education must stimulate solidarity, equality, and respect for human rights involving democratic strategies and an open climate of cultural interchange.
7. Environmental education should treat critical global issues, their causes and inter-relationships in a systemic approach and within their social and historical contexts. Fundamental issues in relation to development and the environment, such as population, health, peace, human rights, democracy, hunger, degradation of flora and fauna, should be perceived in this manner.
8. Environmental education must facilitate equal partnership in the process of decision-making at all levels and stages.
9. Environmental education must recover, recognise, respect and utilise indigenous history and local cultures, as well as promote cultural, linguistic and ecological diversity. This implies acknowledging the historical perspective of native peoples as a way to ethnocentric approaches, as the encouragement of bilingual education.
10. Environmental education values should empower all peoples and promote opportunities for grassroots democratic change and participation. This means that communities must regain control of their own destinies.
11. Environmental education values all different forms of knowledge. Knowledge is diverse, cumulative and socially produced and should not be patented or monopolized.
12. Environmental education must be designed to enable people to manage conflicts in just and humane ways.
13. Environment education must stimulate dialogue and cooperation among individuals and institutions in order to create new lifestyles which are based
on meeting everyone's basic needs regardless of ethnic, gender, age, religion, class, physical or mental differences.

14. Environmental education requires a democratization of the mass media must be transformed into one of the main channels of education, not only by disseminating information on an egalitarian basis, but also through the exchange of means, values and experiences.

15. Environmental education must integrate knowledge, skill, values, attitudes and actions. It should convert every opportunity into an educational experience for sustainable societies.

16. Education must help develop an ethnic awareness of all forms of life with which humans share this planet, respect all life cycles and impose limits on human exploitation of other forms of life.

*International Council for Adult Education, at UNCED, Rio de Janeiro*
APPENDIX 2.4
UNESCO’S CATEGORIES OF ENVIRONMENTAL EDUCATION OBJECTIVES

UNESCO’s categories of environmental education objectives are:

- **Awareness:**
  To help social groups and individuals acquire an awareness and sensitivity to the total environment and its allied problems.

- **Knowledge:**
  To help social groups and individuals gain a variety of experience in, and acquire a basic understanding of, the environment and its associated problems.

- **Attitudes:**
  To help social groups and individuals acquire a set of values and feelings of concern for the environment and motivation for actively participating in environmental improvement and protection.

- **Participation:**
  To provide social groups and individuals with an opportunity to be actively involved at all levels in working toward resolution of environmental problems.

UNESCO-UNEP 1978:1
**LEARNING PROGRAMME UNIT**

SCHOOL: 

TOPIC / ISSUE: Vegetables Gardens

CRITICAL OUTCOMES: Co1, Co2

RESOURCES:

CONTACTS:

<table>
<thead>
<tr>
<th>LEARNING OUTCOMES</th>
<th>ACTIVITIES</th>
<th>ASSESSMENT (What evidence collected and how assessed?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learners will - Identify how vegetables are used (different ways) - Work in groups to produce a collage. - Explain how vegetables are grown.</td>
<td>- Ask learners to collect or draw pictures of people using vegetables in newspapers and magazines and make a list of these uses. - Use the map of the South African Rain patterns to discuss the importance of water for vegetables. - Divide the learners into groups, and let each learner pick one or more words to construct a sentence(s) that describe vegetable uses. - Each group should then produce a collage using the pictures and sentences on vegetables.</td>
<td>- Were the learners able to construct sentences describing how vegetables are used? - How accurately did learners represent how vegetables are grown and used in their collage?</td>
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<tr>
<td>- View a video about vegetable growing and jot down the steps followed in growing vegetables in a garden.</td>
<td>Vegetable Gardens in our homes / schools or community - Read the Durban Solid Waste Park: Vegetables Gardens' Lessons.</td>
<td>- Were learners able to construct sentences about words on how to grow</td>
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</tbody>
</table>
- Identify and represent South Africa's main rivers on a map.
- Identify their positions on the map.
- Explain difficult words to the learners.
- Using a map of South Africa's Rivers, learners should identify the main rivers of South Africa, and the river(s) that supplies water to their town and community.

**Learners will**
- Draw a map of their school and home.
- Understand that access to water for vegetable growing might be affected by the political and socio-economic conditions.
- Find and record information about vegetables, which is of significant interest.
- Communicate their findings to their peers.

