

EVALUATION OF ENVIRONMENTAL EDUCATION COURSES IN
BOPHUTHATSWANA COLLEGES OF EDUCATION

BY

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Submitted to Rhodes University in partial fulfilment of the
requirements for the degree of Master of Education in
Environmental Education. January 1992.

ABSTRACT

This study evaluates Environmental Education courses in Bophuthatswana Colleges of Education. The semi-structured interviews with final year students, lecturers, rectors of colleges offering the courses, external examiners and the course co-ordinator at the Institute of Education at the University of Bophuthatswana (Unibo) are made. Written documents relating to Environmental Education courses, such as students' examination answer books, moderators' reports and minutes of meetings, are also used to evaluate the courses.

Specifically, the aim of this study is to identify the strengths and the weaknesses of Environmental Education courses in Bophuthatswana Colleges of Education and this would present a contribution in the research field and also be useful in the further refinement of the courses. Strengths and weaknesses identified in this research are related to knowledge of Environmental Education and environmental issues, the syllabuses of the Environmental Education courses, the operation of the courses, the examining of the courses and the ethos and support of the colleges and the local university's Institute of Education.

(ii)

New insights are gained inter alia into the operation of Environmental Education courses in the Teacher Education programme in Bophuthatswana. An important contribution of the study is the application of the phenomenological paradigm, since it allows understanding of subjective experience as far as the operation of Environmental Education is concerned.

ACKNOWLEDGEMENTS

The researcher gratefully acknowledges the suggestions and critical appraisal of Professor P.R. Irwin who supervised this study together with Dr. W.L. Holderness who assisted with supervision. I must also express my gratitude to Susan James and Maureen Motsela's excellent job with the typing of this study.

The Institute of Education and the Bophuthatswana National Parks Board have both made financial contributions towards this study and their assistance is gratefully acknowledged.

Finally I wish to record my gratitude to my wife Nanny and my son Katlego without whose support and sacrifices this study would not have been possible.

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CHAPTER I
INTRODUCTION

Environmental education like several other disciplines, such as Science Education, is concerned with a change in the approach to teaching different subjects from a mere conveying of factual information to concern for total personal development of each pupil in school through active involvement in learning. Prior to this change in the approach to teaching, more particularly in developing countries, memorization of definitions, dates, formulae, events and facts as well as diagrams was the most important part of learning. Teachers were seen as providers of knowledge rather than facilitators of learning and all that they said was considered final by the students and should be accepted without questioning.

This change in the approach to teaching different subjects with the emphasis placed on the environment was initiated by a number of international conferences on Environmental Education which have been held since 1970. Two widely accepted statements of principles on Environmental Education emerged, namely, the Belgade Charter (Fensham 1976) and the Tbilisi Declaration (UNESCO - UNEP 1978) (Appendix G) and have done much to clarify the purpose and direction of Environmental Education (Christian 1988).

Several authors have justified the need for practising Environmental Education approaches in schools both internationally and in South Africa (Ballantyne and Tooth-Aston 1987, Hale 1986, Hurry 1984, Knamiller 1987, Unesco-Unep 1986, 1988 (a), 1988 (b), Vulliamy 1987). All agree that Environmental Education in schools should not be introduced as a new subject but should be an approach to teaching, mainly because the curriculum in schools is already overloaded.

Although the response towards this need for Environmental Education in formal educational institutions has been slow (Christian 1988, Hale 1986), several countries have already taken a lead in pioneering Environmental Education at school level, namely USSR, Europe, North America and Australia (Christian 1988). All these countries have included Environmental Education into existing school curricula and such a development has recently been evident in South African schools including Bophuthatswana (Christian 1988, Irwin 1987b, 1991).

Environmental Education being an approach to teaching in schools, the need for its incorporation into the Curriculum for Teacher Education both pre-service and in-service is justified. Several authors have argued for such an introduction both locally and internationally (Ballantyne and Oelfse 1988, Glasgow 1987, Hale undated, Hurry 1979, Jetter 1982, Stone 1990). Explicit in their writings is

that teachers need to be taught how to implement Environmental Education approaches within the school curriculum on a cross-curricular basis.

Teachers should be equipped with Environmental Education competencies for successful implementation of Environmental Education approaches in schools. Such competencies have been identified by Allman et. al. (1976), Greig et. al. (1989), Neal and Palmer (1990), Opie (1989), Robinson and Wolfson (1982), Wolsk (1977) and Zoller (1986) and they include Environmental Education methods, knowledge and skills relating to Environmental Education problems and solutions to such problems.

As a response towards the need to include Environmental Education into the Teacher Education Curriculum, Environmental Education was introduced in Bophuthatswana in the early 1980's both at the University of Bophuthatswana (UNIBO), where under-graduate and post-graduate courses are offered, and in Colleges of Education (Irwin 1991). This introduction of Environmental Education in Bophuthatswana is largely due to Irwin's (1982a) proposals and recommendations made in his Submission proposing the incorporation of Environmental Education in the Teacher Education Curriculum in Bophuthatswana. Emphasised in Irwin's submission are Environmental Education principles which are in agreement with the Tbilisi principles (Unesco-Unep 1978). Also recommended in Irwin's submission

is that Environmental Education in the Teacher Education Curriculum should be implemented in a form of a general course either as a discrete entity or part of existing courses such as "civics" or "developmental studies."

A need for a specialist course in Environmental Education at teacher training institutions similar to the one recommended by Irwin (1982a) has been recognised by several educationists in South Africa (Ballantyne & Oelfse 1989, Clacherty 1988, Hurry 1982). They also agree that Environmental Education in the Teacher Education Curriculum can be introduced as a course by itself but should be an approach to teaching in schools. Stone's (1990) view by contrast is that Environmental Education should not be introduced as a new and separate course into the existing and already overloaded Teacher Education Curriculum but rather that Environmental Education components should be introduced into the existing courses. It is doubtful whether such a practise can be made with success in Bophuthatswana Colleges of Education where lecturers are faced with constraints in implementing the teacher education innovation (Niven 1988).

In Bophuthatswana, Irwin's (1982a) proposal led to the introduction of full three year credit courses in five of the seven Colleges of Education. These colleges are Taung, Moretele, Tlhabane, Hebron and Marapyane with Lefurutshe and Strydom being the only two colleges which have not yet

introduced Environmental Education courses. This Environmental Education programme in Colleges of Education involves theory relating to Environmental Education which includes resources available for its execution, ecological foundation upon which it is based, its comparative study and examination of its application in the school teaching situation as well as its philosophical basis.

Also included in the Environmental Education programme are skills to produce resource materials and for the effective operation of programmes with pupils. Practical and project work which accounts for about a quarter of the programme over the three years is integrated with theory. The concept of field studies and excursions is also introduced to student teachers with emphasis placed on planning and preparation, follow-up and consolidation and adaptation of experiences to the school situation. Evaluation also forms an integral part of the programme as a whole.

Since Environmental Education courses have been in operation in colleges from 1986, the first students graduated in them at the end of 1988. The design and evaluation of these Environmental Education courses was, and is, a co-operative venture of college lecturers teaching the courses, external examiners and lecturers at Unibo.

Environmental Education courses in Bophuthatswana Colleges

of Education form part of a wider programme of developing new curricula in the colleges in accordance with the recommendations of the Bophuthatswana National Education Commission of 1979. These courses have been praised by Niven (1988) in his evaluation of the Teacher Education Curriculum Innovation in Bophuthatswana Colleges of Education. Niven praised the Environmental Education courses for they contain what he regards as a fundamental approach to teaching both the natural and social sciences and that they bring theory and practice together with the ultimate integration of this into Bophuthatswana schools. He further praised them for their stress of the importance of central issues in syllabus planning and that they should be considered as models in any general curriculum review.

Despite the praise given to the Environmental Education programme in Bophuthatswana Colleges of Education, a curriculum innovation does not occur without flaws, no matter how carefully this might be anticipated. This view is shared by several authors. For example, already over sixteen years ago, Hall and Rutherford (1975) stated :

All too often, innovation adopters are confronted with a morass of unanticipated happening and deficiencies that make implementing a simple innovation take on the appearance and effect of a poorly planned invasion. Major breakthroughs in understanding change are critical if schools and colleges are to be the adoptive and responsive institutions that society is led to expect. (p. 227).

Implementation flaws relating to curriculum innovation in

the form of Environmental Education has been identified both locally and abroad (Ballantyne and Oelfse 1989, Hale 1986, O'Donoghue and McNaught 1990, Task Team on Environmental Education 1988 and Vulliamy 1987). Such flaws and constraints are possible in the implementation of Environmental Education in Bophuthatswana Colleges of Education. It is therefore, the researcher's considered view that as the Environmental Education programme has now been in operation over a period of five years, and that it could be expected to have reached a level of stability of operation, its evaluation would be appropriate as well as beneficial for further development.

Although flaws and constraints can be experienced when a curriculum change is made as in the case of Environmental Education in Bophuthatswana Colleges of Education, the strengths and successes of such an innovation should not be underestimated. Opportunities which can lead to the success of Environmental Education in formal institutions have been identified in several countries including South Africa (Ballantyne and Atwell 1985, Hurry 1987, Mays 1985, Neal and Palmer 1990, Opie 1989, and Robinson and Wolfson 1982). The success of Environmental Education is already evident in Bophuthatswana where there is accumulating evidence of environmental awareness, concern and action in the most remote villages and schools of the territory (Irwin 1991). Such successes also need to be identified in Colleges of Education where student teachers

enrol for Environmental Education as an ancillary course over a period of three years.

This study, therefore, attempted to evaluate Environmental Education objectives in Bophuthatswana Colleges of Education and sought to specifically find answers to the following questions :

1. What is understood by the term "Environmental Education" by lecturers, students, rectors and the representative of the Institute of Education at UNIBO?
2. What are the constraints experienced when Environmental Education programmes are implemented in Colleges of Education?
3. What are the successes of the Environmental Education programme in Bophuthatswana Colleges of Education?
4. What changes and improvements can and need to be made in the Environmental Education programme in Colleges of Education?
5. Does the Environmental Education programme encourage active participation of the students and the practice of skills by them?
6. Have students developed positive attitudes towards environmental issues as a result of the Environmental Education programme?

Having introduced what this research is all about, we now turn our attention in reviewing literature on Environmental

Education in the Curriculum for Teacher Education and the evaluation of Environmental Education programmes.

CHAPTER 2

ENVIRONMENTAL EDUCATION AND ITS EVALUATION

2.1 INTRODUCTION

In this chapter literature on the concept of Environmental Education in the Curriculum for Teacher Education is reviewed. Evaluation and its place in Environmental Education programmes is also discussed.

2.2 ENVIRONMENTAL EDUCATION IN THE TEACHER EDUCATION CURRICULUM.

In this section the concept of Environmental Education in the Curriculum for Teacher Education is discussed.

2.2.1 The need for Environmental Education in the Teacher Education Curriculum

The 'definition' of the concept Environmental Education is discussed by several authors both locally and abroad (Clacherty 1990, Greenall 1987, Irwin 1982(b), 1989, 1990, 1991, Maher 1986, Naish 1986, Neal and Palmer 1990, Stevenson 1987, Unesco-Unep 1978). It is therefore not the intention of this study to attempt to redefine Environmental Education but to utilize the operational

definition of Environmental Education. This widely accepted definition of the International Union for Conservation of Nature and Natural Resources (IUCN) reads as follows :

Environmental Education is the process of recognising values, clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among man, his culture and his bio-physical surroundings. Environmental Education also entails practice in decision making and the self-formulation of a code of behaviour about issues concerning environmental quality. (Quoted in Irwin 1991, p. 15).

It is furthermore widely argued that in schools, Environmental Education should not be a subject in its own right, but an approach to the teaching of all the subjects (Alles and Chiba 1977, Ballantyne and Tooth-Aston 1989, Clacherty 1990, Hurry 1982). Environmental Education in schools, should be seen as an integrated course cutting across all subject areas. (Okut-Uma and Wereko-Brobby 1985).

Specifically, teachers who implement Environmental Education approaches should be facilitators of the learning situation rather than providers of knowledge (Allman et al. 1976, Swartland 1988). Such teachers should put more emphasis on the experiences of the pupils involving observing, collecting and reading of data, and discussion (Swartland 1988). Robinson and Wolfson(1982) have identified the following 'effective general learning

approaches' which could be used by environmental educators:

Learning by doing-through first hand experience,
hands-on activities, direct experiences inside
and outside the classroom.
Focusing on what is real and relevant to each student.
Learning through discovery, inquiry, and problem-
solving to develop individual initiative and self-
evaluation.
Using senses and feelings.
Relating new experiences to a larger picture, or parts
to the whole.
Building on past experiences to extend and develop
concepts and skills.
Encouraging positive group interaction that enhances
individual self-esteem. (p.39).

In order to motivate teachers to implement Environmental Education in schools as outlined above, proper training through teacher education programmes could be one answer (Ballantyne and Oelfse 1988, Department of Environment Affairs 1989, Hurry 1982, Jetter 1982, Stone 1990). Such training can be done through both in-service and pre-service training (Ballantyne and Oelfse 1988, Jetter 1982, Stone 1990).

As far as the implementation of Environmental Education in pre-service training is concerned, Irwin (1982a) recommends that this could be done either as a specialist course on its own or it can be incorporated in different subjects offered in colleges. Stone (1990) is against this idea that Environmental Education in pre-service training should be a subject on its own. He said:

The addition of Environmental Education methods courses and other Environmental Education related courses into already crowded teacher training programs presents many difficulties. Rather than

forcing demands for new courses on college curriculums, it seems feasible to insert Environmental Education components into existing teacher education courses. (p.44).

It is questionable as to how practicable Stone's (1990) argument is in Colleges of Education in Bophuthatswana where not all lecturers know what Environmental Education is nor necessarily have an interest in it. Stone's assertion cannot easily be accepted because the introduction of Environmental Education in the Curriculum for Teacher Education is far more complex than the mere putting of environmental content into existing curricula (Unesco-Unep 1988).

Although differences exist as to how Environmental Education should be introduced in the Curriculum for Teacher Education, the need for teacher training in Environmental Education is emphasized by several authors (Ballantyne and Oelfse 1989, Ballantyne and Tooth-Aston 1989, Department of Environmental Affairs 1989, Jetter 1982, Stone 1990 and Unesco-Unep 1978, 1985, 1988a). According to Stone (1990) Environmental Education is needed in the teacher education training programmes because it provides teachers with competencies which include:

Knowledge and skills in the selection, utilization, and implementation of Environmental Education curricular program and strategies designed to achieve the accepted goals of Environmental Education; infusion tactics for Environmental Education curricular and methods by

which this can be accomplished; and knowledge of ecology concepts, knowledge of environmental issues, skills in investigating and evaluating environmental issues, and knowledge and skills in carrying out environmental action. (p.45).

In his argument for the need of Environmental Education in the Curriculum for Teacher Education Jetter (1982) also asserts that :

Teacher education programs must prepare teachers to understand the basic concepts of the philosophy of living in harmony with our environment and to develop appropriate teaching methods for environmental education. (377).

Orlando (1985) also argued for the need of Environmental Education in Teacher Education by stating that Environmental Education is important because it lifts teachers out of the rut, enabling more direct methods of teaching to be used which link with real situations and arouses the interest of the pupils. He further argued that Environmental Education encourages team-work among different teachers, community involvement by teachers and their students, active participation and interest by all community members in tackling and solving environmental problems, and change in attitudes of different community members.

The Tbilisi Conference also emphasized the need for professional training of educators by recommending to the Member States that :

- teachers and learners should be involved in the preparation and adaptation of instructional materials for environmental education; and
- teachers in training should be given an understanding of the widest possible range of educational materials and aids, with special reference to low cost materials and to opportunities for adaptation and improvisation according to local circumstances. (Quoted from Unesco 1988a, p. 16.).

2.2.2 Constraints towards the implementation of Environmental Education in Teacher Education

According to Musonda(1982) three problem areas relating to the implementation and development of any Environmental Education programmes can be identified in Southern Africa.

These constraints are:

- Shortage of personnel trained in Environmental Education.
- Lack of instructional materials and other necessary paraphernalia and
- Lack of funds to finance Environmental Education programmes wherever possible. (p. 5).

In addition to constraints identified by Musonda (1982), Stone (1990) has identified lack of commitment to Environmental Education training by the faculty and other educational policy makers as a major constraint. Stone (1990) asserts that unless teacher educators are converted into Environmental Education supporters the possibility of the implementation of Environmental Education both in schools and teacher training institutions will remain limited. Besides lack of commitment Stone (1990) also feels that teacher educators should be familiarised with the goals of Environmental Education for they cannot be

expected to effectively incorporate Environmental Education into their courses without new knowledge. Failure to develop positive attitudes in teacher educators can also result in a constraint because it will be unlikely that teacher educators will inspire pre-service teachers to effectively incorporate Environmental Education into their teaching (Stone 1990).

Other barriers to the implementation of Environmental Education are reported by Ham and Sewing (1987) and these include the fact that many teacher educators feel unqualified to teach Environmental Education and that they lack logistical support in terms of resources, time and suitable class sizes. Ham and Sewing (1987) found that few teachers understand the socially transformative nature, scope and objectives of Environmental Education and they believe it to be more appropriate to the science curriculum than to their areas of curriculum concern.

The structural organisation of schools is also a constraint towards the goals of Environmental Education which involves inter-disciplinary, issue-based, values and action orientated characteristics (Stevenson 1987). In addition, many teachers received their pre-service training long before Environmental Education approaches and the empowering of teachers for constructive social change was developed (Fien 1990). Other constraints relating to

schools such as syllabuses which lead to the compartmentalization of knowledge and examinations which encourage conservative teaching styles and teacher-centred methodologies can be experienced (Ballantyne and Oelfse 1989, Robbottom 1984, 1987b, Vulliamy 1987). Although these constraints are common in schools they are also experienced in teacher training institutions (Hurry 1984).

Ballantyne and Tooth-Aston (1989) see conflict between the Apartheid system in South Africa and the internationally agreed objectives of Environmental Education. Apartheid practice hinders the realisation of objectives such as developing awareness, knowledge, attitudes, skills and participation and these will ultimately act as constraints towards the introduction of Environmental Education in teacher education. Ballantyne and Tooth-Aston (1989) further assert that the protection of principles of inequality and discrimination inherent in the structures of apartheid, affect the freedom of teachers and students to deal with many political and socio-economic issues involving environmental decision making.

2.3 EVALUATION AND ITS PLACE IN ENVIRONMENTAL EDUCATION

In this section the concept of evaluation is discussed under the following subheadings:

- Evaluation - towards a definition and
- Evaluation in Environmental Education.

2.3.1 Evaluation - Towards a definition

Several "definitions" of educational evaluation are available, often reflecting specific concerns of persons who formulated them (Wolf 1987). Tyler (1950) gave a classical view of evaluation; that it is the process of determining to what extent the educational objectives are actually being realised. This model has been improved by Stake (1967) with what he called the Countenance Model which conceptualises evaluation as multidimensional and holistic, and based on the application of a matrix, with intents, antecedents, transactions and outcomes as its other essential elements (Potter 1991).

The Tylerian (objective based) approach is also improved by Provus's Decrepancy model (1971) which focuses on identifying areas of the programme where intentions did not correspond with actions. Hammond (undated) also conceives evaluation in terms of whether an educational programme achieves its expressed objectives. Hammond further attempts to spell out the nature of the institution and institutional factors that might be relevant in considering the achievement of objectives. The analysis of the relationship between instructional and institutional variables as they bear on measured learner behaviour is

also considered important.

Another widely accepted definition of evaluation is that of 'providing information for decision-making' suggested by Alkin (1969), Cronbach (1963), and Stufflebeam et al (1971). Cronbach (1963) has identified three types of decisions for which evaluation is made, namely course improvement, decisions about individual's needs and administrative regulation. Stufflebeam et al (1971) proposed the Context, Input, Product and Process (CIPP) model which emphasises context, planning, process and outcome. In the view of Potter (1991) the CIPP model is comparable to Stake's holistic model. Alkin's (1969) study of Evaluation (CSE model) is also similar to the CIPP model except that it reconceptualizes process evaluation as "Contemporary Concept of Evaluation". The CSE model is attached to different levels of decision-making namely, planning, implementation, progress and outcome needs assessment evaluation.

Evaluation is also described by several authors as the assessment of merit or worth (Scriven 1967, Stufflebeam 1974). Scriven (1967) proposed a goal-free evaluation as a supplement to a more goal-oriented framework. According to Scriven, in goal-free evaluation the focus is on the outcomes of a programme, intended as well as unintended. He placed emphasis on comparative summative evaluation whereas Stufflebeam's CIPP model was pre-occupied with fostering

improvement and ignoring the fundamental role of summative evaluation. Stufflebeam shows his understanding of evaluation as being concerned with the merits or worth of the programme:

But evaluation is also a necessary concomitant of improvement. We cannot make our programs better unless we know where they are weak and strong and unless we become aware of better means. We cannot be sure that our goals are worthy unless we can match them to the needs of the people they are intended to serve. We cannot plan effectively if we are unaware of options and their relative merits; and we cannot convince our constituents that we have done good work and deserve continued support unless we can show them evidence that we have done what we promised and produced beneficial results. (Stufflebeam 1983, p.139).

A Joint Committee on Standards of Educational Evaluation (1981) published their definition of evaluation as 'the systematic investigation of the worth or merit of some object.' According to Nevo (1983) such a definition might create a considerable amount of anxiety among potential evaluatees and raise resistance among opponents of evaluation. Nevo (1983) also offered his own comprehensive view of evaluation by stating that:

Evaluation is the systematic investigation of various aspects of professional development and training programs to assess their merit or worth. p. xx).

2.3.2 Evaluation in Environmental Education

Evaluation in Environmental Education has been described as "a critical issue" (Wright 1988, Odendal 1986), "a

challenge" (Jetter 1982) and "a process" (O'Donoghue 1986, Odendal 1986). In the view of Wright (1988) and O'Donoghue (1986) evaluation of Environmental Education programmes is mainly done to justify their existence, because of financial constraints. This Wright (1988) argues, has been shown to be counter-productive in an educational context where it sparks a great deal of theorizing.

Evaluation of Environmental Education programmes is necessary for several reasons. Wright (1988) for example identified four factors which contributed to the evaluation of the Umgeni Valley Project, one of South Africa's premier Environmental Education centres. These include a time perspective; internal factors (which include needs to render account of efficiency, financial viability, compatibility with stated aims and objectives, future planning and development strategies); external factors; and rationalization of aims and objectives.

Odendal (1986) sees the 'value' or 'worth' of a programme as being the main purpose of evaluation. This accords with the views of Scriven (1967) and Stufflebeam (1974) highlighted in paragraph 2.3.1. Odendal regards Environmental Education as a goal orientated activity and thus flexibility in structure and content seems to be limited (O'Donoghue 1986). Furthermore, evaluation of Environmental Education programmes should lead to assistance in decision making and also to find out whether

performance relates to objectives (Odendal 1986).

According to O'Donoghue (1986) evaluation can be done for different purposes. Many programme evaluators see evaluation as a consultative process of conceiving, obtaining and producing empirical data for guidance in decision making with regard to specific communication programmes. To programme developers it can be perceived as either a threat or as a means to measure value or proof of effectiveness. O'Donoghue (1986) sees evaluation in Environmental Education not merely as an outcome measurement but as an integrated critical element within the process of social change. He furthermore states that evaluation should not be done by experts for programme designers.

Several reasons may explain why evaluation sometimes fails in Environmental Education. O'Donoghue (1986) cites the work of Stake (1977) who identified the causes of the failure of evaluation programmes in formal education as being a lack of funding, under staffing and late initiation of such programmes. In addition, O'Donoghue (1986) identifies the following as other possible causes of failure of educational programmes:-

- * Specific objectives understate educational purpose.
- * Side effect get ignored.
- * Other contextual factors like variable operating conditions and the complexity of learning transaction are likely to be poorly described.
- * Test results seldom match objectives. They oversimplify and do not successfully measure

transfer and are often poorly validated. (p.20).

Evaluation of Environmental Education in formal institutions is discussed by several authors (Unesco-Unep 1984, Wals et al 1990). According to the "Action Research and Community Problem Solving (AR&CPS) model" as proposed by Wals et al (1990), evaluation should be seen as an ongoing element in any programme. Logbooks used to record achievements, individual journals used by students to express their feelings and reactions, "plus, minus, change" sheets used to find out students likes and dislikes as well as suggestions for change and teacher's documented observations can be useful sources of information.

The AR&CPS model asserts that the most important purpose of evaluation is not to assess, judge and compare students but to give them feedback which stimulates further learning. Students experience with a project empowers them; giving them the responsibility to plan their own education, the opportunity to investigate and act upon an issue that concerns them and the feeling that they can make decisions which affect their lives.

According to Unesco-Unep (1984) central issues in the evaluation of Environmental Education programmes in formal settings are concerned with aspects of student learning and those of the instructional programme. Aspects of student learning which can be evaluated include objectives, knowledge and understanding, thinking skills, action

skills, intuitively measured outcomes and allowing for unanticipated outcomes. In case of the instructional programme; teaching methods and learning activities and the learning environment can be evaluated. Evaluation of Environmental Education is essential (Jetter 1982) for it can lead to the improvement of the course by enabling better informed decision making (Odendal 1986, Wals et al 1990). As O'Donoghue (1986) argues, evaluation of Environmental Education programmes should also be considered as the critical part of processes of change in institutions and also in society.

Having given an overview of the concept of Environmental Education in the Curriculum for Teacher Education and its evaluation, we now turn to the methodology used in this study.

CHAPTER 3METHODOLOGY3.1 METHODOLOGICAL APPROACH

Guba and Lincoln (1988) describe a methodological approach to research as a paradigm and this should not be confused with research methods or techniques. Two distinct research paradigms are identified by Firestone (1987), namely, the "positivist paradigm" and the "phenomenological paradigm". The positivist paradigm holds that behaviour can be explained through objective facts whereas the phenomenological paradigm assumes that there are multiple realities which are socially defined (Firestone 1987).

The phenomenological paradigm is chosen for this study of the evaluation of the recognised Environmental Education courses in the curriculum for teacher education. The researcher chose this approach because Environmental Education is a holistic co-ordinating and idea exchange forum for a wide range of communication traditions and its evaluation through a tight experimental hold is usually met with little success (O'Donoghue 1988). Qualitative methods are, therefore, used to collect data (Hitchcock and Hughes 1989). Qualitative data are chosen for this study because they allow inner understanding which "enables the comprehension of human behaviour in greater depth than it

is possible from paper and pencil tests and from standardised interviews" (Rist 1979).

According to Miles and Huberman (1984) qualitative data are of well-grounded, rich description and explanation of processes occurring in local contexts. They further assert that qualitative data can preserve chronological flow, assess local causality and derive fruitful explanations.

3.2 RESEARCH SAMPLE

The sample chosen for this study comprised 13 final year student teachers taking Environmental Education as an ancilliary, eight lecturers teaching the course and three rectors of Colleges of Education which offer the course and the course co-ordinator at Unibo. This sample was chosen on the assumption that the respondents were involved in the implementation of Environmental Education in the Colleges of Education and that their responses would assist in fulfilling the goal of the research. This sample was drawn from four Colleges of Education offering the Environmental Education courses, namely, Tlhabane, Hebron, Moretele and Marapyane. These colleges are located in four separate magisterial districts of Bophuthatswana, namely, Bafokeng, Odi I, Moretele I and Moretele II (Mathanjana) respectively (see map in Appendix F). These districts incorporate both rural and urban settings.

The registration of students in Environmental Education courses differ from one college to the other. At Hebron College of Education, Environmental Education courses are compulsory for students taking the primary diploma and for those specialising in Geography in the secondary diploma. At Tlhabane College of Education a similar enrolment is practised except that in the case of the primary diploma students are enrolled after every one year. At Moretele College of Education only students specialising in the teaching of Geography are enrolled for the Environmental Education courses. At Marajyane College Environmental Education Courses are optional and those students having the interest in the subject can choose it in both primary and secondary diplomas.

The number of students taking Environmental Education courses varied as from 1986, with the courses becoming more popular in colleges (see Table 3.1).

The researcher did not draw samples from the other three Colleges of Education in Bophuthatswana (Strydom, Taung and Lehurutshe Colleges) because they did not fit in with the research aims. In the case of Strydom and Lehurutse Environmental Education courses were not yet introduced in the year 1991 and the researcher felt that not enough relevant information could be drawn from these institutions.

Table 3.1 Statistics on number of students registered for Environmental Education

COLLEGE	YEARS					
	1986	1987	1988	1989	1990	1991
HEBRON	0	0	137	332	490	450
LEHURUTSHE	0	0	0	0	0	0
MARAPYANE	0	0	0	0	86	146
MORETELE	0	0	0	31	63	83
STRYDOM	0	0	0	0	0	0
TAUNG	16	11	13	3	1	0
TLHABANE	0	27	170	210	212	225
TOTAL	16	38	320	576	862	904

At Taung College of Education, where courses were offered in the period 1986 to 1990, Environmental Education courses are no longer offered. In addition, the lecturer who used to teach the courses is no longer involved with them and the rector who used to lead this institution during the operation of such courses is no longer attached to teacher training in colleges.

Besides student teachers, lecturers and rectors of Colleges of Education, two external examiners of the Environmental Education courses at first and second year levels were interviewed. These external examiners were included in the sample because they are responsible for the setting of the

college examinations in Environmental Education as well as marking and moderation. In addition, external examiners are represented on the syllabus panel which is a body charged with the responsibility of formulating and amending the Environmental Education syllabuses.

One course co-ordinator from the Institute of Education at Unibo was also included in the sample. This individual oversees the Environmental Education courses, and organises and sits on panel meetings together with lecturers, external examiners and the representatives of the Bophuthatswana Government Department of Education.

3.2.1 Sample description

3.2.1.1 Students

The researcher has chosen 13 students randomly and they represented 4% of the total population of 325 final year students. The time available to the researcher to complete this study also affected the number of students interviewed. Out of the 13 final year students interviewed, five were studying for the University Diploma in Education (Secondary) and eight for the University Diploma in Education (Primary). More students were drawn from the group doing the primary diploma because Environmental Education is compulsory for these students in two of the colleges chosen for this study.

With reference to the academic background of the students, Table 3.2 below indicates that all the students interviewed did Biology as one of their subjects at matric level. This suggests that all of them should already have been introduced to basic ecology at high school level. With seven students having done Geography this was a good advantage for them because matric Geography is one of the important subjects through which Environmental Education can be developed in schools (Ballantyne and Attwell 1985).

Table 3.2 Summarised responses to the question "What content subjects have you studied at matric?"

SUBJECT	STUDENTS (N = 13)
BIOLOGY	13
GEOGRAPHY	7
HISTORY	5
MATHEMATICS	2
PHYSICAL SCIENCE	2
AGRICULTURAL SCIENCE	1

With reference to subjects students are interested to teach when they have completed their diploma, Table 3.3 indicates that seven students stated that they would have liked to teach Geography when they have completed their diploma. It is interesting that four students mentioned that they would be going to teach Environmental Education in schools, when

they had completed. This is an important response and should not be lost as it might be shared by many others. One could question students' understanding of what Environmental Education is in schools. Furthermore, four students indicated English and two History which could accommodate Environmental Education approaches as indicated in the previous paragraph.

Table 3.3 Summarised responses to the question "Which subject(s) would you like to teach next year?"

SUBJECT	STUDENTS (N = 13)
GEOGRAPHY	7
ENGLISH	4
ENVIRONMENTAL EDUCATION	4
HISTORY	2

Only three students out of the 13 students interviewed mentioned that they are members of an environmental club which functions on an extra-curricular basis.

3.2.1.2 Lecturers

Eight Environmental Education lecturers were interviewed out of the total population of 9. Out of the eight lecturers interviewed, four indicated that it was their

first year of teaching Environmental Education courses, three indicated that it was their third year and one indicated that it was his second year of teaching Environmental Education. With reference to their academic background, Table 3.4 indicates that four lecturers studied Geography as a major subject, four Educational Studies, two Setswana, two History, one Agriculture and one Art. With Environmental Education being holistic in its approach the above mentioned subjects can provide lecturers with background information to offer the course, although staff-development in the field of Environmental Education can also be of value.

Table 3.4 Summarised responses to the question "What are your major subjects at first degree level?"

SUBJECT	LECTURERS (N=8)
GEOGRAPHY	4
EDUCATION	4
SETSWANA	2
HISTORY	2
AGRICULTURE	1
ART	1

The researcher did not ask for information on the academic qualifications of lecturers because he took it that almost

all lecturers in colleges are graduates and information on their major subjects will be enough to indicate their field of study.

To find out whether Environmental Education lecturers have extra responsibility of teaching other subjects besides Environmental Education, they were asked the question; "Which subject(s) do you teach besides Environmental Education?" Their responses are summarised in Table 3.5

Table 3.5 Summarised responses to the question "Which subject(s) do you teach besides Environmental Education?"

SUBJECT	LECTURERS (N=8)
GEOGRAPHY	4
HISTORY	1
ARTS	1
AGRICULTURE	1
NONE	2

Out of the eight lecturers interviewed only two indicated that they have received specific training in Environmental Education. Four lecturers also indicated that they are members of conservation clubs and wildlife associations

which function on an extra-curricular basis.

3.2.1.3 External Examiners

Two external examiners for first and second year level were interviewed. Both indicated that this is their second year (1991) of examining the Environmental Education courses. The third-year external examiner was not interviewed because he provided the researcher with all his moderation reports and letters he wrote to the Director of the Institute of Education and these revealed his perceptions about Environmental Education.

3.3 METHODS OF DATA COLLECTION

Two qualitative methods of data collection were used in this study, namely, semi-structured interviews (Burroughs 1975) and document analysis (Hitchcock and Hughes 1989). The two methods allow the researcher to explain the richness and complexity of human behaviour by studying such behaviour from more than one stand-point using qualitative data (Cohen and Manion 1980). Semi-structured interviews using a schedule were used mainly because "they provide for relatively systematic collection of data and at the same time ensure that important data are not forgotten" (Schurink 1988). Such interviews were used because they allow probing to stimulate subjects to provide additional information or give further particulars in case of vague

answers (Hitchcock and Hughes 1989, Schurink 1988).

Documentary sources were used in this study because they allowed the researcher to reach opinions about people who produced them. They also provide information relating to their production and enable the researcher to reach opinions from them about the people they are written to (Hitchcock and Hughes 1989).

3.3.1 The research interview

A series of semi-structured interviews was conducted with student teachers (Appendix A), lecturers (Appendix B), rectors (Appendix C), external examiners (Appendix D) and the Institute's course co-ordinator (Appendix E). Different interview schedules were developed for the participants depending on their involvement in the operation of Environmental Education courses in Colleges of Education.

Interview schedules for students, lecturers and external examiners were developed by the researcher to seek information relating to their personal background; knowledge of Environmental Education and environmental issues; their feelings about the Environmental Education syllabus in general as well as about specific topics such as projects, field excursions and trails; and their perceptions relating to the examination of the courses and

the level of support provided.

In the case of rectors and the Institute's course co-ordinator the researcher did not seek information relating to their personal backgrounds. The researcher felt that such information would not have been of much significance to the goals of the study. Besides the interview questions asked of other respondents, rectors and the Institute's course co-ordinator were asked to comment about the inclusion of Environmental Education in the teacher education curriculum and what barriers they felt could affect such an innovation.

3.3.2 Documentary sources

The second method of data collection involved analyzing course related documents. Written records in the form of moderator's reports, students' examination answer books, minutes of the panel meeting (29/08/89), and minutes of the Curriculum Committee meeting (18/05/90) were analyzed. Permission to examine examinations answer books was obtained from the Director of the Institute of Education in whose control they were kept. Complete anonymity was accorded this information.

In their last semester of training at college, student teachers are expected to evaluate the Environmental

Education programme they are about to complete. A question relating to this aspect of the syllabus is asked in the examination of the Environmental Education course at the end of the third year. Answers from student teachers doing the primary and secondary diploma at the end of 1989 and 1990 answers were photocopied and made available to the researcher.

External examiners also provided the researcher with moderator's reports covering the period 1988 to 1990. Other written documents in the form of minutes of panel meetings on Environmental Education and minutes of the Curriculum Committee were made available to the researcher by the Institute of Education at UNIBO.

Although in some instances such documents provided little information, they provided an opportunity for a more direct communication process between the researcher and the different informants (Van Sant 1989). Analysis of written materials was also considered important in cross-validating the interviews of student teachers, lecturers, chief examiners, rectors and the course co-ordinator of the Institute of Education at UNIBO.

3.4 FIELD PROGRAMME

The process of data collection spanned a period of approximately three months from March to May. The

researcher required this time due to the fact that some participants were not easily available with students being on practice teaching and lecturers visiting them in schools to evaluate them. The commitment of some rectors in other activities away from colleges also prolonged the period of data collection. Interviews at each college covered one to three days depending on the number of informants identified at a particular institution.

In the words of Rist (1982) "Gaining entry, and the conditions under which it is granted, is one of the most critical phases of qualitative research." In order to gain access to the Colleges of Education, permission was asked from the rectors through written letters of introduction from the Department of Education at Rhodes University. Such letters were written eight weeks in advance to help ensure acceptance of the researcher by the college management (See example in appendix J). Permission was in each case given to the researcher provided that he did not disturb the running of the college. This approach was appreciated by rectors and helped to establish a good and friendly relationship from the outset.

The researcher met with rectors and in some cases vice-rectors two days before the day on which he conducted interviews to obtain formal approval. Meetings were also held with lecturers offering the Environmental Education courses and in some cases with final year students to fully

explain the project to them as participants. In general, the researcher was welcomed in all the colleges with invitations made in some cases to the researcher to address students on Environmental Education and environmental issues.

3.5 DATA ANALYSIS

Based on the information provided by the respondents, the researcher separated the sample into five broad categories; students' perceptions, lecturers' perceptions, rectors' perceptions, external examiners' perceptions and the perceptions of the course co-ordinator at the Institute of Education at UNIBO. The information obtained was analysed for content and then synthesized in five cohesive chapters; knowledge on Environmental Education; views about the Environmental Education syllabus; course operation; examining of Environmental Education; and the ethos and support of the colleges and the Institute of Education. The researcher is fully aware of the subjective nature of the comments made and the conclusions drawn in the "results" and "interpretations" in the following five chapters.

The researcher has also analysed documentary sources and used information acquired from them to cross-validate data obtained from the semi-structured interviews. Analysis of written documents also drew attention to inconsistent or

contradictory statements and helped to ensure that as close as possible to a true sense of reality was presented.

3.6 APPLICATION OF EVALUATION MODELS

This study presents a holistic portrayal of the operation of Environmental Education courses in Bophuthatswana Colleges of Education. Methodologies applied tend to describe the programme from the perspective of the participants. The participants indicated the strengths of the courses and this accords with evaluation ideas of the Joint Committee of Standards of Educational Evaluation (1981), Nevo (1983), Scriven (1967), Stufflebeam (1974, 1983) and Stufflebeam et. al. (1971) that evaluation is concerned with merit or worth as highlighted in section 2.3.1.

Weaknesses in the operation of Environmental Education courses are identified and recommendations have been made in this study. Such recommendation can lead to informed decision making as suggested by Alkin (1969), Conbach (1963), Stufflebeam (1974, 1983) and Stufflebeam et al (1971) in section 2.3. Some of the general objectives of the programme (see general objectives 4 and 5 in Appendix H are assessed and it can be mentioned here that this study accommodate evaluation ideas of Tyler (1950), Stake (1967), Provus (1971) and Hammond (undated) as discussed in section 2.3.

3.7 EVALUATION OF THE RESEARCH METHODS

Of the two data-collection techniques used in this study, semi-structured interviews produced most primary source data and revealed most insights on a range of topics. The interviews provided comprehensive data which reflected the views of the informants and suggestions by them regarding the development and implementation of Environmental Education in the curriculum for teacher education. In some instances the researcher made a serious omission by not asking some of the respondents interview questions which could have drawn important information. For example, lecturers were not asked what they thought about the support and guidance they required. Limited time available to the researcher to complete this study also affected the researcher's choice of the number of students.

Documentary sources acquired by the researcher provided valuable information to validate the respondent's perceptions. In most instances views expressed by interviewees were similar to those written on acquired documents.

CHAPTER 4KNOWLEDGE ON ENVIRONMENTAL EDUCATION AND ENVIRONMENTAL
ISSUES4.1 INTRODUCTION

In this chapter responses are analyzed to find out the following:

- * Knowledge relating to the understanding of Environmental Education, and
- * Knowledge relating to the understanding of environmental issues.