**MAIN ‘FINDING OUT’**
- The teacher will draw a map of the school on the board, learners will then copy this map into their workbooks. The teacher and learners will walk in the schoolyard and mark the positions of the vegetable gardens in their workbooks.
- Discuss the differences in access to water rural and urban areas.
- Let learners write two different stories about ‘Vegetables and I’, one from an urban’s point of view and the other from a rural’s point of view.
- Learners interview family and friends to collect stories about vegetable Gardens.
- Learners also interview some members of the community and ask them the same.

**Adapted from: O’Donoghue’s 2000: 16-18**

- Were learners able to identify South Africa’s main rivers on the map?
- Were learners able to identify the river that supplies water to their towns and community?
- How accurately did the learners represent the vegetable gardens in their workbooks?
- Note whether the learners’ stories reflect an understanding of the different environmental dimensions.
- Whether learners were able to formulate accurate questions?
- Whether learners were able to record information through the interviewing process?
- Were the learners able to report their findings to others?
- The teacher should assess the learners’ action plan for feasibility and presentation.

<table>
<thead>
<tr>
<th>Learners will</th>
<th>MAIN ‘FINDING OUT’</th>
<th>Learners will</th>
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<tbody>
<tr>
<td>- Assess a community, school or home area and make recommendations for improvement.</td>
<td>- The teacher will draw a map of the school on the board, learners will then copy this map into their workbooks. The teacher and learners will walk in the schoolyard and mark the positions of the vegetable gardens in their workbooks.</td>
<td>- Assess a community, school or home area and make recommendations for improvement.</td>
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<td>- Discuss the differences in access to water rural and urban areas.</td>
<td>- Learners work in groups to plan how they can start vegetable gardens in the school, home or community.</td>
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<td>- Let learners write two different stories about ‘Vegetables and I’, one from an urban’s point of view and the other from a rural’s point of view.</td>
<td>- They then draw up a vegetable Garden Action Plan.</td>
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<td>- Learners interview family and friends to collect stories about vegetable Gardens.</td>
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### APPENDIX 3.2

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<tr>
<th>Phase: Senior Learning Program</th>
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<tbody>
<tr>
<td>Human and Social Sciences</td>
<td>Natural sciences</td>
<td>Life Orientation</td>
<td>Mathematical Literacy</td>
<td>Technology</td>
<td>Language Literacy and communication</td>
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<td>Phase Organiser: ENVIRONMENT Programme organiser</td>
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<td>Nature of Urbanisation</td>
<td>Causes of Urbanisation</td>
<td>Consequences of Urbanisation</td>
<td>Solutions/Alternatives</td>
<td>Terminology and concepts.</td>
<td>Nature of Urbanisation</td>
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<tr>
<td>Critical Outcomes</td>
<td>Learners will be:</td>
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<td>Causes of Urbanisation</td>
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<td>- working with other learners in teams (CO2);</td>
<td>- collecting,</td>
<td>- Consequences of Urbanisation</td>
<td>- Solutions/Alternatives</td>
<td>- Terminology and concepts.</td>
<td>- Consequences of Urbanisation</td>
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<td>organising and analysing</td>
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<td>information (CO4);</td>
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<td>- communicating using different</td>
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<td>language modes (CO5)</td>
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<td>Learners will be able to:</td>
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<td>- Demonstrate an understanding of interrelationships between society and the natural environment.</td>
<td>- Use Scientific knowledge and skills to support responsible decision-making through assisting parents with safe roofing materials in the informal settlement area.</td>
<td>- Evaluate and participate in activities that promote effective human values. For example ensuring bio-diversity care in the areas people move into.</td>
<td>- Critically analyse how mathematical relationships are used in social, political and economic relationships.</td>
<td>- Access, process and use information from a variety of sources and situations in order to know and understand environmental issues.</td>
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<td>Activity: Learners will be divided into groups of five (5). - Each group will discuss, define and classify: (a) urban and rural settlement (b) natural resources (c) relationship between settlements and natural resources.</td>
<td>Activity: Learners will be divided into groups. - They will then be asked to discuss scientific methods used in gathering information. - They will then link their methods of gathering information about urbanisation.</td>
<td>Activity: Learners will critically analyse the data collected through questionnaires in relation to social, political and economic relationships. For example: - the number of informal households in their area, and - the types of informal households they have</td>
<td>Activity: Learners will discuss in teams, and discuss the effects of human movement versus urbanisation. - They will keep records of their discussion.</td>
<td>Activity: Learners will work in teams, and discuss the impact of technology in: • Agricultural activities • Industries (various types) • Forestry - The impact of technology should be linked to urbanisation.</td>
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<td>- Active participation</td>
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<td>They will write their own notes on:</td>
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<td>- Active participation</td>
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<td>- Defining the Concepts:</td>
<td>- Defining the Concepts:</td>
<td>- Causes, consequences, and solutions of urbanisation.</td>
<td>- The collected information.</td>
<td>- Record keeping</td>
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<td>(a) rural and urban</td>
<td>(a) rural and urban</td>
<td>- They will also put up a collage of all the information they have gathered about the theme.</td>
<td>- They will critically analyse the information collected</td>
<td>- Assignments should be well done, viz the gathering of information.</td>
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<td>(b) natural resources</td>
<td>(b) natural resources</td>
<td>- Records should be kept up to date.</td>
<td>- Their questionnaires should be correctly filled in.</td>
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<td>(c) settlements</td>
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<td>- Consequences of</td>
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<td>- Solutions/Alternatives of</td>
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<td>Classifying natural resources.</td>
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<td>- They will name renewable and nonrenewable resources.</td>
<td>- They will name renewable and nonrenewable resources.</td>
<td>- They will know why people move from one area to another.</td>
<td>- They will discuss the different categories of informal settlers households</td>
<td>- They will define and discuss the various categories of information.</td>
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<td>- They will name organisms, which depend on natural resources for their survival.</td>
<td>- They will name organisms, which depend on natural resources for their survival.</td>
<td>They will inform other learners in their school through fact sheets.</td>
<td>They will explain and discuss the various impacts of technology in the mentioned fields.</td>
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<td>- They will indicate the relationship that exists between man and natural resources.</td>
<td>- They will indicate the relationship that exists between man and natural resources.</td>
<td>A worksheet on these categories will be completed.</td>
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### Performance Indicators