4.2 THE CONCEPT OF ENVIRONMENTAL EDUCATION

The basic concept of Environmental Education has been dealt with in chapter 2. In order to synthesize the criteria for judging and evaluating the responses the following criteria from Unesco-Unep (1978), which is a key document in clarifying the concept of Environmental Education, are used:

The 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 the motivation for actively participating in environmental improvement and protection.

Skills: to help social groups and individuals acquire the skills for identifying and solving environmental problems.

Participation: to provide social groups and individuals with an opportunity to be actively involved at all levels in working towards resolution of environmental problems. (p. 3).

The understanding of the concept of Environmental Education by all the respondents is analysed and summarised in Table 4.1. This table forms the basis of the discussion of Environmental Education by all the respondents in the subsections which follow.

Table 4.1 Summarised responses to the question "What do you understand by the concept Environmental Education?"

	AWARE- NESS	ATTITUDES	KNOW- LEDGE	SKILLS	PARTI- CIPA- TION
STUDENTS (N=13)	8	5	8	4	1
LECTURERS (N=8)	6	2	3	5	1
RECTORS (N=3)	2	2	1	0	0
EXAMINERS (N=2)	0	1	2	1	0
INSTITUTE REP. (N=1)	1	0	1	0	0

4.2.1 The concept of Environmental Education as understood by students.

With respect to the column on "awareness," Table 4.1 indicates that eight students out of 13 display, in the opinion of the researcher, an understanding of the concept Environmental Education as relating to the Unesco-Unep criterion of "awareness" of the environment. A further analysis of the concept awareness is given in Table 4.2 which indicates that six students out of eight, who described Environmental Education as relating to awareness, have described awareness as a concern with "allied problems". This suggests a learning experience by student teachers over their two-year period of training in colleges, assuming that they had little environmental awareness before coming. This is in agreement with the explanation of awareness in Unesco-Unep (1978). One student who perceived Environmental Education as being concerned with allied problems said,

I would say it (Environmental Education) is a field of study which make students aware of current problems and possible solutions to such problems. Problems such as pollution, population explosion, ozone depletion and so forth.

Table 4.2 also indicates that four out of the eight students who described Environmental Education as relating to awareness perceive it as a concern about the total environment. This is also in agreement with Unesco-Unep (1978) and it also indicates a learning experience by students who take the Environmental Education course at

college.

Two students of those who described Environmental Education as being concerned with awareness relate this awareness to "activities in the environment". This is not in accord with the Unesco-Unep (1978) conceptualisation of awareness, but in the considered opinion of the researcher this description of the concept awareness relating to human activities in the environment can be considered as an acceptable and good explanation by the students.

TABLE 4.2 A summary of student responses to the components of the Unesco-Unep concept of "awareness".

	Students (N=8)
Activities in the environment	2
Sensitivity	-
Total environment	4
Allied problems	6

It is also significant that not a single student has described awareness as relating to sensitivity. The researcher feels that such an explanation of Environmental Education in colleges is not made maybe due to lack of material such as the Unesco-Unep (1978) document in which the aims, objectives and principle of Environmental Education are stated. It is also possible that students did not perceive awareness as sensitivity because the

researcher did not expose them to such a concept during the interview.

Table 4.1 also indicates that five students out of the 13 interviewed understand Environmental Education to be concerned with the development of attitudes. This is in agreement with the Unesco-Unep (1978) stated objectives that Environmental Education should help individuals to acquire a set of values, feelings and concerns for the environment.

In all cases the five students who used attitudes as a criterion to describe Environmental Education perceived it as a means of changing the damage done by human beings to their environment. One student said,

Environmental Education is the correction of what we as human beings have done to the environment. It correct people's perception and enable them to correct the problems that we as human beings have done.

Eight students out of the 13 interviewed indicated knowledge as a criterion to describe Environmental Education. One student said,

Environmental Education is a discipline which deals much about people and how they are aware about the things that are found in their surroundings. The people must have knowledge about their standard of living and the problems experienced in their surroundings.

The researcher believes such knowledge-orientated responses reflect the approaches and emphases of the Environmental Education courses. The researcher's own experience has

taught him that most students admitted in the course do not generally show concern about issues around them, but after being exposed to the courses, then start to show much more concern.

As far as the acquisition of skills is concerned, only four students displayed this objective to describe Environmental Education. This might be an indication of how students think about what they learn, that what they learnt is only for examination purposes and not something to be used throughout their lives. From the researcher's experience, in most cases students learn only to score high marks in the examination and do not use the skills they have acquired in their subsequent life experience.

Table 4.1 also indicates that only one student perceived Environmental Education as a discipline which provide individuals with an opportunity to be actively involved in working towards resolution of environmental problems. It can be speculated here that students do not see Environmental Education as a discipline which encourage participation but as a subject to do in order to qualify for the diploma. The researcher feels that maybe through engaging students practically in community projects which address environmental problems their understanding of Environmental Education would change more towards the objective of participation. Students indicated knowledge of what Environmental Education is all about. Although

they displayed all objectives of Environmental Education, the objective of participation as indicated in Table 4.1 still needed to be clarified to them.

4.2.2 The concept of Environmental Education as understood by lecturers.

Table 4.1 indicates that six of the eight lecturers interviewed see Environmental Education as developing awareness among the people. This is in harmony with the high response of students who understood Environmental Education to be concerned with awareness. It can be speculated here that possibly lecturers emphasised awareness in their explanation of the concept of Environmental Education to students. One lecturer said,

Environmental Education to my mind has to do with creating awareness among people of the limited nature of natural resources and our desire to make effective use of them, conserve them for future use, and make sure that we live a healthy life in society.

The understanding of Environmental Education in the above quotation indicates a narrow view where it is seen as concerned only with natural resources. This might be a good explanation for the sake of informing people but it does not tackle the broader issues of understanding Environmental Education as a comprehensive concept.

Table 4.1 also indicates that two lecturers displayed attitudes, three knowledge, five skills and only one

participation, in their explanation of the concept of Environmental Education. This reveals that generally lecturers understand the objectives of Environmental Education.

The fact that only one lecturer displayed participation in explaining what Environmental Education is, raises concern on the part of the researcher. It can be speculated that active involvement in working towards resolution of environmental problems is not emphasised in lecturers' teaching. If lecturers do not understand Environmental Education to be leading to active participation, this could be a constraint towards spreading its objectives to student teachers and ultimately the pupils they are going to teach in schools.

4.2.3 The concept of Environmental Education as understood by rectors

Table 4.1 indicates that out of the three rectors interviewed, two displayed awareness, two attitudes, one knowledge, and not a single rector displayed skills and participation in their explanation of the concept Environmental Education. From the rectors' responses it can be speculated that they display some degree of what Environmental Education is all about.

It is understandable that rectors are not specialists in

the field of Environmental Education and cannot be expected to give a detailed explanation thereof, but their omission of categories of skills and participation in describing Environmental Education is a matter of concern. If rectors do not understand that Environmental Education leads to participation in solving environmental problems this can be a constraint in the implementation of Environmental Education in colleges. Rectors need to be given further information on what Environmental Education is about so that they in turn can encourage lecturers to implement it.

4.2.4 The concept of Environmental Education as understood by external examiners

The two external examiners interviewed for the first and second year levels displayed limited knowledge in their understanding of what Environmental Education is. Only one of them referred to attitudes and skills to describe Environmental Education. It concerns the researcher that the two external examiners for first and second year levels did not display awareness and participation in their description of what Environmental Education is. It suggests that the two categories of "awareness" and "participation" would be unlikely to be accommodated in the examinations set by these examiners and this might be a constraint towards the implementation of Environmental Education in colleges. It also raises questions as to whether students are given fair treatment in the

examinations.

One external examiner indicated three categories of objectives in explaining what Environmental Education is, by saying,

Environmental Education deals with helping people to acquire knowledge, skills, and attitudes which will help them to cope with the environment. After having been taught about Environmental Education and environmental issues, people will change their attitudes and will help others who don't have the knowledge of Environmental Education.

This explanation only emphasizes the spreading of knowledge as the ultimate aim of Environmental Education. This narrow view of Environmental Education by an external examiner needs to be addressed through workshops, seminars and panel meetings with lecturers.

4.2.5 The concept of Environmental Education as understood by the Institute course co-ordinator.

The Institute's course co-ordinator displayed limited awareness and knowledge in explaining what Environmental Education is about (see Table 4.1). Although he indicated that he understood Environmental Education in terms of the accepted definition of the IUCN, he gave no indication of what he understood by the definition. It concerns the researcher that the Institute course co-ordinator could only suggest two of the five categories of the objectives of Environmental Education. This suggests that he has a

limited background and understanding of the concept which could be a constraint towards the implementation of the course in colleges. The researcher feels that the course co-ordinator should make more use of people in the community who do know what Environmental Education is about.

4.3 KNOWLEDGE ON ENVIRONMENTAL ISSUES

Environmental issues are happenings in our social, political, economical and bio-physical environment (O'Donoghue and McNaught 1990; Rowland and Cooper 1983). Environmental issues can also be classified into three broad categories namely global threats (for example, acid rain, global warming, destruction of the ozone layer and tropical forests); regional destruction of life support systems (for example, habitat destruction, soil erosion, pollution and others) and socio-political issues like political oppression, rural poverty and social unrest (O'Donoghue and McNaught 1990).

Environmental issues rarely act in isolation from one another. Because they are interconnected, it is often not possible to establish a simple cause and effect relationship between an issue and its causes (Rowland and Cooper 1983). Although environmental issues are mentioned individually by respondents their interrelationship and complexity should always be borne in mind.

4.3.1 Knowledge of environmental issues by students

The results of question 14 "What do you perceive as environmental issues?" are given in Table 4.3 and they show pollution to be the major area of concern. Also of interest is population explosion, deforestation and soil erosion. The issue of housing which is cited by only one student but is closely related to population explosion raises suspicions as to what extent it was addressed in lectures.

TABLE 4.3 Environmental issues identified by students
(N=13)

Pollution :	11
Water Pollution	5
Littering	6
Air pollution	7
Ozone depletion	7
Population Explosion	6
Deforestation	5
Global warming	4
Soil erosion	3
Conservation of natural resources	1
Housing	1

As far as conservation of natural resources is concerned, environmental educators in centres like the Goldfields Education Centre in Pilanesberg and the South African Nature Conservation Centre (S.A.N.C.C.) at Delta Park in

Johannesburg which were visited by most of the students interviewed (see chapter 7) might be disappointed to realise that it was indicated by only a single student as an environmental issue. It is worth noting that the students identified the depletion of the ozone layer and global warming as real environmental issues. It might be speculated here that this shows the strengths of the Environmental Education programme which provide students with knowledge on global issues. This supports a comment by one external examiner in 1990 as quoted in paragraph 7.3.1. that lecturers do address topical issues in their teaching. What one would ultimately hope to see is more mention and identification of global issues as lecturers become more informed about them and cover them in their lessons.

The issue of deforestation is also identified by five students out of 13 with only three students indicating soil erosion which is associated with deforestation. It raises concerns as to how much the issue of soil erosion is addressed for it is a reality in Bophuthatswana where there is a shortage of fuel with a lot of wood collection taking place (Wilson & Ramphela 1989). This might also be attributed to the fact that possibly most students interviewed are living in urban settlements like Ga-Rankuwa, Mabopane and Temba where there is industrial development. Identification of pollution as an environmental issue by eleven students suggests more

support for this speculation. Generally, one might conclude that while some environmental issues are addressed in the Environmental Education programme, this is not enough because environmental issues do not only refer to the physical environment; political, social, economic and aesthetic issues also need to be covered. This is an apparent weakness as revealed by students' responses.

Shifting an emphasis from identifying environmental issues to the issue of communicating them, led to the question :

15. Do you ever discuss certain environmental issues you learn about in Environmental Education with your friends?

Ten students out of the 13 interviewed said that they discussed environmental issues with their friends. One student said,

Well, I remember a friend of mine. They were making a demonstration and she asked me why there is a sticker of an ozone friendly on the deodorant spray? I had to explain to her about the ozone layer destruction.

The above quotation shows how students can easily spread the knowledge they have acquired to the other people of the community. The researcher feels that students need to be exposed to more such issues because there is a possibility that other community members can benefit from the knowledge which they acquire from Environmental Education lessons.

4.3.2 Knowledge of environmental issues by lectures and rectors.

Two questions, 17 for lecturers and 3 for rectors were asked to find out whether lecturers communicate about environmental issues with their rectors and which environmental issues need to be attended to. The two questions asked in interviews were:

17. Do you ever talk to your rector about environmental issues?

If yes, what issues do you discuss?

If no, why?

3. Do you discuss environmental issues with your lecturers?

If yes, what issues do you discuss?

If no, why?

Results to the questions reveal that there is communication about environmental issues between Environmental Education lecturers and rectors of Colleges of Education with only two lecturers having indicated that they do not talk to their rectors at all, and that they do not even see them. In the considered opinion of the researcher, more particularly because of his involvement with the Environmental Education programme in colleges, this is a significant point raised by the two lecturers and should not be lost sight of. In most cases rectors do not discuss

with lecturers about their teaching and moreover they are largely interested in the results at the end of the semester. One lecturer of the two who indicated that they never talk to their rectors said:

I do not even see the rector. I guess it is because of the pressure of work because in most cases we are here and the rector is out of college or he is in his office and we never see him.

Probing to questions 17 and 3 gave further interesting results which are summarised in Table 4.4. It is quite evident that littering is a major concern in Colleges of Education. From the researcher's experience of five years attached to a college, the issue of littering is a real problem in colleges. Maybe the management in colleges need to show much more concern about this issue.

TABLE 4.4 Environmental issues discussed by lecturers and rectors

	Lecturers (N=8)	Rectors (N=3)
Littering	5	3
Tree Planting	4	2
Environmental days	3	1
Illiteracy	0	1
Unemployment	0	1
Soil erosion	0	1

Tree planting and environmental days are also indicated as environmental issues commonly discussed by lecturers and rectorors. Because the two issues concern practical activities which might be done in the college campus, the researcher feels that the discussion occurred mainly due to consultation only to comply with bureaucratic procedures, when lecturers organise such activities.

It is interesting to note that illiteracy and unemployment are also indicated as environmental issues which are communicated but only from the rector's point of view. Illiteracy can lead to unemployment and ultimately poverty which is widely experienced in southern Africa (Wilson and Ramphela 1989). The fact that lecturers did not raise the two issues as being critical, raises concern as to how much they are tackled in their lectures. This is confirmed by the responses of students discussed in paragraph 4.3.1 where they did not raise poverty as an environmental issue.

Another interesting response by one rector is the issue of soil erosion. Lecturers did not see this as an environmental issue to discuss with their rectorors, but one rector saw it as a critical issue:

One environmental issue I always talk about is soil erosion. Our area is very sandy and we should educate the community to conserve the soil which is so important to us.

The researcher is of the opinion that because farming is no

longer a common practice in some areas of Bophuthatswana, especially where the researcher made this study, it is possible that soil erosion cannot become a major concern for the respondents.

4.3.3 Feelings of external examiners about the teaching of environmental issues.

Question 10 was asked to find out whether students in their answering of examination question papers show the possibility of having addressed environmental issues in their areas. This question read as follows,

10. Do you think lecturers and students address real environmental issues in their regions?

If yes, what issues are they?

If not, what issues do you think they should address?

The two external examiners for first and second year levels indicated that students' answers do not show that they have tackled environmental issues in their areas. One examiner stated that students were, in fact, unable to give practical examples of problems they experience in their areas. The concerned examiner said:

No. Why I say so is because in most of the questions you ask them to give practical examples from their own experience and area, there is where they experience problems. It is like they can't identify them. They can't relate issues to their surroundings.

The above assertion is also supported by the second year external examiner who said:

... they are too theoretical instead of being practical. Because if we are to talk about environmental issues they have to relate them to their practical environment. We have a lot of littering in many regions, especially, Mabopane and Ga-Rankuwa, but it does not reflect from their answers.

4.3.4 Knowledge of environmental issues by the course co-ordinator

The course co-ordinator was asked the question:

What environmental issues do you think Environmental Education lecturers and students should address?

In his response to the above question the course co-ordinator indicated that parochial issues closer to colleges as well as global issues should be addressed. To the course co-ordinator such issues can be exciting to the students and they can create a good learning experience. In the opinion of the researcher this is a good perception of what environmental issues are by the course co-ordinator. In addition, the researcher's experience of resource materials sent by the course co-ordinator to lecturers also covered parochial as well as global issues and this is a good contribution towards the success of the Environmental Education programme in colleges.

4.4 CONCLUSION

This chapter focused on two important areas, namely, knowledge of the concept Environmental Education and knowledge of environmental issues. Respondents indicated a considerable knowledge of what Environmental Education is about. Environmental Education objectives relating to awareness, attitudes, knowledge, skills and participation were displayed in explanations given by the respondents. Most respondents could explain Environmental Education by referring to objectives of "awareness of allied problems", "development of attitudes" and the "acquisition of knowledge". The two objectives of "skill development" and "participation in solving environmental problems" need to be given more consideration. In addition, constraints such as lack of instructional materials and examination need to be addressed.

As far as environmental issues are concerned students showed a learning experience by referring to both local and global environmental problems. This indicates a strength of the Environmental Education programme. Lecturers and rectors, however, need to be exposed to more knowledge of what environmental issues are and to be encouraged to communicate them to others. It would seem that external examiners are not satisfied with students' understanding of environmental issues and maybe this needs to be addressed.

Having now established something of the respondents' understanding of Environmental Education and their perception of environmental issues, we now turn our attention to investigating perceptions of the college syllabus for Environmental Education.

CHAPTER 5**VIEWS ABOUT THE ENVIRONMENTAL EDUCATION SYLLABUS.****5.1 INTRODUCTION**

In this chapter views of lecturers and students relating to the Environmental Education syllabus in colleges are analysed and discussed (See Appendix H for the syllabus). Rectors were not asked to comment about the syllabus itself but their comments relating to the inclusion of Environmental Education in the whole Teacher Education Curriculum were taken into account. Students views about the syllabus are also discussed in Chapter 6.

5.2 ASPECTS CONSIDERED LEAST WORTHWHILE IN THE SYLLABUS

Table 5.1 indicates that sixteen out of twenty one respondents stated that nothing should be left out of the existing Environmental Education programme. This is an indication of some degree of satisfaction with the existing syllabus. Trails, outings, excursions, and fieldtrips were mentioned by four respondents as being least worthwhile.

TABLE 5.1 Summarised responses to the question "Which aspects do you consider least worthwhile in the Environmental Education syllabus?"

RESPONSE	STUDENTS (N = 13)	LECTURERS (N = 8)
None	10	6
Trails	1	2
Fieldtrips/Outing /Excursions	1	-
Environmental Education in Bophuthatswana	1	-

All of these take place outside the classroom and one would speculate here how strongly this relates to a general reluctance among teachers, especially the products of "Bantu Education", to engage in any teaching outside the security and confines of the classroom in which the teacher holds sway and has total control. The researcher has personally experienced many such instances of teachers having fears of being asked questions outside the classroom which they would not be in a position to answer and would then see their status and authority over the pupils

threatened. This is proved by a student who answered that:

The syllabus stated that we must design a trail but I cannot even manage that, so I feel it is not important.

The above quotation also suggests that a possible further reason may lie in the perceived non-relevance of trails as for example the student who stated that :

They are not good because sometimes after undertaking an excursion we don't get solutions to problems we have experienced at college.

A single student quoted the section dealing with perspectives on Environmental Education in Bophuthatswana stating :

... to me is very trivial to our course. We are not people who determine the educational structures. So it becomes very difficult for me to infer into the situation because they are saying or the question is like this :
How as Minister of Education will you device a plan to teach Environmental Education in Bophuthatswana?

This point should not be lost as it might be more widely shared, but one might ask whether to some degree it is a resistance to be empowered, however small an attempt this might be.

One further comment is worth noting from a lecturer who felt nothing should be left out. He said :

As far as I am concerned I have not discovered what could be left out because you find that according to the syllabus people need to be introduced to these courses. And there must somehow be some guidance and resources made available to teach some of this topics. With resources being available one will be in a position to teach the courses with ease.

The above quotation indicates that a lack of resources is a serious constraint towards the teaching of Environmental Education. This aspect of lack of resources is discussed in Chapter 8.

5.3 PERCEPTIONS RELATING TO THE TEACHING OF THE SYLLABUS

In order to find out whether the Environmental Education syllabus has the quality to arouse concern or curiosity that hold practitioners attention, questions about whether the syllabus covers lecturers' interest and which aspects are easy to teach were asked.

5.3.1 Aspects considered easy to teach

Table 5.2 indicates that out of the eight lecturers interviewed only one found it easy to teach all the topics. This suggests that lecturers experience difficulties in the teaching of the Environmental Education courses (see paragraph 5.3.2). It can be speculated here that this could be due to lack of training on the part of lecturers as indicated in Chapter 3.

TABLE 5.2 Topics identified by lecturers to be easy to teach (N=8).

TOPIC	NUMBER OF OCCASIONS MENTIONED
All	1
Environmental crises like pollution, soil erosion etc.	8
Trails	1
Introduction to Environmental Education	2
Organisations related to Environmental Education	1

The aspect on environmental crises is mentioned by all the lecturers as being easy to teach. It can be speculated here that this is due to the fact that environmental issues are a real experience to both the lecturers and the students, and students tend to understand more easily aspects that they see and identify with. This assertion is confirmed by one lecturer who said,

I think those aspects which deal with pollution, soil erosion and overgrazing. I think they are used to them.

A single lecturer mentioned trails as an easy topic to teach. From Table 5.3 it can be deduced that the section on trails is considered the most difficult area for lecturers to teach. This is confirmed in section 6.5.1. which revealed that this aspect is only dealt with theoretically without any practical trails developed in colleges as the syllabus requires (See Appendix H).

5.3.2 Aspects considered difficult to teach.

One lecturer of the three who experienced difficulties with trails as indicated in Table 5.3 mentioned that it is difficult to impress in the minds of the students how a trail can be an important issue in Environmental Education. He said,

I think aspects such as trail and trail development are a little difficult to impress on the minds of students. They cannot see how trails can be so important a concept in Environmental Education. They want more concrete issues to their life than recreational facilities like going out hiking that is not important to their studies.

It can be speculated from the above quotation that some lecturers perceive trails purely as recreational facilities and not for use in teaching. This is an indication of lack of knowledge on the part of lecturers of what trails are and how they can be developed. This aspect is further discussed in Chapter 6.

TABLE 5.3 Topics considered difficult to teach

Responses	Lecturers (N = 8)
None	2
Trails	3
International overview	2
Introduction to Environmental Education	1
School community and the environment	1

A single lecturer as indicated in Table 5.3 experiences difficulty in teaching the section on the "Introduction to Environmental Education" to the first years. He said,

Students regard Environmental Education to be a totally new subject. They are inclined to perceive Environmental Education as Geography, because most of the subject matter that is contained in Environmental Education is more related to Geography but it is not Geography as such. So, difficulties arise with regard to the differentiation between Environmental Education and Geography.

It can be speculated from the above quotation that Environmental Education in colleges might still in some cases be confused with Geography. This confusion might also be brought about by the admission criteria used at the colleges where Environmental Education is made compulsory for students taking Geography. This can be a constraint as far as the understanding of Environmental Education is concerned.

One lecturer also pointed out that the section on "School, community and the environment" is difficult to teach. He commented that,

... there is no available material to teach such an aspect. I don't find it easy to just move into the community or the society and find relevant material to teach about this topic.

The problem of lack of material to teach the Environmental Education syllabus is quite evident from the above quotation. On the other hand it can also be speculated that there are still lecturers who limit their teaching within the classroom situation.

Two lecturers indicated that they experience difficulty in teaching the aspect on "An International Overview of the concept Environmental Education" It can be speculated here that difficulties arise in this section because lecturers do not have resource material relating to this topic or they really do not know what to teach.

5.4 EXTRA-INFORMATION FOR THE SYLLABUS.

The question "What additional information do you feel should be added to the Environmental Education syllabus?" was asked of lecturers with the hope that they would easily state topics which they feel should be addressed by the Environmental Education course. As indicated in Table 5.4, three lecturers felt that the Environmental Education

syllabus is adequate and nothing extra should be added. Maybe this is due to the fact that lecturers do not know much about Environmental Education, so they did not want to commit themselves on the subject that they are not conversant with. It can also be speculated that lecturers in colleges are overloaded with a lot of teaching to do, so extra-information will become more of a load to carry.

TABLE 5.4 Additional content to be added to the syllabus

	Lecturers (N = 8)	Institute Co-ordinator (N = 1)
None	3	---
More practical work	4	1
Little work is done	1	---

A single lecturer felt that little is done in the course of Environmental Education but when probed further the lecturer concerned could not state what should be added to the course. It can also be speculated here that the lecturer concerned felt a need for the improvement of the syllabus but due to lack of specialisation in the course he could not state clearly what needed to be added.

Table 5.4 also indicates that four out of eight lecturers together with the Institute course co-ordinator felt that more practical work should be added to the syllabus. Presently, practical work and project work accounts for a quarter of the course over the three years and it is at all

stages integrated with theory (Irwin 1987b). Possibly this shows lack of awareness or failure on the part of lecturers to realise and interpret the syllabus document properly. One lecturer revealed this failure to interpret and understand the syllabus properly when he said,

I think in our syllabus, students should be made aware of environmental days wherein they can participate fully, because we only teach them we don't participate fully.

It may be deduced from this quotation that lecturers might limit their teaching to the classroom situation with lack of involvement of students in practical activities outside the classroom or within the community. Such a point was made earlier (see section 5.1). One other lecturer also showed dissatisfaction with the practical work given in the syllabus by saying,

I suppose the theoretical part is okay, what should be more interesting is the introduction of more practical work. In our institutions we are engaged in a lot of theory and students ultimately don't appreciate the practicality of the issues which has been given to them. This can be done by giving a practical project in the second semester of each year which will make them apply the theory acquired in the first semester.

The course co-ordinator also indicated that the syllabus needed to be augmented by adding more practical projects. In this respect he suggested more surveying work and in addition that students should suggest topics that need to be added to the syllabus. The researcher feels that these aspects are accommodated in the different sections of the course outline (see Appendix H). It can be speculated that

maybe lecturers together with the course co-ordinator need a syllabus which is more specific and more detailed. This issue has also been raised by one external examiner (see section 7) and it seems it needs serious consideration.

5.5 RECTORS VIEWS ABOUT THE INCLUSION OF ENVIRONMENTAL EDUCATION IN THE COLLEGE CURRICULUM

All the three rectors interviewed indicated that the inclusion of Environmental Education in the Teacher Education curriculum is very important. One said:

To me the curriculum that excludes Environmental Education is incomplete because I see it (Environmental Education) as enhancing one's awareness of the environment. As far as I am concerned it should cut across the curriculum.

The above quotation also supports the view that Environmental Education should be inter-disciplinary or integrated in its approach.

A single rector perceived Environmental Education to be almost similar to Geography by saying that:

Environmental Education is more important in the primary section because most students in that section have not done Geography at matric level and it is a bridging course for such students. It will help such students, and for those who have done Geography in the secondary diploma and are proceeding with Geography and taking it (Environmental Education) as an ancillary it is just reinforcing them, giving them extra information on Geography as a whole.

According to the Bophuthatswana National Parks Board : Tertiary Unit (1991), this association of Environmental

Education with Geography is viewed by Environmental Education lecturers as a hindrance to the implementation of Environmental Education in colleges. Environmental Education lecturers felt that they should be seen as subject specialists and not be grouped with Geography or Agriculture. They viewed such an independence of Environmental Education from other departments as an advantage with respect to the channelling of funds and budgeting, assumption of administrative responsibility and control over the use of certain instructional materials that need to be used in Environmental Education by lecturers, and availability of the opportunity to Environmental Education lecturers to take decisions on issues relating to the use of the college grounds by advising the maintenance staff on issues of campus care.

The researcher feels that all students should be given a chance to take Environmental Education as a course in colleges, and Environmental Education should not be seen as Geography nor Biology but as an approach that can be used by all the teachers.

The inclusion of Environmental Education in the Teacher Education Curriculum was also supported by the course coordinator who said:

I think no Teacher Education programme can afford not to include Environmental Education. How it is included depends very much upon the philosophy of the developers and the people for whom the programme can be offered to. I think there are two ways of introducing it, as a straight hard

cell when it is introduced as a subject, or to introduce it coming from a lower base that is to say, every subject should include an element of Environmental Education. Although I am little bit sceptical to the success of that approach I would prefer the approach we are using. Put it as a subject, struggle with it and let it diffuse slowly into other subjects.

Quite evident from this quotation is the idea that Environmental Education can best be implemented in the Teacher Education Curriculum in the form of a subject as an entity rather than being incorporated in several disciplines only. This is compatible to several comments by students who felt that Environmental Education should be made a major in colleges so that it can compete with other disciplines like Geography, Mathematics, Afrikaans, and so on.

A further comment about the inclusion of Environmental Education in the Teacher Education Curriculum was made by a rector who said :

Environmental Education makes students conscious of the community within which they live. But community to me forms part of Environmental Education and if they are properly oriented towards Environmental Education they would in the meantime become aware of what we would refer to as environmental quality. There would be values in the community in which they would serve in life which they should aspire to and everybody looks forward to good things. It would make them to aspire to have quality in their environment. They would observe and strive towards good values and quality values in their environment.

The above quotation agrees with the idea that Environmental Education should extend into the nearby community but not

end in the classroom.

5.6 CONCLUSION

The overall analysis of the syllabus revealed that the present syllabus of Environmental Education satisfies lecturers and most felt that nothing should be left out. Lecturers find it easy to teach about the "environmental crises" but the section on trails is problematic with lecturers teaching this section in theory only. Lack of teaching resource materials with lecturers not understanding concepts like trails is a constraint in the teaching of Environmental Education. Generally, the introduction of Environmental Education in the Teacher Education Curriculum is welcomed by rectors in Bophuthatswana Colleges of Education.

Having now established something of the respondent's views about the Environmental Education syllabus and perceptions about its incorporation in the pre-service teacher training, we now turn our attention to the operation of Environmental Education courses in colleges.

CHAPTER 6COURSE OPERATION6.1 INTRODUCTION

In this chapter an evaluation of the operation of Environmental Education courses in Colleges of Education is made and discussed under the following sub-headings :

- * The quality of lectures
- * Practical work
- * Field excursions and
- * Trails

6.2 THE QUALITY OF LECTURES

In order to find out about the quality of lessons and abilities of lecturers, opinions were sought from external examiners and students.

6.2.1 External examiners' perceptions of lessons and lecturers

Views were sought from two external examiners for first and second year levels about Environmental Education lessons and the lecturers offering them. Such views are sought through the following questions:

"8. Do you think lecturers have enough background

knowledge and confidence to teach the Environmental Education course?

9. Do you think students are exposed to problem solving and decision making processes which are applied to environmental management concerns? Comment?"

6.2.1.1 Perceptions of external examiners relating to lecturers' background knowledge and confidence

One of the two external examiners interviewed said,

I have come to realise that the lecturers presently teaching Environmental Education should have been Geography lecturers. I have always commented that they are not happy. I think the problem is that generally in Colleges of Education, we employ people who have not been exposed to the teaching situation and to the extent that they depend on the textbook. They can't relate their teaching with and visualise how is it possible at the college, and implement it in the school situation. I think it is a general problem. And in a practical subject like Environmental Education that becomes more of a problem.

This quotation suggests that lecturers depend on textbooks for their teaching. As Environmental Education does not have a single textbook to rely upon totally, or which covers all the topics in the syllabus, this could be a major constraint to its teaching. Another constraint which is reflected in this quotation is that it is a common practice that in colleges lecturers teaching geography are automatically appointed to teach Environmental Education without considering their interests. This too could be detrimental to the implementation of Environmental

Education in colleges. The general lack of teaching experience of lecturers appointed to lecture in colleges can also affect the teaching of Environmental Education for they lack the expertise of using different teaching approaches. In the researcher's opinion the above-mentioned constraints can lead to poor lessons and ultimately a negative attitude to the course by both lecturers and students.

Although Environmental Education lecturers might find it difficult to offer their courses due to the above mentioned constraints, Irwin (1989) in his letter to the Director of the Institute of Education said,

I wish to record what a pleasure it is for me to see the growth and development of Environmental Education in the Colleges, not only in terms of the increase in the number of students taking the courses but, very importantly, in the quality of work which is being produced by them. Clearly this is a reflection of the increasing quality of teaching in environmental education at the Colleges.

This quotation is based on Irwin's observation during the period 1986 to 1989, the period during which he was the chief examiner for all three year college levels. Contrary to the former quotation by one of the two external examiners interviewed, this quotation suggests that the quality of work produced by lecturers in colleges is satisfactory and also shows growth and development. In addition, there is an increase in the number of students taking the course, which suggests that Environmental

Education is becoming popular in the curriculum for Teacher Education in Bophuthatswana.

6.2.1.2 Perceptions on whether students are exposed to problem solving and decision making processes.

The two external examiners interviewed, felt that students are not exposed in problem solving and decision making processes which are applied to environmental concerns. One external examiner said.

Yes I think they are not ... Maybe they are interested in passing the course more than thinking about implementing it in the field. Maybe it is still our problem, lecturers you know, our attitudes. It seems we are interested in passing them, making them score marks and nothing else.

The above quotation suggests that there is an element of the "diploma disease" in college students. Students may be interested in passing the examination and nothing else. It can also be deduced that lecturers give students high marks which they really do not deserve. The researcher feels that this can be a constraint to the ultimate implementation of Environmental Education in schools by students who have graduated and not really knowing what Environmental Education is all about.

One of the two interviewed external examiners also indicated that it is difficult for lecturers to expose students in problem solving and decision making processes

because they too are never exposed to such processes. The concerned examiner said,

... lecturers are themselves products of a system which did not teach them problem-solving skills. I think this is a serious problem if not being worse. ... If you visit lecturers in classroom you still find the lecture method being applied, i.e the chalk and talk method. We have not yet reached a point where we as teachers can see ourselves as facilitators of learning. We are predominantly imposing our ideas on our students. I think that is the problem.

This statement implies that it is not easy for lecturers to move away from the chalk-and-talk method to apply Environmental Education approaches because students can imitate their former teachers. There is a possibility that lecturers' practises can be imitated by student-teachers in colleges and it is potentially a very serious constraint on the implementation of Environmental Education in colleges and ultimately in schools.

6.2.2 Students perceptions of lessons and their lecturers

Students responses were drawn relating to the quality of lessons, whether they were allowed to offer suggestions and opinions and also whether they thought Environmental Education courses could provide them with skills and knowledge to practice its approach when they teach.

6.2.2.1 Students perceptions of the quality of lessons

Responses of students to question number 16, "What can you tell me about the quality of lecturing at first and second year level?" are represented on Table 6.1. Some students gave more than one answer.

TABLE 6.1 Summarised responses to the question
'What do you want to tell me about the quality of
lecturing at first and second year level?'

RESPONSE	STUDENTS (N = 13)
Interesting	7
Practical	2
Enjoyable	2
Good	2
They are declining	2
Motivating	1

Question 16 looked to be reasonable to the researcher with the hope that students would comment about lessons and their lecturers but this did not come out from the responses. Seven students out of the 13 interviewed, indicated that the lessons were interesting but when the question was probed further students could not reveal which aspects interested them. Maybe this was because students did not remember topics they treated in previous years and the researcher did not expose them to the syllabus document

during the interviews.

Table 6.1 also indicates that two students perceived Environmental Education lessons to be practical. This suggests that some Environmental Education lessons covered issues real to the students, and that they could implement them practically. This might also have led to the comment that they were enjoyable.

A single student indicated that Environmental Education lessons are motivating. This might also be related to the fact that they are about practical issues to some students and thus they encourage learning. Two students indicated that in their view Environmental Education lessons were declining in quality. This might be attributed to a change of lecturers, one of the two students commenting:

... presently there is a decline in their quality, since last year, maybe because of the change of the lecturing staff, with little effort being put by other lecturers.

It can also be deduced from this quotation that lecturers differ in their commitment to teaching.

An analysis of final year students' answer sheets supports the above assertion with one student having written:

During my first year course, I did not know really what Environmental Education was because we did not take any excursion or do any practical work but we did the course theoretically. The lecturer who was teaching this course did not have any experience about it. When we asked him questions he always said that he did not know the

answers. So, he was discouraging us because it was the first time we came across this subject.

One student also expressed a concern about an overloaded curriculum in colleges as well as too much work given by the lecturers. This might lead to the situation where students do not attend to their work properly. This student said:

Yes it (lecturing) was good and challenging. In fact lecturing is good but the work they give us is more demanding. We are doing too many subjects.

6.2.2.2 Perceptions of students relating to skills and knowledge acquired from Environmental Education

Final year students were asked the question:

20. Do you think the Environmental Education course so far is providing you with relevant skills and knowledge to practice its approach next year when you teach?

All the students felt that the Environmental Education course had provided them with skills to practice. Further probing to question number 20 led to the question:

"What do you think is an Environmental Education approach?" and the results of the responses are summarised in Table 6.2. Although this question does not elicit what skills the students had acquired, it was deliberately broad and intended to search the extent to which students know what are Environmental Education approaches.

TABLE 6.2 Results of probing to Question 20

"What students understood to be an Environmental Education approach?"

RESPONSE	STUDENTS (N = 13)
Improving the school ground	2
Teaching about environmental issues	2
Teaching about conservation	1
Organising excursions	6
Organising practical projects like cleaning campaigns and tree planting	7
Establish LCC	1
No response	4

Table 6.2 indicates that the dominant consensus was around organising practical projects like cleaning campaigns and tree planting, organising excursions, teaching about environmental issues, improving the school ground, teaching about conservation and establishing a Lengau Conservation Club. It should be noted that field excursions and practical projects each account for almost a quarter of the programme each year (See Appendix H). An alternative explanation could however be that they like the course because they will simply go out on excursions which form the greater part of the course. Furthermore, a statement of knowledge on such topics does not necessarily mean that commitment to practice will result when the students are teaching.

Perhaps most interesting is the proportion (4 out of 13) who could not give a response to what they understand by Environmental Education approaches. This says something about the difficulty of doing Environmental Education as an individual subject at college level and the practising thereof as an approach to teaching in schools. Maybe students still want to see Environmental Education being a subject all by itself in schools.

The following comment indicated that student teachers already foresaw problems in practising Environmental Education approaches in schools :

Yes, because we experience problems when we are on teaching practice. We are channelled to teach only what is stated in the syllabus but not to comment on other issues.

6.2.2.3 Perceptions of students relating to suggestions and opinions on what content to include in the Environmental Education course

Students were asked the question:

13. Do your lecturers allow you to bring suggestions as to what content to include in the Environmental Education course?

Ten out of 13 students indicated that lecturers did allow them to suggest topics for inclusion in the Environmental Education lessons. Only three said No. Most lecturers thus allow students to make suggestions on what content to be taught.

Further probing as to what content they suggested for inclusion in the course of Environmental Education, an interesting pattern emerged which is shown in Table 6.3. Topics suggested by students shows that they want more practical projects as part of the course. Theory was also cited as an area which needs to be given more attention. A single student showed concern about the lack of attention on culture. This indicates a weakness on the part of lecturers who might not be drawing enough examples from the students' cultural background. Because Environmental Education is concerned with the total environment this aspect should be accommodated in the lecturers' teaching. One student suggested the inclusion of a current issue in the form of the Gulf Crisis in lessons. This might also reveal the fact that lecturers sometimes do not address current issues as they exist locally and globally.

TABLE 6.3 Results of probing question 13

SUGGESTED TOPIC	STUDENTS (N = 13)
<u>Practical work</u>	
Cleaning campaign	2
Launching of the E.E day	1
Development of a nature table	1
<u>Theory</u>	
The issue of the Gulf Crisis	1
Addition of cultural aspects	1
No suggestion given	6

A significant number of students (6 out of 13) indicated that they have never suggested any topic for discussion in

class. This reveals the fact that although students can be empowered to decide on what is to be taught this is not an easy task to accomplish. Maybe this is due to the type of schooling which students have experienced which did not allow them to have any input on what they were taught. It can also be speculated here that although students can be given a chance to suggest topics for inclusion in the Environmental Education lesson this practise fails because students know very little about the course and they did not contribute much.