- They will be evident when learners name, define and indicate relationships between man and natural resources.
- Learners are also to work on relevant newspaper cuttings.

### Assessment

- Observation
- Small group assessment
- Notes taking
- Record keeping
- Peer assessment
- Insight shown in discussions

- Observation
- Small group assessment
- Notes taking
- Record keeping
- Questionnaires
- Peer assessment

- Observation
- Small group assessment
- Notes taking
- Record keeping
- Questionnaires
- Peer assessment

- Observation
- Small group assessment
- Notes taking
- Record keeping
- Questionnaires
- Peer assessment

- Observation
- Small group assessment
- Notes taking
- Record keeping
- Questionnaires
- Peer assessment

- Observation
- Small group assessment
- Notes taking
- Record keeping
- Project
- Newspaper cuttings

#### Time table

Normal 45-min. periods are used. However, fixed time allocation is not relevant to a cross-curricular strategy since activities can flow / move from.

- It is important that the teacher should play vital roles of mediator in the learning; designer and manager of learning programmes and materials; leader and manager; pastoral; scholar; researcher and lifelong learner; and citizen and community developer: if
Hi William,

We had a look at the questionnaire and have made some comments. Will you introduce the policy pack before or after the questionnaire?

Thank you for sending me selections.

Regards,

Heila.

P.S. I have compiled the letter you requested and we are posting it.
TO:  Dr H. Lotz  
FROM:  Mr Malla  
COMPANY: Rhodes University: EG Unit  
DATE:  17 February 1997  
FAX NUMBER: 046 234 3222  
TOTAL NO. OF PAGES: 03  
PHONE NUMBER: 046 234 3222  
RE:  ENVIRONMENTAL CENTRES  
QUESTIONNAIRE  

☐ URGENT ☐ FOR REVIEW ☐ PLEASE COMMENT ☑ PLEASE REPLY ☑ PLEASE RECYCLE  

COMMENTS:  
My aim with this questionnaire is to gather background information on EE centres in regard to their:  

- Programmes  
- Activities  
- Methods they use  
- Contributions of their activities to the Curriculum 2005  

Please give your views, I will be having a meeting with centre managers on the 24 February 1999.  

Kind regards  

William.  

[Handwritten note: Great topic!]