6.2.3 Summing up the findings on quality of lectures

Environmental Education lessons were described as good, practical, enjoyable and motivating. Practices which it was thought affect their quality relate to the lack of experience of lecturers, the allocation of high marks to students, the lack of lecturers' exposure to problem-solving and decision-making, overloaded curricula, traditional approaches to teaching and the choosing of Geography lecturers to be Environmental Education lecturers.

6.3 PRACTICAL WORK AND PROJECTS IN ENVIRONMENTAL EDUCATION

6.3.1 Perceptions of practical projects by lecturers and students

Respondents were asked to comment on practical work or

projects done by Environmental Education lecturers and students. Students were asked the question

What teaching materials or aids have you produced for Environmental Education course? and lecturers were asked the question:

12. What practical work (projects) have you developed with your students? How do you evaluate them?

The responses of both lecturers and students are summarised in Table 6.4.

TABLE 6.4 Projects which students (N=13) and lecturers (N=8) stated to have developed

RESPONSE	LECTURERS (N=8)	STUDENTS (N= 13)
Models	3	-
Scrapbook	6	13
Vegetable Gardens	1	-
Erosion control measures	1	2
Cleaning campaigns	1	3
Tree planting	-	5
Flower garden	-	4
Nature table	-	1

A number of significant points can emerge from Table 6.4 above.

The scrapbook was made mainly because it was stated in the syllabus document. This shows how lecturers still believe in a detailed syllabus which prescribes to them exactly what to do. Although students developed scrapbooks, they

still do not know how to use them (see also section 6.3.4).

It would seem that lecturers are more comfortable with projects which can only be performed within the college campus and not extended into the community. A single lecturer has engaged students on a cleaning campaign but the possibility could be that this was limited to the college campus and did not need any detailed organisation from the lecturer.

Table 6.4 also indicates that students observe environmental days like tree planting day and this shows an environmental practice on the part of lecturers and students. A comment by a student indicates that there are problems relating to the development of practical projects in the college campus. This student said :

There is no good improvement or advancement we have made but last year (1990) we wanted to make the flower gardens but because our college is not well fenced our project did not succeed. The animals came inside and destroyed our garden.

Some colleges' environment needs to be properly fenced to enable students to develop good projects which will last and not be damaged by animals. This is in agreement with the recommendation made by lecturers in the report by the Bophuthatswana National Parks Board - Tertiary Unit (1991).

A single lecturer indicated that students tend not to develop an interest in practical projects:

.... what I have realised is that some of them become committed by the time when these scrapbooks are required for the allocation of marks. Maybe if you can say you are not going to allocate marks they won't put more emphasis.

According to another lecturer, complaints relating to students perceptions are experienced when developing practical projects in the college ground:

I took out my students on cleaning campaigns, although with a lot of complaints that I use them as labourers.

This indicates that some college students perceive cleaning campaigns to be manual labour or hard labour. Maybe this can be attributed to the effects of 'Bantu Education' through which education was used to develop blacks into manual labourers (Molteno 1986).

6.3.2 Perceptions of practical projects by rectorors

The three rectorors were in support of the practical projects performed by the students. One rector said :

I think they are doing good projects. It shows that they are not only theorizing. What they are doing in class they also do practically and it shows that students understand what they are doing.

A single rector indicated that projects developed by students are in most cases not permanent.

I was aware of some flower plots around the college and I am disappointed that it does appear that the project is dying. That is the project I like very much, actually I wish that it could also be extended because it is aesthetic.

Maybe this suggests that there is lack of co-operation

between rectors and lecturers in developing projects, with lecturers not given the necessary support or guidance.

All the rectors felt that Environmental Education projects should also be extended to the community. One stated that,

There should be some community projects, like I talked about job creation that will be part of the project.

Because all the three rectors indicate support for the development of practical projects, this is an opportunity which lecturers need to utilize in implementing Environmental Education in colleges.

6.3.3 Perceptions of practical projects by the course co-ordinator

Problems relating to the development of practical projects can also be deduced from the words of the course co-ordinator who said:

I think originally is a good idea. But I think we have possibly exhausted it because in my visits to colleges I've seen nothing that really catches the eye. I think it is idealistic and I feel that should be a sort of an expression. But if students and lecturers feel that they are moving towards that direction I think that is fine. But I wouldn't say that a project as part of the lectures should go away. I also think that this is due to the attitudes of the management of the colleges. I think management of the colleges is still struggling to come to terms with the management of the college campus. Many of the management committees seem not being able to cope with the students expressions or tolerate something like a rock garden, or aloe bed.

It can be deduced from this quotation that practical projects in the college campus are good but there are problems relating to the management of the college campuses which ultimately affects their development. Students' expressions or their activities in the form of rock gardens or aloe beds are not easily accommodated by the college management. College environments also seem not to be favourable for the development of some of the practical projects. The researcher feels that only through support from the college management can the development of practical projects in colleges be a success.

6.3.4 Perceptions of practical projects by external examiners.

Although all students developed scrapbooks as part of their project in Environmental Education at first year level, a comment by the first year level external examiner in his 1987 moderator's report indicates that students still experience problems in using such scrapbooks:

Students need to have it made clearer about the value of scrapbooks and simulation/games for primary.

This idea is also supported by a comment made by the present first year external examiner who said:

Their response to such questions I think is disappointing and I think it is because I am dealing with the first years we are too ambitious to talk about such things. If you take the first semester, the possibility is that with 3 periods assigned to the course, not everybody could have

tackled the section on the use of the scrapbook.

A view point expressed from the above quotation is that more periods are needed for Environmental Education lessons. These periods will enable lecturers to do more practical activities. Three periods of 35 minutes per week are not enough for this course.

6.3.5 Summing up the findings on practical work

The above discussion reveals that lecturers do try to engage students in practical projects but they experience constraints such as the notion attached to practical work as manual labour, and the college time-tabling. Rectors support the idea of practical projects and such support needs to be utilised.

6.4 FIELD EXCURSION IN ENVIRONMENTAL EDUCATION

6.4.1 Perceptions of excursions by students

Final year students were asked the question "Have you ever visited natural, historical or cultural areas as part of your training?" If yes, what are they? What is your opinion about them? If not, why?" and their responses are summarised in Table 6.6.

Table 6.5 indicates that most students have visited Pilanesberg Game Reserve. Other areas having been visited

by colleges include the S.A.N.C.C. at Delta Park, Rustenburg Game Reserve and Sterkfontein Caves.

Table 6.5 Places having been visited by students (N = 13)

Place	Students (N = 13)
Pilanesberg Game Reserve	10
S.A.N.C.C.	7
Eastern Transvaal	4

Pilanesberg Game Reserve got most visits mainly because of its good facilities in the education centre and more particularly because of the successful Environmental Education programmes operated there. Out of the ten students who visited the Pilanesberg Game Reserve, six indicated that they were most impressed by nature trails operated at this reserve. One student said:

I can say Pilanesberg Game Reserve is very interesting because I have learnt a lot from it. In this area animals are not kept in cages, they are left in their natural habitats or more freely and multiply. We also undertook a nature trail which was interesting because we managed to see varying types of trees and their importance to us as human beings. I think the nature trail there is more important than the one we did at college.

It can be deduced from this quotation that students learn quite a lot from the excursions they have undertaken. Excursions also enable them to compare their practices at

college with what is done in specialist areas like game reserves. A single student stated that accommodation at Pilanesberg Game Reserve needs to be improved more particularly the type of food offered.

Besides Pilanesberg Game Reserve the S.A.N.C.C also provided a good learning experience for the students. One student said:

Oh! I've seen some interesting things at this centre. I was taught about an owl, how it feeds and even how it reproduces. I also managed to see its chicks for the first time. I was also taught about the different ecological systems found in South Africa in the form of models which was very interesting. I think I will take my pupils there next year when I teach.

The Eastern Transvaal area, which is a far area from the location of Bophuthatswana Colleges of Education, was also visited. Although most of what was seen in this area were physical features, students learnt about forestry and the production of paper. It is interesting to note that only one student indicated having done field studies in the college campus and the nearby community. It can be speculated here that most students still understand field excursions to be long trips far away from their college environment. Maybe students still need to be taught that the immediate environment around the school buildings can also provide good learning experiences.

6.4.2 Perceptions of field excursions by lecturers

Table 6.6 indicates that out of eight lecturers interviewed only one has not undertaken an excursion with his/her students. This lecturer pointed out that time was a problem with many activities like work experience, and other college activities given more preference than excursions. It is quite evident from such a lecturer's comment that field excursions are seen as long trips from the school premises. The researcher feels that field excursions could also be incorporated in the college activities, and maybe be done on the nearby environment. Maybe this indicates a need for a workshop to be organised for lecturers on what field excursions entail.

Table 6.6 Places having been visited by lecturers

Place	Lectures (N=8)
Pilanesberg Game Reserve	5
Manyeleti Game Reserve	2
S.A.N.C.C. in Delta Park	2
Rustenburg Game Reserve	1
None	1

From Table 6.6 it is evident that, most of the lecturers interviewed try to take students on excursions. They value the section on excursions very highly with one commenting:

I would imagine that excursions are important because they kind of bridge the gap between theory that is studied in the classroom and the

actual hand-on situation as it exists in our environment. Students are able to correlate the two very effectively. I would imagine that is a very good aspect of the course and it should not be neglected.

From Table 6.6 it is also evident that while trips to local areas were also undertaken by two lecturers, they still put more emphasis on long trips. Little emphasis was placed on the value of the schoolground or nearby surroundings.

Another difficulty indicated by lecturers when undertaking field excursions is that relating to red tape. Permission has to be sought from the Department of Education before an excursion can be undertaken to areas outside Bophuthatswana. Protracted delays in obtaining permission can delay the organising and planning of excursions and in some cases lead to the cancellation of some of the excursions.

Lecturers also experience difficulty in evaluating field excursions. Of the eight lecturers interviewed only three indicated that they have evaluated the excursions they had undertaken. They listed the following means of evaluation:

- they made students complete some worksheets and thereafter such worksheets were marked.
- some discussion of the students' experiences in class.

A single lecturer indicated a good evaluation procedure relating to a field excursion by saying :

We gave out questions to students asking them to critically look at the programme at Pilanesberg, the organisation structure, the activities there, what are the successes or failures, what suggestions will they make to improve the situation, and if in future we have to undertake such an excursion where or what as a group from the college do they think we should improve the programme.

6.4.3 Perceptions of field excursions by rectors

Interviews with college rectors indicated that they all allow lecturers to undertake field excursions with their students. Areas identified by rectors to be suitable for such excursions are game reserves, zoo's, immediate surroundings, cultural and historical places, biological gardens, and places with geographical features like the eastern Transvaal. Difficulties experienced by lecturers when organising field excursions are identified by rectors as communication problems, financial constraints, time-tabling and an over-loaded curriculum.

Communication problems are identified in two forms, namely; some colleges are located in remote areas and it is difficult for them to contact areas necessary to visit. The other communication problem occurs within some colleges among lecturers and even with the college management. One rector said:

.. there seems to be communication breakdown between lecturers, so as to plan for their excursions. We need to have an itinerary at the beginning of the year on what excursions are to be taken and heads of departments should share such itineraries and compare their visits. Heads of departments should work out this at the beginning of the semester not on the last week when semester marks are wanted and people would say I would not have semester-marks because somebody has taken a group out. So planning and communication need to be neatened up because it does appear to be a problem.

All three rectors indicated that lecturers experience a financial constraint when organising excursions. The financial constraint arises because it is not easy for lecturers to make their students pay for their transport. In some colleges students are met half-way with costs to encourage them to undertake excursions. The researcher would like this to be made a policy in all the colleges, so that all lecturers could be motivated to undertake excursions.

A single rector commented about time-tabling and the overloaded curriculum as being constraints in the undertaking of excursions:

... the time-tabling constraint occurs because the curriculum is over-loaded. I had a complaint somebody saying 'Now look, a group of students have gone out, I would be doing an activity with them towards collecting semester-marks. So, it would mean that the excursion should also be time-tabled.

The researcher feels that this constraint of time-tabling of field excursions also relates to a lack of communication

within the staff. It is possible that the curriculum might be overloaded with theory but field excursions should be seen as part of the curriculum itself.

A single rector also indicated a lack of interest on the part of the students as a hindrance towards the undertaking of field excursions. Furthermore, this rector revealed that students are not keen to undertake trips to places where they are going to learn, they only want to go out for enjoyment.

6.4.4 Perceptions of field excursions by external examiners

The two external examiners interviewed were of the opinion that field excursions are very important and that they need to be undertaken. One external examiner stated that field excursions provided students with a learning experience as they are engaged in practical activities, and that this section needs to be included in the syllabus:

Definitely they have to be included in the syllabus because I guess being out students are likely to do what they did in class practically. I think they gain so much in field-work. They must definitely go out on field-works.

One of the external-examiners showed concern about a wrong notion held by lecturers, that is, that field excursions refer to long trips away from schools with less usage of

the local environment:

I think there is a wrong notion of field trips and excursions. That is if you have to do that successfully you have to take students far away from their school to places like Pilanesberg. I think problems of lecturers is that they have not yet come to realise that the immediate environment of the students will give all the resource materials for teaching. And that primarily fieldwork must be confined to a greater extent to the area where the student lives. This is ultimately going to teach them, I think that's my own point of view, I am not sure I am right on that.

Concerning the examining of field excursions, one external examiner felt that this should be compulsory because it is included in the syllabus. Examining of field excursions seems to be too early at first year level because the students at this level have not yet been exposed to methodology. The examiner said:

Because one will feel the question will be appropriate only after the first years have been exposed to methodology. So perhaps at first year we have to teach them the skills of Environmental Education not how it should be taught. It is too early as far as that is concerned. The syllabus being what it is, you have to ask them the question on fieldtrips.

The researcher feels contrary to this view because students are exposed to methodology in other disciplines at first year level, for instance, in work-experience.

6.4.5 Perceptions of field excursions by the course co-ordinator

The course co-ordinator at the Institute of Education also felt that field excursions are essential to the general education of the students but that they should be carefully structured. He expressed the view that students should be taken out on excursions but that this should not be seen as "sort of time out". The Institute course co-ordinator also felt that lecturers should liaise with the Bophuthatswana National Parks Board on this issue, and they must use facilities such as those at Pilanesberg and also use other reserves like Maria Moroka and Borakalalo. He felt that excursions to other areas like cultural, historical sites and museums were not so important because he did not see them relating to Environmental Education. This perception of the course co-ordinator could be problematic in dealing with lecturers who are encouraged to take a holistic view and to deal with the total environment.

6.4.6 Summing up of the findings on field excursions

Various difficulties affect the undertaking of field excursions in colleges. These include a wrong understanding of what are field excursions, lack of communication, financial constraints, time-tabling and the overloaded curriculum. Nevertheless, most lecturers have engaged their students in them. These field excursions

provided students with good learning experience and they should be encouraged. College managements should support field excursions.

6.5 PERCEPTIONS RELATING TO TRAILS

Perceptions relating to the topic of trails and trail development were sought from students, lecturers and the Institute's course co-ordinator and are discussed in the following section. The researcher made a serious omission by not asking the second year level external examiner to comment on trails and their development in colleges.

Because of the limited time during which the researcher was supposed to complete this study, with the second year level external examiner not being readily available, the researcher did not manage to fix this omission. Rectors were not asked to comment on trails because the researcher thought that such a question would not be valid to them because it is more about the subject content of Environmental Education and they were all not specialists in the subject.

6.5.1 Perceptions of students and lecturers relating to trails

All 13 students interviewed indicated that they have never been involved in the practical development and design of a

trail nor in the preparation of guidebooks for use in the college campus or nearby surroundings as required by the syllabus (See Appendix H). The understanding of the concept of trail was also shown to be problematic to both students and lecturers. One student said:

Well we did not get deeper into trails. The meaning of the word trail has been difficult. In short we did not have a lecturer who could take us around on a trail.

Eight of the students blame their lecturers for not having engaged them in the development of a trail in their campus. It seems lecturers only treat this aspect theoretically and no practical work is done. One student said:

I think our lecturer has not yet asked us to develop a trail. We only did this section theoretically and no proper guidance and motivation has been made towards the development of projects such as trails.

It would seem that lecturers fear the challenge of the unknown outside the class-room. The aspect of trail development seems not to be given proper attention, it is only done theoretically.

The above assertions by students are confirmed by all the lecturers who mentioned that they have not yet developed trails in their college campuses. Out of the eight lecturers interviewed five indicated that they are new in the teaching of the course and they have not yet reached a stage where they have to treat the section on trails which is prescribed for the second year level.

A single lecturer identified a lack of tools and consultation with the management at college as a constraint towards the development of trails at college:

There are several constraints towards developing a trail in our campus. One is that the resources are not available, in the college, we don't have equipment. We also have to get areas to develop after the constructions have been finished. We still don't know what is happening in the campus because it is still under construction.

The researcher made an omission by not probing the above comment that equipment is not available to develop trails. This is a serious misconception by the lecturer that to develop a trail special equipment is used.

Another lecturer indicated a lack of expertise as a reason for not being able to engage students in developing a trail:

We have problems with regard to the vegetation of the college. I think we need somebody who is quite knowledgeable of vegetation so that he can help us out with names of trees which are here in the premises.

6.5.2 Perceptions of the Institute's course co-ordinator relating to trails

The Institute's course co-ordinator has special feelings about the section on trails, fieldwork and outings:

Fieldtrips, outings, nature trails and things like that are outgrowths of someone's attitudes, interests, and to some extent ability. What we want to stress is that unless you make a nature trail you have no interest in Environmental Education ... I don't think it is realistic to our students to go into schools and establish a nature trail. I think what we have to do is to de-emphasis that part. ... Because for me the

idea of a nature trail is a very sort of a white orientated thing. You can go into any white suburb and you'll get the very wide nature trail like in Pretoria which is very nice. But I don't see the very same sort of idea coming out through the middle of Orlando ...

The above quotation indicates that the respondent perceives trails to be related to nature only. This could be a limited understanding of what trails are. Opposition to trails could also be largely due to the traditional approach to teaching where students are not given the opportunity to appreciate and interpret the total environment in a meaningful way (Opie 1989). As an approach to teaching, a trail, however small it might be, for example in the schoolyard, can lead to good teachable moments and an everlasting understanding of information.

It concerns the researcher that the course co-ordinator at the Institute of Education has a negative attitude to fieldtrips, outings and trails. Maybe this is an indication that he is still attached to the traditional approach to teaching with students not being given chance to relate their learning to the immediate environment. In the researcher's opinion such a perception of outdoor activities by the course co-ordinator can be a constraint towards the implementation of Environmental Education courses in colleges.

6.5.3 Summing up of the findings on trails

Generally trails are not well understood in colleges; in most cases they are handled only theoretically. Not a single college has developed a marked trail in its campus or nearby surroundings.

6.6 CONCLUSION

This chapter examined the operation of Environmental Education courses in colleges, specifically giving attention to the quality of lessons, practical work, excursions and trails. It is clear that some weaknesses and strengths exist in the implementation of Environmental Education in colleges. Having examined the operation of Environmental Education in colleges we now focus on the examination of Environmental Education courses in colleges.

CHAPTER 7

EXAMINING OF ENVIRONMENTAL EDUCATION

7.1 INTRODUCTION

Examining of Environmental Education courses in Colleges of Education of Bophuthatswana is done at the end of each of the six semesters of the three years of students' training. Respondents were asked to comment on the examination and responses were categorized as follows:

- * perceptions of students and lectures
- * perceptions of external examiners
- * perceptions of rectors
- * perceptions of the substitute course co-ordinator

7.2. PERCEPTIONS OF STUDENTS AND LECTURERS RELATING TO EXAMINATION

Final year students and lecturers were asked the question 'What is your comment on examination of Environmental Education'. Their views are summarised in Table 7.1.

Table 7.1 Summarised responses of lecturers and students to the question, 'What are your comments about the Examination of the Environmental Education course?'

RESPONSES	STUDENTS (N = 13)	LECTURERS (N = 8)
Fair	6	3
Not challenging	3	-
Allow thinking and expression of opinion	7	3
Vague, imbalance, and have too much repetition	-	2
Enjoyable	1	-
No experience of examination	-	2
Needed general knowledge	4	1

Table 7.1 above indicates that six of the thirteen students interviewed considered the examination to be fair. This might be mainly because the examination allows thinking and expression of one's opinion and it also needs general knowledge. The openness of the examination can also lead to students comments that the examination is fair. By contrast three students felt that the examination is not

challenging. This could be mainly because of its openendedness and of the fact that students are allowed to express their own opinions, a practise which is not common in other subjects.