18 FEB. 1999  12:14  DEPT. ENVIRONMENTAL AFFAIRS & TOURISM  
ERMELO CENTRE  
TEL: 017 819 1155/1158  
FAX: 017 819 2828/2829  

DEPARTMENT OF ENVIRONMENTAL AFFAIRS & TOURISM  
ERMELO CENTRE  
TEL: 017 819 1155/1158  
FAX: 017 819 /2828 /2829  

FAX COVER
ENVIRONMENTAL EDUCATION CENTRES  
(MPUMALANGA) (Compiled by M.W. Mailu  
15 February 1999)

QUESTIONNAIRE (CENTRE.................. )

1. Curriculum 2005 is a new education framework for teaching and learning in South
   Africa. It is based on the teaching and learning outcomes.

   1.1 What are the outcomes of the activities (programmes) in your centre? (Use the
      back of the page for more information).

      1.1.1

      1.1.2

      1.1.3

      1.1.4

      1.1.5

   1.2 Are these outcomes classified into critical and specific outcomes?
      If yes, when did you classify them?

      1.2.1

      1.2.2

      1.2.3
1.3 To work towards the achievement of these outcomes, do you use "syllabus-like" programmes or activities? Name them if your answer is yes:

1.3.1

1.3.2

1.3.3

1.3.4

1.3.5

1.3.6

1.3.7

1.3.8

1.3.9

1.3.10

1.4 What resources are you using to assist you to achieve these outcomes?

1.4.1
1.4.2
........................................................................................................

1.4.3
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1.4.4
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1.4.5
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1.4.6
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1.4.10
........................................................................................................

In what way are

1.5 How much are teachers and learners involved in the development of the curriculum they follow in the centre?
........................................................................................................

1.6 Do you think the outcomes you mentioned in 1.1 may be changed/improved?
Comment.

Put this question after 1.3.
1.7 Do you think each centre should develop its own learning programmes or centres should collectively develop learning programmes? Comment.

1.8 Do you think teaching and learning based on problem-solving/issue-based can be a good idea of overcoming "syllabus" related teaching and learning? Comment.

1.9 Carefully read through the school EE policy, and state whether it can be a useful resource to use in the centre and schools to support teaching and learning?

1.10 Are there specific EE methods you use during the EE programmes mentioned in 1.1? Name them.

1.10.1

1.10.2

1.10.3

1.10.4

1.10.5
1.11 Name any other EE methods you use during your EE activities.

1.11.1 ........................................................................................................

1.11.2 ........................................................................................................

1.11.3 ........................................................................................................

1.11.4 ........................................................................................................

1.11.5 ........................................................................................................

1.12 The programmes / activities you carry out in the centre are they evaluated? How? By whom? When?

1.13 Is your centre using the School Environmental Policy and Management Plan?

William - in general this looks quite solid. Some cases need further explanation. My worry is - what if centres are not familiar with C2005 'language' and the SEP? Are you going to 'mediate' the questionnaire with a workshop/ introductory session to the SEP + help to clarify questions.
ENVIRONMENTAL EDUCATION CENTRES
(MPUMALANGA) (Compiled by M.W. Maiba
15 February 1999)

QUESTIONNAIRE  (CENTRE: GRASKOP)
MORE RESIDENTIAL-RELATED REPORT
Curriculum 2005 is a new education framework for teaching and learning in South Africa. It is based on the teaching and learning outcomes.

1. What are the outcomes of the activities (programmes) in your centre? (Use the back of the page for more information).

   Visiting groups are co-responsible for compiling the programme of their learners. In this way they ensure that the residential programme is related to Curric.2005.

2. Theoretical work of the classroom can be practically exercised at the centre, ensuring practical outcomes.

3. The programme concentrates on environmentally related knowledge, attitudes and skills. The outcome aimed at creating lifestyles that is in harmony with the vision and mission of our directorate.

2. Do you think the outcomes you mentioned in 1. May be changed/improved?
   Comment.

   Yes - there is always room for improvement e.g.1 however must be properly equipped and empowered and on top of contemporary knowledge and techniques.

3. Are there specific EE methods you use during the EE programmes mentioned in 1. Name them.

   1. A lot of adventure is built into the programme. Learners enjoy adventure and can relate positively to their experiences at the centre.

4. Are these outcomes classified into critical and specific outcomes?
   If yes, when did you classify them?

   No - we have not gone that far. It is something that we should investigate and workshops. Maybe you could organise a collective workshop.
5. To work towards the achievement of these outcomes, do you use "syllabus-like" programmes or activities? Name them if your answer is yes:

We are very careful not to repeat the home-school syllabus, but rather to be a lengthening of the syllabus of the home-school. In this way, the answer is yes—the activities are related to syllabus themes. We try to present items and programmes that cannot easily be presented at the home school.

6. What resources are you using to assist you to achieve these outcomes?

We try to make use of the natural environment as much as possible. Groupwork is stressed. Items are thought-provoking, and learners are encouraged to think for themselves. Hands-on experiences work better than long lectures.

7. How much are teachers and learners involved in the development of the curriculum they follow in the centre?

As already stated, visiting members of staff play a major role in selecting appropriate items in the programme. Learners are encouraged to voice their opinions at the end of the programme.

8. Do you think each centre should develop its own learning programmes or centres should collectively develop learning programmes? Comment.

There is a lot of merit in both. The topography of centres, differing vastly, and programmes are influenced by the different circumstances. A programme that harmonizes with the centre itself is encouraged. On the other hand, it would be to the advantage of our directorate if there is basic and common guidelines.

9. Do you think teaching and learning based on problem-solving/issue-based can be a good idea of overcoming "syllabus" related teaching and learning? Comment.

For sure, learners, however, should first master problem-solving techniques. Talking around in circles won't get us anywhere. Issue-based learning is to be encouraged, but not at the expense of giving the learner a good holistic background.
10. Do you think the school EE policy management plan, can be a useful resource to be used in the centre and schools to support teaching and learning?

To be honest, I am not on top of the school EE management plan. Should this plan, however be a plan that is generally accepted, it can be a basis for excellent cooperation.

11. Name any other EE method you use during your EE activities.

A very important success factor at our centre is enjoyment. The learner must enjoy the programme. Also a feeling of security, acceptance for what he/she is, and lots of love and understanding. Enough free time, good facilities and a full tummy is important.

12. The programmes/activities you carry out in the centre are they evaluated?

Yes. When? Throughout the programme but especially during the last evening.

By whom? Ourselves, visiting members of staff and learners.

How? We do not encourage written evaluation of any sort — too much trouble in the past. We do however encourage open communication.

13. Is your centre using the School Environmental Policy and Management Plan?

No, not in the residential programme. However there are many principles and even contents that coincide in a great way. Maybe my answer should be yes.

14. I include our programme-menu. Maybe it will illuminate the contents of this questionnaire.

Kind Regards

Marti Gijzeman
(Centre manager)
ENVIRONMENTAL OFFICER’S PROFILE

1) Name and Surname: _____________________

2) Centre: ______________________________

3) Formal Qualification: __________________

4) Years experience in education: __________

5) Short description of your current work:

6) Do you have a clear job description? What are your key performance Areas?

7) Short description of your experience in the following areas:
   - Environmental Education;
   - Curriculum Development;
• Environmental Officer: Professional Development:

• Materials Development:

• Assessment:

8) Short description to reflect your understanding of OBE:

9) Description of the nature and extent of any OBE training you have received:

10) Involvement in any other professional development programme:
11) Description of difficulties experienced in supporting teachers:


12) Any comments about OBE:


APPENDIX 4

SECOND STRUCTURED QUESTIONNAIRE

Phase: Grade 7, 8 and 9

Name of School: ________________________________
Principal: ________________________________

TEACHER AND CLASSROOM PROFILE

1) Teachers Information:
   1.1) Name: ________________________________
   1.2) Subjects Taught: ________________________________
   1.3) Years of Experience: ________________________________
   1.4) Qualifications: ________________________________
   1.5) Brief description of teaching styles you use:

   _______________________________________________________
   _______________________________________________________
   _______________________________________________________
   _______________________________________________________

   1.6) Brief description of the resources used mostly in your teaching

   _______________________________________________________
   _______________________________________________________
   _______________________________________________________
   _______________________________________________________

   1.7) Description of your previous inservice experience

   _______________________________________________________
   _______________________________________________________
   _______________________________________________________
   _______________________________________________________

   1.8) Description of any teaching issues you are faced with

   _______________________________________________________
   _______________________________________________________
   _______________________________________________________
   _______________________________________________________
2) Classroom:
2.1) Grades you teach: _____________________________________________
2.2) Number of learners in your class: ________________________________
2.3) Average age of learners in your class: _____________________________
2.4) The primary language spoken by your learners: _________________

3) Outcomes – Based Education:
Would you consider the Environmental education Centre’s learning programmes units your learners attended as outcomes – based or not? (Yes or No)
If Yes,
A) What outcomes was learning focused on?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

B) What activities were carried out by learners?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

C) How were these activities outcomes assessed?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

D) What was the role of the Environmental Officer during the learning process?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

E) What was the role of the teacher(s) during the learning process?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
3.2) If No,
A) Substantiate your answer [Give reason(s)]

B) What learning activities were carried out by learners?