Lecturers indicated a positive response towards examinations with three out of six who had been exposed to examinations, stating that they were fair. Two lecturers indicated that the examination was open-ended which might be the reason for them to state that it is fair.

Two lecturers out of the six interviewed indicated that the examination is sometimes vague, unbalanced and also has a lot of repetition. This comment was mainly related to the examination of first year level in 1990. One of the two lecturers said,

Various aspects can be alluded to in the 1990 first year level examination. Some questions were not specific, they involved a broad area with students not shown the parameters along which they should work. Students were left in a disadvantaged position in which they have to discuss fifteen aspects in twelve lines. The other one is imbalance in the paper with the examiner asking questions from two or three aspects only. Repetition of questions was also a problem with students who have read two aspects being in the position to do well in the examination.

The above quotation shows a lack of communication between the external examiners and the lecturers as proposed in University of Bophuthatswana: Institute of Education (1989)

that external examiners should attend panel meetings with lecturers to share ideas. This also indicates a lack of usage of question papers set by College examiners on the part of external examiners. In the considered opinion of the researcher, this ignorance of college lecturers' examination question papers by external examiners is a constraint towards the teaching of Environmental Education in colleges because lecturers will perceive the setting of examination question papers as a waste of time and they will not put enough effort into developing them.

7.3 PERCEPTIONS OF EXTERNAL EXAMINERS RELATING TO EXAMINATION

7.3.1 Aspects considered poorly or easily answered in examination

Table 7.2 indicates that fieldwork and topical environmental education issues are regarded as easy aspects for students to answer in the examination. This might be attributed to the practicality and reality of such aspects. Moderator's reports of 1990 confirm this with one external examiner stating that:

Clearly excursions have been of major benefit to students - their sources show that they have had a real learning experience. Lecturer to be congratulated and strongly recommended to keep up this practise.

Table 7.2 Aspects perceived by first and second year external examiners to be easily or poorly answered

POORLY ANSWERED ASPECTS	EASILY ANSWERED ASPECTS
a) Questions in need of explanation of concepts which are Geography related. b) Misconception of the concept "resource" in educational terms. c) Food pyramid. d) Value of the scrapbook. e) Those dealing with problem solving.	a) Fieldwork. b) Topical Environmental Education Issues.

Topical environmental issues are a reality to the students; thus they perform well in the examination in this area. This too is confirmed by moderation reports of 1990 for Tlhabane, Moretele and Hebron Colleges of Education which stated that:

It is very pleasing to see that these topical environmental issues have been covered in class. Answers were good but could perhaps have been in a little more depth. Students perhaps need a little more information.

One of the two external examiners interviewed indicated that students experience difficulty in answering questions

which need explanation of concepts which are Geography related. It would seem that this external examiner perceives Environmental Education simply as a matter of using Geography information. This clearly indicates that there is a need for more clarification of what Environmental Education is about. The concerned external examiner actually said:

As I have indicated, where you want them to explain certain concepts in Environmental Education, especially concepts found in Geography. Because of their lack of knowledge of Geography they don't find it easy to answer such questions, to the extent where one would say perhaps there is a need to make Environmental Education compulsory for the students who take Geography as a subject.

In the considered opinion of the researcher, particularly, due to his involvement and experience of Environmental Education teaching in colleges, the making of Environmental Education compulsory for Geography students affects students perceptions in the course. They tend to see it as Geography and those who have not done Geography tend to feel disadvantaged and ultimately develop a negative attitude to Environmental Education.

7.3.2 External examiners' perceptions of lecturers expectations in the examination

The two external examiners interviewed indicated that lecturers understand what is expected of their students in the examination. This can be attributed to the fact that lecturers set 'concept papers' which are used by external

examiners to set question papers. One external examiner saw value in 'concept papers' set by college examiners:

In as far as the paper I set is concerned I allow lecturers' questions to appear. At times I take the same question set by a lecturer but make it sound differently. I respect the type of questions set by lecturers, especially if I realise that this question emphasizes issues found in an area.

One of two external examiners also indicated the importance of the meetings between examiners and college lecturers. He felt that meeting with college lecturers through panel meetings will enable lecturers to know what is expected of them.

7.3.3 External examiners' perceptions of difficulties relating to the examination of Environmental Education

The overall response of the two external examiners interviewed, to the question "What difficulties have you identified as far as the whole examination is concerned which ultimately affects students performance?" revealed three main problems relating to examinations, namely different interpretations of the syllabus, students with poor background knowledge of environmental issues, and lack of resources. As far as syllabus interpretation and students' poor background knowledge are concerned, one external examiner said:

The syllabus is very scanty. It does not got enough flesh. It gets many interpretations by many lecturers. It is for the lecturer who is well conversant with Environmental Education as

a subject who would find it easier to interpret concepts in the syllabus. The fact that students themselves have been taken up from the very poor position of knowledge of environmental issues. So, there are two problems here, one from the side of the lecturers and one from the students. And I think they became confined to the whole situation.

The above quotation indicates that the external examiner concerned seems not to have moved away from the old (Bantu Education) paradigm of a detailed prescriptive syllabus. Different interpretations in the answering of questions by students is a reflection of students' thinking, analysis and evaluation. It concerns the researcher that there are still external examiners who need a detailed prescriptive syllabus.

An analysis of 1987 moderator's reports shows that several topics were not well addressed in class. This included topics relating to the roles and functions of organizations, potential educational benefits of trails, consolidation of excursion activities back in the classroom, understanding of concepts like "resources" and perception of fieldwork as a trip to the nature reserve. These problems are still a reality to some colleges, more particularly because some colleges have recently introduced Environmental Education courses.

Furthermore, other difficulties relating to Environmental Education as reflected in the moderator's reports include low co-ordination between semester marks and examination

marks, strict marking with no marks given for unusual (but not wrong) answers and the difference in examination marks entered and those on the scripts.

In one moderator's report of 1987 it is revealed that students are given high semester marks in order to pass the examination, and this shows to be a serious irregularity practised by lecturers. The moderator said:

The low correlation between semester marks and exam marks are some cause for concern. I believe very strongly that moderators should also have access to semester work for evaluation purposes. ... A majority 9/13 students have in this case failed the exam but been pulled through by higher semester marks.

Strict marking with no marks given for unusual answers is a serious constraint as far as the examination of Environmental Education is concerned. This might be attributed to reluctance on the part of lecturers to allow students to be creative and innovative, a tradition they have acquired from the old Bantu Education paradigm, which required students to reproduce what was given to them.

Differences between the marks entered in the mark sheet and those on the script might be attributed to the workload given to individual lecturers and the short period given to them to mark the scripts. Through proper checking and re-checking by the heads of department this could be overcome.

7.3.4 General comments by external examiners

From the moderator's reports and their letters written to the director of the Institute of Education (Unibo), it is quite evident that Environmental Education as a course in Colleges of Education has grown and developed. This is revealed by a steady increase in the number of students taking the course as well as an improvement in the quality of teaching as indicated by Irwin (1989) in Chapter 6, (Section 6.2.1.1).

7.4 PERCEPTIONS OF RECTORS RELATING TO EXAMINATION

The overall response of College rectors to the question 'Are you satisfied with your students performance in Environmental Education examinations?' was a firm 'Yes'. One rector indicated that students perform satisfactorily in the examination because good reports are written to them and students also score high in the examination. The rector concerned said:

Yes I am satisfied with students performance from the examiners' reports and the high percentage pass we score in Environmental Education. I have just read a good report, recent report which has made me feel satisfied.

7.5 PERCEPTIONS OF THE INSTITUTE'S ENVIRONMENTAL EDUCATION COURSE CO-ORDINATOR

The Environmental Education course co-ordinator at the

Institute of Education (Unibo) showed satisfaction as far as the examination of Environmental Education in colleges is concerned. He is not ecstatic about the examination of Environmental Education because the majority of the students pass. He indicated that examination questions do not allow students to express their opinions and they are inclined to use "academic garbage" which is not a real experience for students.

This is in contradiction to the perceptions of students and lecturers given above. This is also in contradiction with students' perceptions that such examinations allow their usage of general knowledge. It would seem that the course co-ordinator does not have enough background knowledge and understanding of what Environmental Education is about as is clearly indicated in his suggestion that the examination should cover the interpretation of graphs on wheat production in the Southern Prairies of the United States of America. It is a contradiction of his own idea that the examination should be a real experience for students.

7.6 CONCLUSION

Examining of Environmental Education courses in colleges is seen to be generally fair, allowing thinking, expression of opinion and ultimately revealing growth and development of the Environmental Education concept. Sometimes, examination question papers tend to be vague, imbalanced

and much too repetitive which can be attributed to lack of communication between lecturers and external examiners. Other weaknesses in the examining of Environmental Education courses relate to differences in syllabus interpretation, poor background knowledge of students, uneven marking by lecturers and lack of teaching resources.

Having discussed the respondents' perceptions about the examination of Environmental Education, we turn in Chapter Eight to an analysis of the ethos and support of the colleges and the Institute of Education with regard to Environmental Education.

CHAPTER 8THE ETHOS AND SUPPORT OF THE COLLEGES AND THE
INSTITUTE OF EDUCATION8.1 INTRODUCTION

In this chapter the ethos and support of colleges and Institute of Education are analysed with a view to understanding how these factors can possibly affect the implementation of Environmental Education. Responses are discussed under the following headings:

- * Perceptions relating to panel meetings,
- * Perceptions relating to seminars, conferences and workshops,
- * Perceptions about facilities and
- * Perceived barriers by rectors and the support given.

8.2 PERCEPTIONS RELATING TO PANEL MEETINGS

Subject panel meetings are held several times during the year to discuss difficulties experienced by lecturers in the teaching of Environmental Education and the changes to be effected on the existing syllabuses. According to the University of Bophuthatswana : Institute of Education (1989) such meetings should be attended by external examiners, college lecturers, Institute course co-ordinator, and representatives of the department of

education. Respondents were asked to comment about such meetings and their responses were categorised as follows:

- Lecturers' comments relating to panel meetings
- Rectors' comments about panel meetings
- External examiners' comments about panel meetings and
- The Institute of Education course co-ordinator's comments.

8.2.1 Lecturers' comments about panel meetings

Lecturers were asked the question "Have you ever attended any panel meeting(s) on Environmental Education? Comment?". Six out of eight lecturers who teach Environmental Education had already attended the panel meetings. The two who did not attend panel meetings had not yet got the chance because they have only recently started to teach Environmental Education.

Two lecturers indicated constraints as far as panel meetings are concerned, these being lack of planning in the organisation of such panel meetings, the absenteeism of external examiners and the fact that not all lecturers manage to attend panel meetings. Poor organisation of panel meetings is reflected in a comment by one lecturer who said:

In principle panel meetings are good but in practice they are not because those who are supposed to be in charge of them seem not to have prepared themselves adequately for such

tasks. Therefore, normally the panel meetings would lack direction and substance. Otherwise, the whole concept of having panel meetings is worthwhile.

Two lecturers indicated that the absenteeism of external examiners is a constraint towards the success of panel meetings and the ultimate implementation of Environmental Education in colleges. From the responses of these two lecturers it can be deduced that there is a lack of communication between lecturers and external examiners. One said:

The problem lies with the fact that after you have marked the answer sheets and submit the marks, you will get a moderator's report. Most of the things said by the moderator could be better understood if the moderator was present at the panel meeting. In some cases you come across the remark that you have inflated the marks. I think it can be wise if the moderator can be present at the panel meeting and if possible give individual attention to individual lecturers from various colleges.

The other said:

I think we are looking for people like the examiners themselves, those people who might help us as far as the course is concerned. I think in the panel meetings we discuss things like what should be done in Environmental Education and what is expected of us as college lecturers in the subject?, etc. Now their absence contributes to the failure of the panel meetings.

One lecturer indicated that all the lecturers teaching Environmental Education should be given the opportunity to attend such meetings. He felt that in such meetings they get the opportunity to discuss with each other issues such as the availability of resources and possible approaches to

the subject:

My comment is that many more lecturers need to attend because you get information from such meetings. You ask your colleagues for reference material which is not available to you. You share experiences which I found most interesting. You also get exposed to other people's approaches to the subject.

Although there were some reservations about panel meetings, the overall response of lecturers is that panel meetings are worthwhile as they provide a situation where they can share ideas on how they can best teach Environmental Education. One lecturer said:

I think it is good to have such meetings because they are broadening ones mental horizons as far as the course Environmental Education is concerned.

In the researcher's opinion, partly because of his experience of panel meetings, such meetings can provide favourable moments for lecturers to share their experiences. It would seem however that the absenteeism of external examiners is frustrating because what is agreed upon is not always conveyed to them. The researcher strongly feels that the Institute of Education at Unibo should try to address this constraint as it affects the implementation of Environmental Education in colleges.

8.2.2 Rectors' comments about panel meetings

The overall response of college rectors to the question 'How do you feel about lecturers attending panel meetings?'

is that they support the idea of panel meetings and they encourage lecturers to attend them. All rectors see panel meetings as playing a supportive role towards the implementation of Environmental Education. One rector said:

My lecturers are gaining a lot from panel meetings because most of them are new at college, that is they have been teaching in schools but not in colleges. I think they will improve their understanding of Environmental Education through such panel meetings.

Two rectors indicated a constraint which can lead to the failure of panel meetings as being lack of planning for such meetings. It is important to note however that this constraint is not only in Environmental Education but it is also common in other subjects. One rector said:

Well, we do have constraints, not only for Environmental Education lecturers but for lecturers across the curriculum and that is the problem of planning. Because, panel meetings are organized by UNIBO and we have realized that there are such problems which don't come from colleges nor from those lecturers which embrace planning as far as Unibo is concerned.

A single rector indicated that there is also a lack of direction in the planning of panel meetings, in the sense that in such meetings examination papers and tests seem to be the most important topics for discussion. According to this rector lack of resource materials seem to be the most important topic but it is not given important consideration in panel meetings.

8.2.3 External examiners' comments about panel meetings

Two of the three external examiners indicated that they have only attended panel meetings once, while the other one indicated that failure to attend panel meetings was mainly due to never having received an invitation or notice of such meetings from the Institute of Education. This seems to be a serious problem in the implementation of Environmental Education because lecturers, as indicated earlier, need their guidance and support.

One external examiner also indicated that his other commitments sometimes clashed with dates set aside for panel meetings. Lack of planning and preparation for the panel meetings is also revealed by one external examiner who said:

There is very little I can comment on about that panel meeting, because I went there not having background knowledge of the previous discussion on the design of the new syllabus for implementation in 1992.

The researcher feels that lack of communication between lecturers, external examiners and the Institute of Education will lead to more serious constraints towards the implementation of Environmental Education.

8.2.4 The Institute of Education course co-ordinator's comments about panel meetings

The Institute course co-ordinator was asked the question:

"Do you experience any difficulties when reviewing and developing the Environmental Education syllabus during panel meetings?" and this was answered with a positive answer that problems used to be experienced in the past but now no longer exist.

Constraints that used to be experienced were those relating to the difficulty in merging lecturers' experience and those of the course co-ordinator. Furthermore, the Institute course co-ordinator indicated that panel meetings provided wonderful experiences to work with lecturers, with reasonable syllabuses being developed. The researcher views involving practitioners in the development of their own syllabuses as a good practice. This is a new approach to curriculum development in Bophuthatswana as noted by Niven (1988).

8.3 PERCEPTIONS RELATING TO SEMINARS, CONFERENCES AND WORKSHOPS

In order to find out whether lecturers attend seminars, conferences and workshops to enrich themselves, respondents were asked questions relating to the above activities and responses were categorised similarly to those above, namely,

- * Lecturers' responses
- * Rectors' responses
- * External examiners' responses and

- * The Institute course co-ordinator's responses.

8.3.1 Lecturers' responses

Only two of the eight lecturers have managed to attend workshops, conferences or seminars. It seems some college lecturers are not aware of activities relating to Environmental Education in their regions. Such ignorance is revealed by one lecturer who said:

I attended a lot of them in the USA but not here.
I know nothing about what is happening around here.

The researcher feels that the above comment by one of the lecturers is not a reasonable response because the concerned lecturer needs to adapt his experiences in his environment and even share information acquired from abroad.

The two lecturers who attended conferences, workshops and seminars revealed that they have learnt quite a lot from such activities. Such gatherings provided them with resource materials on Environmental Education which they use in their teaching. One lecturer said:

They were worth attending. Given the fact that there is not much material on Environmental Education that is easily accessible to students and lecturers. It is imperative that every now and then we should be involved in workshops to upgrade our knowledge and be exposed to themes we were not exposed to.

8.3.2 Rectors' responses

Rectors' overall response to the question, "Do you allow lecturers to attend workshops, conferences, seminars and discussions relating to Environmental Education?" was a positive 'Yes' with all stating that they allow lecturers to attend such gatherings. Two rectors out of the three interviewed revealed that they experienced difficulty as far as reporting back about such gatherings is concerned. One rector said:

... I would like it if they have attended such workshops that they should come back and share that experience with their colleagues of other subjects. ... so, I have the problem here. I have not diagnosed what the problem is but it still worries me that people don't report. Because I am yearning to hear from people when they have gone out to talk about things they have discussed with other people who are not here at college.

It concerns the researcher that rectors cannot simply request lecturers to report on meetings they have attended. The researcher feels that if lecturers have used college funds to attend workshops, seminars and conferences, the rectors have the right to demand reports on such meetings from the lecturers.

8.3.3 External examiners' responses

The first and second year external examiners support the idea that college lecturers should attend workshops, seminars and conferences on Environmental Education. One external examiner said:

I think it should be compulsory. I mean just to give an example, I have not done Environmental Education in my life. It was through interaction with people that I realized much can be gained in attending conferences and workshops, because they help you to know how to approach the subject in the first place.

Implicit in this quotation is that even though one is not trained in Environmental Education, one can develop in it through workshops, conferences and seminars.

The analysis of the moderator's reports also reveal the importance of an in-service course as a means towards developing the teaching of Environmental Education by lecturers. The third year external examiner who once conducted such an in-service course supports its effect by saying :

The standard of answers is reasonably good for first year students but there is still room for improvement. There is, in my view, little doubt that the significant improvement over the 1st semester (in terms of standards) is related (possibly very closely) to the in-service course for Environmental Education lecturers which was held in May this year.

The external examiners for first and second year were further asked whether they have organised workshops, conferences or seminars and their response was a 'No'. It would seem the reason for not having organised such gatherings is because both have only recently started to examine the courses, that is they each only have one year's examining experience. One said:

No, I have not. Perhaps I started as an examiner last year and unfortunately an examiner attached

to a college and I know people protested about that I will show partiality that is if I belong to Hebron I would set their questions. So, I have been asking myself, but I think there is a need for that.

The above quotation indicates that although the external examiner sees the need to organise workshops, conferences and seminars for lecturers, his belonging to a college affects his decisions on whether to organise or not organise such gatherings. Perhaps this is an indication to the Institute of Education that the choice of an external examiner belonging to a College of Education can be a constraint towards the implementation of the courses.

8.3.4 Institute of Education course co-ordinator's response

The Institute's Environmental Education course co-ordinator was also asked the question whether lecturers should attend seminars, workshops and conferences relating to Environmental Education and the answer was a firm 'yes'. It became evident in discussion with him that such gatherings provide an opportunity for improvement but colleges are not aware of them. Furthermore, the course co-ordinator blamed "the environmental movements" for not being well published. This can be a constraint in the implementation of Environmental Education, because the course co-ordinator should be in a position to expose college lecturers to every possible source of information that can lead to the

successful implementation of the course.

8.4 PERCEPTIONS RELATING TO FACILITIES

College rectors and the Institute of Education's course co-ordinator were asked questions relating to the availability of facilities for the teaching of Environmental Education and their responses are analyzed and discussed. Other respondents were not asked to comment about facilities, which has subsequently been shown to be a weakness in this study.

8.4.1 Perceptions of the Institute's course co-ordinator relating to facilities

According to the Institute course co-ordinator many facilities are lacking in colleges which might be necessary for the teaching of Environmental Education. These include special classrooms characterised by displays, posters and other equipment. The course co-ordinator furthermore expressed the view that the all purpose classrooms used in colleges seem to be a constraint as far as the implementation of Environmental Education in colleges is concerned. In the considered opinion of the researcher, the course co-ordinator's comments relating to the multi-purpose classroom are not valid in Environmental Education which can be taught in any available environment.