C) How were these activities outcomes assessed?

D) What was the role of the environmental officer during the learning process?

E) What was the role of the Teacher(s) during the learning process?

3.3) Would you agree / disagree whether the centre’s outcomes based learning programmes enhanced your teaching – learning in your class in regard to:

A) Integrating environmental issues effectively in learning?
B) Using environment as phase organiser of learning?
C) Using resource materials provided by the Environmental Educations Centre?
D) Learners and teachers develop their own resource materials after receiving the "how to do" at the centre?
E) Other teachers at the school have been worked shopped by teachers who attended the centre on how to use the environment as a phase organiser of learning.
3.4) Participation during Outcomes Based Learning:

A) Would you rate the participation of the learners during the learning process at the centre as:
   - Excellent
   - Good
   - Satisfactory
   - Fair
   - Poor
   (Put a cross on the relevant answer)

Substantiate your answer:


B) Would you rate the participation of the Environmental Officer during the learning process as:
   - Excellent
   - Good
   - Satisfactory
   - Fair
   - Poor
   (Put a cross on the relevant answer)

Substantiate your answer:


C) Would you note the participation of the teachers during the learning process as:
   - Excellent
   - Good
   - Satisfactory
   - Fair
   - Poor
   (Put a cross on the relevant answer)

Substantiate your answer:
D) How would you rate the participation of teachers in outcome learning at the school:
   • Excellent
   • Good
   • Satisfactory
   • Fair
   • Poor
   (Put a cross on the relevant answer)
   Substantiate your answer:

E) Describe briefly what you understand by environment:

F) Describe briefly what you understand by outcomes based education:

G) Describe your involvement in environmental education:

H) Give any comments about OBE and OBL (Outcomes Based Learning):

Thanks for completing this questionnaire
APPENDIX 4.4
SECOND STRUCTURED QUESTIONNAIRE

ASSESSMENT OF THE EECS' OBL PROGRAMMES

1) **Focused Group Interview**

1.1) Who should be involved?
EO from the Sommereg EEC
EO from the Graskop EEC
EO from the Pilgrims Rest Centre
EO from the Barberton EEC
EO from the Amsterdam EEC

1.2) Size of participants
Five (5)

1.3) Number of sessions
One session: Focused questions
Experiences on OBL Programmes

1.4) How will I ensure participation?
- Consult with Centre Management [Participant, interview, questionnaires]
- Personal letters to participants
- Provide tea and finger lunch

1.5) Location
To be decided later with the participants

2) **Interview Guide:**

2.1) **Opening Question**
Mention differences between the New Curriculum and the Old Curriculum

2.2) **Introductory Question**
What do you understand with the phrase Outcomes Based Learning?

2.3) **Transitional Question**
What do learning areas of the new Curriculum entail?

2.4) **Key Question**
How effective are the EECS' OBL Programmes?

2.5) **Ending Question**
Looking at what we have discussed and if there are points / facts we have left out anywhere?
3) **Conducting the Interview**

3.1) **Pre-session**
Changes in education

3.2) **Main session**
Attention is given to the question in 8 above

3.3) **Physical Arrangements**
- Around a table
- Glass of water
- Quiet room

3.4) **Handling unwanted people**
- Tact and dialogue

3.5) **Recording the focus group (and record keeping)**
- Tape recorder
- Notes taking
- Photos

3.6) **Encourage participants to talk, ask questions and give comments**
- Probe for further information

3.7) **My role as interviewer**
- Seeker of wisdom, challenger and referee
Graskop Environmental Centre

Programme Menu

Apart from items that are presented by the visiting group itself, the following specialised items can be presented by the staff of this centre. This document serves as a programme menu, and visiting groups are welcome to contact us before the intended visit in order to compile the final programme for the group.

1. **Eco-audit**
   A short and basic theoretical workshop on the principles of basic ecology is followed by a hands-on experience where learners are guided to make an assessment (audit) of the conditions of a nearby area. The balance between nature and culture is stressed. Learners have ample opportunity to express their own views and to compare their findings with their home environment.