The co-ordinator also pointed out that another constraint relating to facilities could be related to the management at colleges. It would seem that management at college do not advertise the subject, probably because they do not understand it. Although this does not relate to facilities per se, but if management do not understand Environmental Education as indicated by the course co-ordinator, this can ultimately affect the availability of facilities for the teaching of the course. With rectors having indicated a reasonable understanding of Environmental Education, the introduction and support for Environmental Education cannot be much of a serious problem.

8.4.2 Perceptions of rectors relating to facilities

The three rectors interviewed felt that there are adequate facilities available for the teaching of Environmental Education in their colleges. They also revealed that there is enough land lying fallow which could be used by Environmental Education lecturers. One rector said:

Like I said I was going to recommend this whole area which is lying fallow. That has been used for Agricultural Science. It has been worrying me for years. As you see when they mowed the other places they left it out but I started with them because I want that grass to be removed so that it becomes very clear that place can be cultivated into something. And it can be divided into areas as well. There are those natural trees there that will be left in their natural form and perhaps around them flowers can be sowed but this other one where there are no trees can be used for vegetables and so on.

The above comment displays a very limited idea of what

Environmental Education is all about. This rector seems, at least in part, to equate Environmental Education with gardening. Perhaps this suggests that rectors need to be given more information on Environmental Education. Although the question on the availability of facilities was asked rectors with the intention of getting information on several facilities such as weather stations, gardens, rockeries, ponds and the others which can be used in the teaching of Environmental Education, rectors did not mention them. It is possible that maybe they are not aware that these are essential facilities for the teaching of Environmental Education and that they can be easily created. Here too they need further information.

8.5 PERCEIVED BARRIERS BY RECTORS AND SUPPORT GIVEN TO OVERCOME THEM

Rectors were also asked what they saw as the constraints experienced by lecturers (question 11) and what support was given to them in order to overcome such problems (question 16).

8.5.1 Barriers perceived by rectors

The results of question 11 "What barriers do you think your lecturers experience when teaching the Environmental Education course?" to rectors, are shown on Table 8.1 which indicates that all the rectors perceive limited resource

material as a serious constraint towards the teaching of Environmental Education.

Table 8.1. Barriers perceived by rectors

BARRIER	NUMBER OF OCCASIONS MENTIONED
Limited resource material	3
Lack of specialised lecturers	2
Failure of excursions (due to financial constraints, time-tabling, and over-loaded curriculum)	1

In the opinion of the researcher, this is due to lack of communication between the lecturers through workshops, conferences and seminars. Certainly lecturers will always experience problems as far as materials are concerned if no resource base can be made available to them.

Staffing seems to be a problem at colleges with most lecturers having received no training in Environmental Education (See section 3.2.1.2). The Bophuthatswana National Parks Board - Tertiary Unit report (1991), also revealed that Environmental Education lecturers are allocated teaching in other subjects besides Environmental Education and this appears to be a constraint to the full implementation of the goals of the course because they tend

to concentrate on those subjects not giving enough attention to Environmental Education.

A single rector indicated that lecturers experience problems when organising field excursions and this could be attributed to time-tabling, overloaded curriculum and financial constraints. This situation was also discussed in Chapter 6 (section 6.4).

8.5.2 Support and guidance given to lecturers as perceived by rectors

All the three rectors interviewed felt that Environmental Education lecturers get enough support and guidance by liaising with other colleges, attending conferences, workshops and seminars and also by discussing issues among themselves. The general comment by rectors revealed a favourable and positive atmosphere conducive for the implementation of Environmental Education in the Colleges of Education. The researcher feels that if these favourable conditions can be used properly, the implementation of Environmental Education in colleges will become a success.

8.6 CONCLUSION

In this chapter the College and Institute of Education ethos were analyzed and discussed. It is evident that

although there are strong reservations, panel meetings provide a situation where lecturers can share ideas. Some weaknesses relating to such meetings are that they lack planning and direction and that in most cases external examiners do not attend them. In addition, not all lecturers are given a chance to attend them.

Workshops, conferences and seminars are not well attended by lecturers. Rectors support the idea that they should attend them but it seems rectors are unable to request them to report about such gatherings. Constraints such as limited resource materials, financial constraints, time-tabling and overloaded curriculum affect the implementation of Environmental Education in colleges.

Having analysed data relating to the ethos and support of the Colleges of Education and the Institute of Education, we now attempt a concluding synthesis of the data and formulation of recommendations arising from this study.

CHAPTER 9SYNTHESIS AND RECOMMENDATIONS9.1 INTRODUCTION

This study has attempted to evaluate Environmental Education courses in Bophuthatswana Colleges of Education. Specifically, it has tried to find out about the understanding and knowledge of Environmental Education and environmental issues (Chapter 4), thoughts and judgements about the Environmental Education syllabus (Chapter 5), the operation of Environmental Education courses (Chapter 6), examination of Environmental Education courses (Chapter 7) and the ethos of colleges and the Institute of Education in as far as this might affect Environmental Education (Chapter 8).

Based on the insight gained from the analysis of data in the previous chapters it is evident that there are both strengths and weaknesses pertaining to Environmental Education courses in Bophuthatswana Colleges of Education. Based on this, recommendations are made in this chapter on the future operation of Environmental Education courses in Colleges of Education.

9.2 THE STRENGTHS OF THE ENVIRONMENTAL EDUCATION COURSES

Chapter 4 revealed that there was a considerable understanding of Environmental Education in Bophuthatswana Colleges of Education. Students and lecturers were able to display categories of the Unesco-Unep objectives of Environmental Education in their responses. Students were also able to identify both local and global environmental issues.

In chapter 5 respondents indicated some degree of satisfaction with the existing syllabus, with some individuals indicating that nothing should be left out. Most topics posed few difficulties for lecturers with the topic on environmental issues being considered very easy to teach.

Environmental Education is becoming popular in Bophuthatswana Colleges of Education (Chapter 2 and 6). Environmental Education lessons were described to be interesting, enjoyable, good and motivating and this too is an indication of the strength of the Environmental Education courses. An understanding of what an "Environmental Education approach" is on the part of students (Section 6.2.2.2) was also an indication of the success of the Environmental Education courses. This strength is also emphasised in the literature review (Section 2.2.1). Environmental Education courses have also

encouraged students to be engaged in practical projects (Section 6.3.1) and most students were engaged in field excursions which provided a good learning experience for them. (Section 6.4). Practical work and excursions are important aspects of Environmental Education in Teacher Education. (See Section 2.2.1).

Chapter 7 revealed that the examination of Environmental Education courses is generally seen to be fair with open-ended questions set to accommodate different opinions of students. The usage of examination papers set by lecturers also brings a certain amount of co-operation and understanding between external examiners and college lecturers. It is also revealed in chapter 7 that there is growth and development in the quality of work done by students in Environmental Education.

In chapter 8 it was suggested that panel meetings provide a situation where lecturers share ideas on how best they can teach Environmental Education. Chapter 8 also showed that rectors support the idea that lecturers should attend workshops, conferences and seminars and that this might lead towards more successful implementation of Environmental Education in Colleges of Education.

9.3 THE WEAKNESSES OF THE ENVIRONMENTAL EDUCATION COURSES

Although there was a considerable understanding of

Environmental Education by students, lecturers, rectors, and the course co-ordinator they still need to understand better about how Environmental Education relates to sensitivity, the acquisition of skills to identify environmental problems and how to solve them, and that Environmental Education involves active participation. These Unesco-Unep objectives of Environmental Education were not emphasized by the respondents. Some also displayed a limited understanding of Environmental Education as being concerned with natural resources.

Chapter 4 also revealed that students were unable to relate what they learn in Environmental Education to their real environment (see section 4.3.1), that is, they only learn theoretically with insufficient practical implementation. There is also a lack of communication between lecturers and rectors on environmental issues.

In chapter 5 the following aspects of the Environmental Education syllabus document were shown to be problematic to the lecturers and students; excursions, trails and outings, the introduction of Environmental Education and its international overview and the section on school, community and the environment. It was also evident in that lecturers experience problems in the teaching of Environmental Education courses due to a lack of instructional materials, lack of training and specialization in Environmental Education, failure to interpret the syllabus properly and

the fact that they are overloaded having to teach other courses beside Environmental Education. This constraints are also mentioned in the literature review. (Section 2.2.2). Chapter 5 also revealed that lecturers tend to limit Environmental Education courses to the classroom with insufficient practical work being done outside the classroom. A need for a specific and more detailed syllabus was displayed by some respondents. Some resistance by students to being empowered was also revealed in section 5.2.

Chapter 6 indicated the following constraints which affect the qualify of Environmental Education lessons, namely; appointment of lecturers lacking experience to teach in Colleges of Education and that they ultimately depending on a single text book; the interest of lecturers in only passing students, that is, by giving them high marks even if they do not deserve them; a frequent change in lecturers teaching Environmental Education; lack of exposure to problem-solving and decision-making on the part of lecturers and ultimately not practising such processes in their lessons; and some lecturers still not understanding what Environmental Education is all about. Such constraints ultimately lead to a situation where students did not understand what Environmental Education approaches are as shown in section 6.2.2.2.

The following constraints relating to the development of

practical work or projects in Environmental Education are also revealed in chapter 6; only projects specified in the syllabus document are done; students develop projects only to get marks and thus in most cases their projects are not permanent; some students cannot use projects they have developed; some students have negative feelings about projects and most projects developed are not extended into the community. Some colleges' surroundings are not seen to be favourable for the development of projects and this discouraged the students. In addition, management in some colleges does not understand what is entailed in practical work done by students. A limited time of three periods per week is also a constraint in developing Environmental Education projects. Time as a constraint towards implementing Environmental Education programmes is also mentioned in Section 2.2.2.

The operation of field excursions has certain weaknesses. These include the organisation of the excursion itself with permission needing to be sought from the Department of Education which sometimes takes a long period before approval is received. Other constraints affecting excursions involve communication among the lecturers and also with places to be visited, financial constraints with some students not being able to pay for their excursions, overloaded curriculum, the time-table which does not give lecturers enough time to undertake excursions and a lack of interest on the part of some students. (See Section

2.2.2). Most lecturers also find it very difficult to evaluate the excursions they have undertaken. There is still a wrong notion among students and lecturers that a field excursion must be a long trip to far-away areas. Little emphasis is placed on the immediate surroundings of the college, schools or students.

Chapter 6 also showed that the section on trail and trail development is not given proper attention. Most lecturers do not understand what an educational trail is all about and not a single trail has been developed in one of the colleges. This section is only done theoretically with students never engaged in developing a trail.

Chapter 7 revealed that there is a lack of communication between lecturers and external examiners and the ultimate result is that broad and vague questions are set by some external examiners with inadequate consideration of examination question papers set by college lecturers. The making of Environmental Education compulsory to Geography students shows to be a constraint towards the understanding of Environmental Education and even develops negative feelings among students who have not done Geography. A similar view is mentioned in Section 2.2.2 where it was stated that teachers believe Environmental Education to be appropriate to the Science Curriculum. A need for a detailed prescriptive syllabus by external examiners (see

section 7.2.3) can be a constraint towards the teaching of Environmental Education in colleges.

Also emerging from chapter 7 were the following problematic topics to lecturers and students, namely, roles and functions of organisations, potential educational benefits of trails, consolidation of activities during excursions back in the classroom and understanding of concepts like resource development. Other difficulties relate to low correlation between semester marks and examination marks, uneven marking, and mistakes made when transferring marks from answer books to mark sheets.

Chapter 8 revealed that although panel meetings were seen to be valuable gatherings, such meetings often failed because of a lack of planning and absenteeism of external examiners and other college lecturers. As far as seminars, conferences and workshops relating to Environmental Education are concerned, very few lecturers have attended them and this was mainly because lecturers were not aware of them. Rectors also find it difficult to make lecturers report on their experiences from such gatherings. Chapter 8 also revealed barriers towards the implementation of Environmental Education as limited instructional material, lack of specialization in Environmental Education by lecturers and failure of field excursions due to financial constraints, time-tabling and the overloaded curriculum.

9.4 RECOMMENDATIONS

This study has identified a number of strengths and weaknesses pertaining to the operation of Environmental Education courses in Bophuthatswana Colleges of Education. Based on the findings of this study, and the researcher's past experience as a college lecturer on Environmental Education, the following recommendations are made for the future implementation of Environmental Education courses in such colleges.

9.4.1 Recommendations on the understanding of Environmental Education and environmental issues

It is recommended that teacher educators should be made more aware of the available literature on Environmental Education and environmental issues. The newly established Tertiary Education Unit of the Bophuthatswana National Parks Board and other environmental organisations should be approached by the Institute of Education to develop such literature.

9.4.2 Recommendations on the Environmental Education syllabus

It is recommended that lecturers should, through workshops and panel meetings, discuss how best they can implement the Environmental Education syllabus. Topics considered

problematic to lecturers can be addressed through workshops and information relating to them made available. More in-service courses are needed for lecturers in order to encourage them to shift from giving their students too much theory in classrooms to a more practical approach outside the classroom.

9.4.3 Recommendations on the operation of Environmental Education courses

As far as the improvement of the quality of lessons is concerned, in-service training with provision of enough instructional materials can be the answer. Management in colleges also need to avoid as far as possible the frequent change in lecturers offering Environmental Education so that lecturers can establish and develop themselves in these courses. The problem of a lack of instructional material can also be addressed by developing a workbook which can be used by both the lecturers and the students. Environmental educators should consider this proposal as a matter of urgency for there is a strong demand for a "text book" on Environmental Education in colleges.

As far as practical work or projects are concerned lecturers need to encourage students to use such projects in their teaching. The support of the college management should be sought in order to develop long-lasting projects in the college surroundings and even in the nearby

communities. Afternoons can also be used to develop projects because three periods per week are not enough for a practical course like Environmental Education.

Constraints relating to field work can be addressed by performing such activities mainly in the college campus or in the nearby surroundings. This recommendation will also address the incorrect notion held by many lecturers and students that field excursions by definition are long trips far away from their colleges. It is also recommended that lecturers need to be advised on how best they can evaluate field work. This can be done through workshops on field work and also by reading available literature on field work.

The practical development of a trail is a serious problem in colleges. It is recommended that lecturers need to be exposed to how to develop an educational trail and also how this can be used in their teaching. This can be done through attending workshops on trail development and also by visiting areas where trails have already been developed to get ideas.

9.4.4 Recommendations on the examining of the Environmental Education courses

There is a lack of communication between Environmental Education external examiners and college lecturers. It is

recommended here that the Institute of Education at UNIBO should encourage frequent meetings between examiners and lecturers as lecturers sometimes do not understand the expectations of external examiners, more particularly, because the syllabus document is not detailed. External examiners should also be encouraged to make more use of question papers set by college lecturers as this will motivate them to set appropriate questions in the following years.

External examiners should also share ideas with lecturers on topics they consider to be problematic in examinations. A correlation between semester marks and examination marks can be addressed by involving external examiners in semester work for evaluation purposes.

9.4.5 Recommendations relating to the ethos of colleges and the Institute of Education

As far as panel meetings are concerned, it is recommended that the planning of such meetings should be improved with the attendants given full information on what they are going to do in such meetings in advance. External examiners should also be invited to attend such meetings because lecturers need their views on their students performance and how they should tackle different aspects of the syllabus.

It is recommended that the Institute of Education should make it compulsory that lecturers attend seminars, conferences and workshops on Environmental Education. Information relating to such gatherings can be obtained from organisations and bodies concerned with conservation and Environmental Education and made available to lecturers through the course co-ordinator.

9.4.6 Recommendations relating to the introduction of Environmental Education as a course in Colleges

Student teachers have difficulty in understanding what Environmental Education is as an approach to teaching in schools. This difficulty arises because in colleges Environmental Education is a course on its own. It is recommended that all lecturers in colleges should be exposed to Environmental Education and they should practise its approach in the subjects they teach.

9.4.7 Recommendation relating to the selection of students who take the Environmental Education course

In some colleges students taking Geography as a course are compelled to choose Environmental Education as an ancillary. This affects students understanding of Environmental Education with many perceiving it as Geography. It is recommended that all students,

irrespective of their specialising subjects should be given the chance to choose Environmental Education as an ancillary.

9.4.8 Recommendation relating to the sharing of Environmental Education expertise in Southern Africa

It is further recommended that more use needs to be made of existing Environmental Education expertise in Southern Africa to go to Bophuthatswana and share what they have with the college lecturers in workshops, conferences and seminars. Bophuthatswana National Parks Board (Tertiary Education Unit) must be encouraged to facilitate such gatherings.

9.5 EVALUATION OF THIS RESEARCH

It will not be possible in a study of this nature to fully evaluate Environmental Education courses in Bophuthatswana Colleges of Education, due to constraints of time and length during which such a work would have to be completed. While the importance of such research to teacher education in Bophuthatswana is acknowledged, in this study, the evaluation of the operation of Environmental Education courses has been dealt with fairly briefly with the researcher concentrating his discussions on aspects he considered to be of major significance.

The inexperience of the researcher as an evaluator has also affected this study with the researcher in some occasions making omissions by not asking a question to the relevant group (see section 6.5 and 8.4), or even failing to probe where it is necessary (see section 6.5.1).

9.6 FINAL CONCLUSION

This study has attempted to evaluate Environmental Education courses in Bophuthatswana Colleges of Education. In doing so both the strengths and weaknesses of such courses have been identified. It is evident from the sample studied that lecturers experience problems in teaching Environmental Education courses mainly because they do not have enough instructional material and because they lack training in such courses. It can be concluded that more training of lecturers through in-service courses and attendance at conferences, workshops and seminars can lead to more successful implementation of Environmental Education courses in Colleges of Education in Bophuthatswana.

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APPENDIX ATOPIC : AN EVALUATION OF ENVIRONMENTAL EDUCATION IN
COLLEGES OF EDUCATIONSEMI-STRUCTURED INTERVIEW : FINAL YEAR STUDENTS OF
ENVIRONMENTAL EDUCATION

1. For which diploma are you studying at College?
2. What are the content subjects you have studied at matric?
3. Which subject(s) would you like to teach next year?
4. What do you understand by the concept Environmental Education?
5. What aspect(s) of the Environmental Education course do you like most?
6. What aspect(s) of the Environmental Education course do you consider least worthwhile?
7. Do you think the Environmental Education course you are doing at College covers your interest?
8. Have you ever visited natural, historical or cultural areas as part of your training?
If yes, what are they? What is your opinion about them?
If not, why?
9. What development/improvements have you made in the college campus for effective educational use?

10. What teaching materials or aids have you produced for Environmental Education course?
11. Do you think such teaching materials will be of help to you when you teach next year?
If yes, how?
If no, why?
12. Have you developed any marked trails or guidebooks for use in your college campus?
If yes, what is your opinion about them?
If no, why?
13. Do your lecturer allow you to bring suggestions and opinions as to what content or aspects to include in the course outline of Environmental Education?
If yes, what have you suggested?
If no, what is your opinion about that?
14. What do you perceive as environmental issues?
15. Do you ever discuss certain environmental issues you learn about in Environmental Education with your friends?
If yes, what issues do you talk about?
If no, why?
16. What do you want to tell me about the quality of lecturing at first and second year?
17. What is your comment about assignments, tests and practical work you did over the past two years?
18. What are your feelings about the Environmental Education examination?

19. Are you a member of any environmental society, historical, cultural or nature orientated group which function on an extra-curricular basis?
If yes, which societies or clubs? Opinions?
If not, why?
20. Do you think the Environmental Education course so far is providing you with relevant skills and knowledge to practice its approach next year when you teach?
21. What do you consider to be the value of the Environmental Education course to you? (i.e. is it of value for your life, diploma, for your community or for the children you are going to teach?
22. What is your general comment about the Environmental Education course as a whole?

APPENDIX B

TOPIC : AN EVALUATION OF ENVIRONMENTAL EDUCATION IN COLLEGES OF EDUCATION

SEMI-STRUCTURED INTERVIEW : ENVIRONMENTAL EDUCATION LECTURERS

1. For how long have you been teaching Environmental Education at college?
2. What are your major subjects at first degree level?
3. Which subject(s) do you teach beside Environmental Education?
4. Have you at any stage received any specific training in Environmental Education and its approach?
If yes, comment?
5. What do you understand by the concept Environmental Education?
6. What aspect(s) of the Environmental Education syllabus do you consider easy to teach?
7. What aspect(s) of the Environmental Education course do you consider most worthwhile to teach?
8. What part(s) of the Environmental Education course do you consider most difficult to teach?
9. Which aspect(s) do you consider least worthwhile and should be left out?
10. What additional information (if any) do you feel should be added to the Environmental Education syllabus?