2. **Re-use, Reduce, Recycle**
   A short theoretical workshop on waste management is followed by a practical hands-on experience where learners make use of provided wastepaper and other ingredients to make their own paper.

3. **Night march**
   Weather permitting and after a short theoretical workshop some of the most prominent star-groups (constellations) are pointed out to the learners. They then undertake a night march from the start, reporting at frequent cheque-points back to the centre. This exercise is also very instrumental in building group cohesion and team spirit, and of course provide lots of excitement and adventure. Group dynamics is exercised in a practical way.

4. **Eco adventure course**
   One of the reasons to conserve nature is because we use it for recreation. The aim of the eco-adventure course is to bring the learner close to nature and for pure enjoyment. Once again group cohesion and team spirit is built up. The course takes the group through natural and manmade obstacles, many of which is very near to the centre, and the stream flowing through our terrain provides a slip and slide into the pool, as well as an overhead cable-slide which provides excellent fun.

5. **Building of shelters**
   Sharing the night with your friends in a shelter that you built from natural forest material is a very exciting experience. The area is very close to the hostel and in case of bad weather the group can easily be accommodated in the hostel buildings. This activity can also be handled on a competition basis and provides lots of fun. Educational aims includes innovation, communication skills, handling differences of opinion, hand skills and job satisfaction.
6. Nature hikes

6.1 The beautiful Forest Falls is about 3km from our centre. A safe swimming pool at the bottom of the falls provides lots of fun. On the way frequent stops are made to point out objects of importance and to discuss human influence on nature and the role and impact of forestry in our country.

6.2 The hike through the indigenous forest clearly shows the difference between nature (undisturbed forest) and culture (disturbed forest). It provides the opportunity to enjoy nature, identification of indigenous plants and the threat of plant invaders. It also include a hands-on experience in the form of the eradication of plant invaders.

6.3 For those who would like a longer hike (15km) it can be provided.

On all these hikes we can provide knowledge, attitudes and skills related to the curricula of the learners.

7. Animals and birds of the region

For those who are interested in the animal life of the region we can provide interesting information and discussions. Although very scarce, there are still some of the following species hiding in the forest:

- Bush buck
- Duiker
- Bush pig
- Porcupine
- Ree buck
- Caracal
- Serval cat
- Musk cat
- Natal green snake
- Night adder
- Water snake

- Crested Eagle
- Hadeda
- Red winged starling
- Guinea fowl
- Partridge
- Quail and many, many more

8. Water ecology

The stream nearby provides an excellent opportunity to present a hands on experience on the most important aspects of water ecology. Linked to this we can add information on water-saving devices.

9. Canoeing and other water sport

We do have a number of canoes and life jackets available, and learners who have never had the opportunity to do some canoeing can do so here. This activity can also be linked to the eco-adventure course. Safety and the importance of water is also addressed in the activity.
10. Lectures and workshops
On the side of the human sciences we are experienced to present lectures followed by
group discussion on the following.

10.1 Leadership
We follow the situational approach because it best illustrates that nobody is
entitled to say: "I will never be a leader"

10.2 Self image
We believe that each learner should have a positive self-image because it is one
of the most important building stones that determines the way of life, and
future management of each individual.

10.3 Problem solving
This lecture/workshop is especially valuable to student representative councils.

10.4 Conflict management
This lecture/workshop is more suitable for the higher grades.

10.5 Communication skills
This practical workshop is aimed at overcoming natural fears that exist in people who
feel themselves inadequate to communicate, especially when addressing a group.

11. Stalking the Lantern
This adventurous activity creates lots of excitement where groups once again must
master all their skills to get as close as the lantern without being observed.

12. Educational Outings
The Graskop Environmental Centre can act as a base from where quite a number of
educational trips can be launched, transport however must be organised by the visiting
group.

12.1 Kruger National Park
12.2 Pinnacle, water-falls, Bourke's Luck Potholes, Viewpoints, God's
Window, Three Rondawels.
12.3 Sudwala Caves
12.4 Lowveld tour including Silk farm, Cheetah project, Coffee farm etc.

We can provide food-parcels to minimise cost.

13. Leadership Courses
This centre can also be available over weekends for leadership courses, church groups,
hiking groups and re-unions
A LIST OF REFERENCES


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