11. Have you undertaken any field excursion(s) with your student?

If yes, to which areas? Opinion? How did you evaluate it/them?

If not, why?

12. What practical work (projects) have you developed with your students? How do you evaluate them?

13. Have you developed any marked trail(s) and guidebooks with your students?

If yes, what areas have you marked? Comment.

If not, why?

14. Do you ever allow your students to evaluate your work?

If yes, explain how?

If not, why?

15. What is your comment about the examination of the Environmental Education course?

16. Have you ever attended any panel meeting(s) on Environmental Education?

If yes, comment?

If not, explain why?

17. Do you ever talk to your Rector about environmental issues?

If yes, what issues do you discuss?

If not, why?

18. What evidence do you have that your theoretical teaching of Environmental Education has produced practical results demonstrated by the behaviour of your students?

19. Are you a member of any environmental society, wildlife club or any other nature orientated or historical or cultural group which function on an extra curricular basis?
If yes, what societies or club? Opinion?
If not, explain why?
20. So far, are you involved in any study of further self development that is Environmental Education related?
If yes, briefly comment?
If not, why?
21. Have you ever attended any workshops, conferences or seminars on Environmental Education?
If not, explain why?
If yes, what are they? Opinion?
22. Have you been involved in any organisation of a public lecture, seminar or discussions on environmental issues in order to expose all students to such issues?
If yes, what issues were addressed? Opinion?
If not, why?
23. What is your general comment about the Environmental Education course as a whole?

APPENDIX C

TOPIC : AN EVALUATION OF ENVIRONMENTAL EDUCATION IN COLLEGES OF EDUCATION

SEMI-STRUCTURED INTERVIEW : RECTORS OF COLLEGES

1. What is your understanding of the concept Environmental Education?
2. What is your opinion about the inclusion of Environmental Education into the curriculum for Teacher Education?
3. Do you discuss environmental issues with your lecturers?
If yes, which issues do you address?
If not, why?
4. Which environmental issues in your region do you think students and lecturers should address?
5. Do you allow your lecturers to undertake field excursions with their students?
If yes, what areas do they visit?
If not, why?
6. What difficulties are commonly experienced by lecturers when planning and organising such field excursions?
7. What is your comment about projects (practical activities) done by students which relate to Environmental Education?

8. Does your college have any small area(s) set aside for the purpose of Environmental Education?
If yes, how is such an area used?
If not, explain why?
9. What barriers do you think your lecturers experience when teaching Environmental Education courses in your college? (If no barriers proceed to Question 11).
10. Do you think your lecturers get enough support and guidance to overcome such problems?
If yes, where comes such support and guidance?
If not, comment?
11. How do you feel about lecturers attendance of panel meetings on Environmental Education?
12. What changes have taken place in the environment of the College campus as a result of the emphasis of Environmental Education in your college?
13. Are you satisfied with your students performance in Environmental Education examinations?
If yes, comment.
If not, explain why?
14. Do you support the idea that lecturers and students should join wildlife clubs or any other nature or historical or cultural orientated society which function on an extra curricular basis? Comment.
15. Do you allow your lecturers to attend workshops, conferences, seminars and discussions relating to Environmental Education?
If yes, comment.

If not, explain why?

16. What is your general comment about the implementation of Environmental Education at Colleges of Education?

APPENDIX D

TOPIC : AN EVALUATION OF ENVIRONMENTAL EDUCATION IN COLLEGES OF EDUCATION

SEMI-STRUCTURED INTERVIEW : EXTERNAL EXAMINERS

1. What level are you examining presently?
2. What is your understanding of the concept Environmental Education?
3. What questions do students answer poorly in the examination?
4. What aspect(s) appear to be easy for students to answer in the examination?
5. What is your comment about the section on field trips, excursions and outings?
6. Do students show ability to use resources they have developed?
7. What difficulties have you identified as far as the whole examination is concerned which mostly affect students performance in the examination?
8. Do you think lecturers have enough background knowledge and confidence to teach the Environmental Education Course?
9. Do you think lecturers should attend workshops, seminars or conferences on Environmental Education?
Comment?

10. Do you think lecturers and students address real environmental issues in their regions?

If yes, what issues are they?

If not, what issues do you think they should address?

11. Do you think students are exposed to problem solving and decision making processes which are applied to environmental management concerns? Comment?

12. Are students showing any possibilities of applying Environmental Education in school teaching situation when they have completed their diploma? Comment?

13. Have you ever attended panel meetings on Environmental Education with College lecturers?

If yes, what is your opinion about them?

If no, explain why?

14. Have you ever organised a workshop or discussion with Environmental Education Lecturers by which you were trying to guide and assist them with the teaching of the Environmental Education Course?

15. Do you think lecturers know and understand what is expected of their students in the examination? Comment?

16. What is your general comment about the development and implementation of Environmental Education in Colleges of Education?

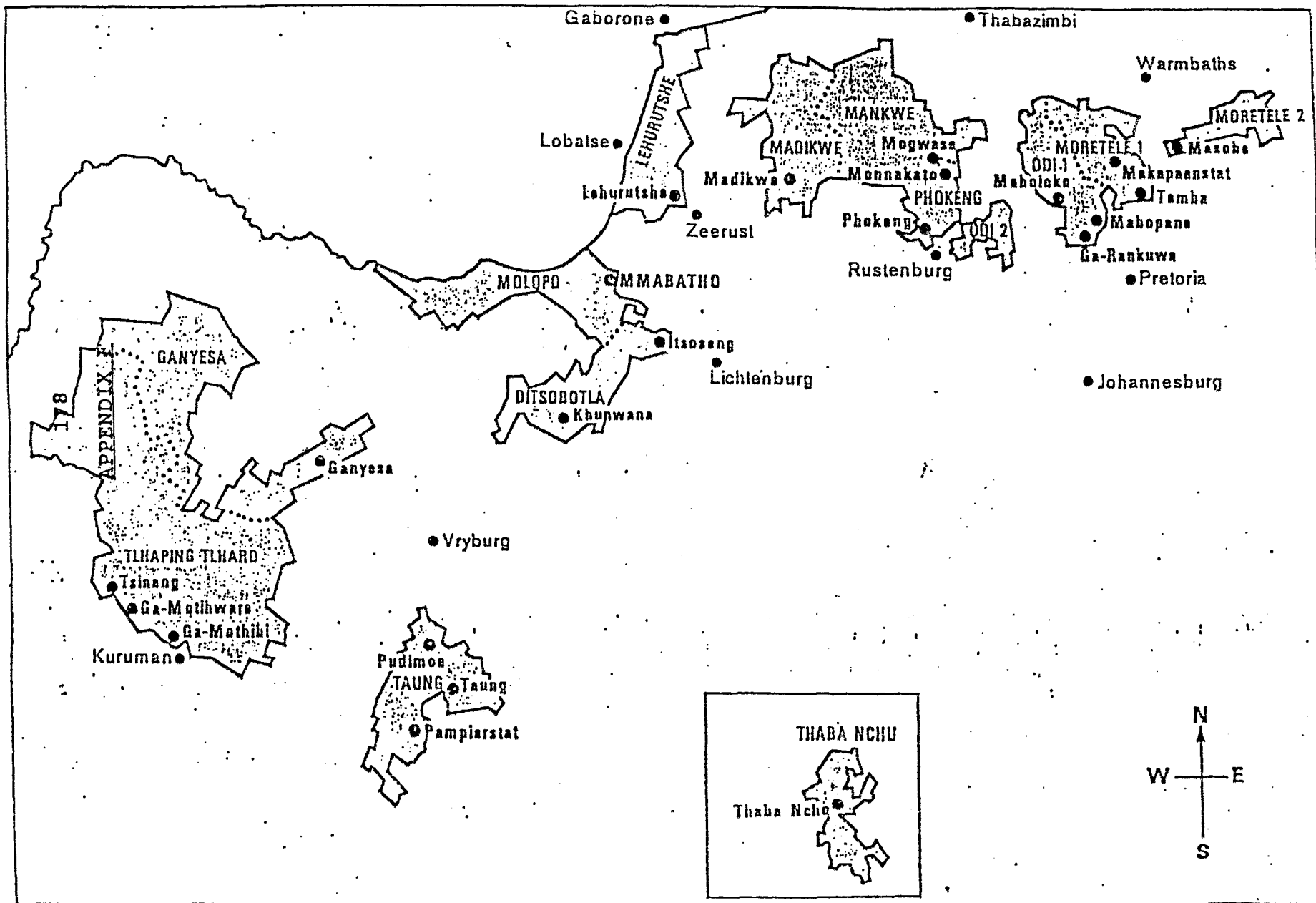
APPENDIX E

TOPIC : AN EVALUATION OF ENVIRONMENTAL EDUCATION IN COLLEGES OF EDUCATION

SEMI-STRUCTURED INTERVIEW : COURSE CO-ORDINATOR AT THE INSTITUTE OF EDUCATION (UNIBO)

1. What do you understand by the concept Environmental Education?
2. What is your opinion about the inclusion of Environmental Education in the Curriculum for Teacher Education?
3. What environmental issues do you think Environmental Education lecturers and students should address?
4. What do you think about the Environmental Education syllabus?
5. What is your comment about the section on field trips, excursions and outings?
6. Do you think the section on trail and trail development is necessary to be included in the Environmental Education curriculum? Comment?
7. What is your comment about the section on practical work (projects) which students together with their lecturers have to develop relating to Environmental Education?
8. Do you think lecturers have enough teaching resources?

9. What facilities are lacking in colleges which are necessary for the teaching of Environmental Education?
10. Do you experience any difficulties when reviewing and developing the Environmental Education syllabus during panel meetings with lecturers? If yes, what are they? How do you overcome them?
11. Do you think lecturers should attend seminars. workshops and conferences relating to Environmental Education? Comment?
12. What additional content (if any) do you feel should be added to the Environmental Education syllabus?
13. Which aspects of the Environmental Education syllabus do you consider least worthwhile?
14. What is your opinion about Environmental Education examinations?
15. Are you satisfied with students performance in such exams?
16. Do you think the Environmental Education syllabus allows lecturers to include aspects they consider important and interesting?
17. What is your general comment about the implementation and development of Environmental Education in Colleges of Education?



THE DISTRICTS AND MAIN TOWNS OF BOPHUTHATSWANA

APPENDIX GGUIDING PRINCIPLES FOR EFFECTIVE EDUCATION AS ADOPTED AT
THE 1977 INTERGOVERNMENTAL CONFERENCE ON ENVIRONMENTAL
EDUCATION HELD AT TBILISI, USSR.

Environmental Education should :

- * consider the environment in its totality - natural and built, technological and social (economic, political, cultural-historical, moral, aesthetic);
- * be a continuous lifelong process, beginning at the pre-school level and continuing through all formal and non-formal stages;
- * be interdisciplinary in its approach, drawing on the specific content of each discipline in making possible a holistic and balanced perspective;
- * 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;
- * focus on current and potential environmental situations while taking into account the historical perspective;
- * promote the value and necessity of local, national and international co-operation in the prevention and solution of environmental problems;
- * explicitly consider environmental aspects in plans for

development and growth;

- * enable learners to have a role in planning their learning experiences and provide an opportunity for making decisions and accepting their consequences;
- * relate environmental sensitivity, knowledge, problem-solving skills and values clarification to every age, but with special emphasis on environmental sensitivity to the learner's own community in early years;
- * help learners discover the symptoms and real causes of environmental problems;
- * emphasize the complexity of environmental problems and thus the need to develop critical thinking and problem solving skills;
- * utilize 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.

APPENDIX H

Colleges of Education - Bophuthatswana

Institute of Education - Unibo

ENVIRONMENTAL EDUCATION SYLLABUS (LEED)

1st, 2nd and 3rd year.

GENERAL AIMS FOR FULL THREE YEAR COURSE

This course seeks to develop a comprehensive sense of awareness about the environment issues.

GENERAL OBJECTIVES

1. To increase the students' awareness of ecological principles that govern the environment.
2. To lead students to understand man's social, economic, historical, cultural and physical relationship with the environment.
3. To increase the students' awareness of the wide range of attitudes and personal values relating to the environment.
4. To allow students to experience problem-solving and decision-making processes which are applied to environmental management concerns.
5. To prepare students to teach about environmental issues and to develop environmental awareness in pupils in an interesting and affective way.

Specific aims for the 1st year of study is to introduce students to environmental education, the resources available for its execution and the ecological foundation upon which it is based.

Specific aims for the 2nd year of study are to provide a comparative study of environmental education and to examine its application in the school teaching situation.

Specific aims for the 3rd year of study are to provide students with a rounded-off philosophical basis to environmental education and the skills to produce materials, operate effective programmes with pupils and to understand and undertake evaluation as an integral part of environmental education.

SUMMARY OF SUGGESTED PERIOD ALLOCATED

YEAR	TERM 1	TERM 2
1	<p>Introduction to Environmental Education (10)</p> <p>Resources for Environmental Education (10)</p> <p>Excursion (10)</p> <p>Project/Practical work (15)</p>	<p>Concepts in Environmental Education (25)</p> <p>Excursions (10)</p> <p>Project/Practical work (10)</p>
II	<p>International overview (15)</p> <p>Trails & Interpretation (10)</p> <p>Project/Practical work (10)</p>	<p>Environmental Education in the schools of Bophuthatswana (25)</p> <p>Excursions (10)</p> <p>Project/Practical work (10)</p>
III	<p>Perspectives in Environmental Education (10)</p> <p>School, Community & Environmental Education (5)</p> <p>Resource utilisation (15)</p> <p>Excursions (10)</p> <p>Project/Practical work (5)</p>	<p>Values clarification (10)</p> <p>P u b l i c participation (5)</p> <p>Evaluation (15)</p> <p>Excursions (5)</p> <p>Project/Practical work (10)</p>

GENERAL NOTES AND EXPLANATIONS

1. S.P.A. (Suggested Period Allocations) are guidelines only and should not be rigidly adhered to.
2. Excursions/Outings/Field studies should be seen in the broadest possible sense i.e. "Excursions" does not mean only long distance visits.
"Fieldwork" is best done locally and may, for example, include the following :
 - * Documenting the local environment.
 - * Carrying out surveys of plants, animals, types of buildings etc.
 - * Opinion survey of environmental issues.

Periods allocated to "Excursions" should be used for thorough preparation and follow-up activities as well as the excursion itself. Students should be involved in the planning and arranging (e.g. writing letters, getting background data) of the programme from the first year onwards. By the third year students should plan and execute the excursion entirely on their own or with only minimal guidance and support from the staff.

3. Project/Practical work should be integrated with relevant aspects of the theory being covered and not perceived as some isolated syllabus requirement.

4. The three year period should be programmed to become more demanding and involve a greater degree of critical thought as the course progresses. Student participation should also increase over the three years.

5. Students should be encouraged to join the Environmental Education Association of Southern Africa (EEASA) at the special student rate and final year students in particular should be encouraged to submit their work to the Southern African Journal of Environmental Education for possible publication. These activities will bring students into contact with like-minded people throughout Southern Africa and enable them to develop long-term professional links.

YEAR 1TERM 1**1. AN INTRODUCTION TO ENVIRONMENTAL EDUCATION****1.1 Why Environmental Education.**

The international environmental crisis.

Survival and quality of life of humankind.

God, creation and moral responsibility.

1.2 What is Environmental Education.

International overview.

Terminology in current use.

Environmental Education as an approach to teaching.

1.3 The origins, brief history and development of Environmental Education.**1.4 Environmental Education in Southern Africa and Bophuthatswana.**

(Suggested Period Allocation : 10)

2. RESOURCES FOR ENVIRONMENTAL EDUCATION**2.1 Identifying resources e.g. Lengau Clubs.****2.2 Using resources for teaching.****2.3 Using existing information e.g. field guides.**

(Suggested Period Allocation : 10)

3. EXCURSIONS/OUTINGS/FIELD STUDIES**3.1 Planning and preparation.****3.2 Excursion.****3.3 Follow-up and consolidation.**

3.4 Adapting the experience to school situation.

(Suggested Period Allocation : 10)

4. PROJECT/PRACTICAL WORK

4.1 Compiling a scrapbook/file : general environmental education material.

4.2 The collection and production of teaching material and aids for environmental education (e.g. charts, games, worksheets).

(Suggested Period Allocation : 15)

YEAR 1TERM 2**1. CONCEPTS IN ENVIRONMENTAL EDUCATION**

- 1.1 Ecology; principles and relationship to humankind.
- 1.2 Threats to the environment (e.g. pollution, energy crisis etc).
- 1.3 The Natural Environment.
- 1.4 The Built Environment.
(Suggested Period Allocation : 25)

2. EXCURSIONS/OUTINGS/FIELD STUDIES

- (Same procedure as for 1st term)
- (Suggested Period Allocation : 10)

3. PROJECT/PRACTICAL WORK

- 3.1 Compiling a scrapbook : ecological and environmental issues.
- 3.2 As for 4.2 in term 1.
(Suggested Period Allocation : 10)

YEAR 2TERM 1**1. AN INTERNATIONAL OVERVIEW OF ENVIRONMENTAL EDUCATION**

1.1 A review of Environmental Education in selected parts of the world (policies, progress and problems).

1.2 International organisations concerned with environmental issues and Environmental Education (UNEP, IUCN, WWF, UNESCO, WORLD BANK and others).

1.3 The World Conservation Strategy.

(Suggested Period Allocation : 15)

2. TRAILS AND INTERPRETATION

Theory of trails and trail development.

Introduction to Interpretation (theory).

(Suggested Period Allocation : 10)

3. EXCURSIONS/OUTINGS/FIELD STUDIES

Planning and preparation.

Excursion.

Follow-up and consolidation.

Adapting the experience to the school situation.

(Suggested Period Allocation : 10)

4. PROJECT/PRACTICAL WORK

Designing a trail(s) and its simple interpretation in school grounds/local area.

Making teaching aids - simple instruments (e.g. quadrant, weather instruments, biological instruments).

(Suggested Period Allocation : 10)

YEAR 2TERM 2

1. ENVIRONMENTAL EDUCATION IN THE SCHOOLS OF BOPHUTHATSWANA

1.1 Education Department Policies and Statements relating to Environmental Education.

An examination of the syllabuses of each subject in terms of

- * potential for developing environmental awareness.
- * the development of a cross-curricular approach to dealing with environmental issues.

1.2 An examination of the potential for Environmental Education in areas of the school curriculum outside of formal teaching subjects.

1.3 Teaching methods and models appropriate to Environmental Education (including gaming and simulation).

1.4 Problems relating to the development of an Environmental Education approach in the schools and an exploration of possible solutions to these problems.

1.5 The design and development of an overall approach to Environmental Education within the school system.

(Suggested Period Allocation : 25)

2. EXCURSIONS/OUTINGS/FIELD STUDIES

(Same procedure as for 1st term).

(Suggested Period Allocation : 10)

3. PROJECT/PRACTICAL WORK

Developing and laying out the trail and simple interpretation designed in term 1.

(Suggested Period Allocation : 10)

CENED 310

DURATION : 3 Lectures per week
COURSE METHOD :
RECOMMENDED BOOKS : See CENED 110
CONTENT :

1. PERSPECTIVE ON ENVIRONMENTAL EDUCATION

- 1.1 Philosophies and concepts in Environmental Education.
- 1.2 The relevance of Environmental Education in the 1990's and beyond.
- 1.3 The relationship of Environmental Education to other disciplines (psychology, sociology, ecology etc.)

2. THE SCHOOL, COMMUNITY AND ENVIRONMENTAL EDUCATION

- 2.1 Co-operation and links with environment and environmental agencies outside of the school system.
- 2.2 The opportunities and constraints governing the development of Environmental Education in Bophuthatswana.

(Suggested Period Allocation : 5)

3. RESOURCE UTILISATION (See also 5 below)

- 3.1 Designing and production of resource material.
- 3.2 Principles of Environmental Interpretation.
- 3.3 Planning of school grounds for effective educational use.

(Suggested Period Allocation : 15)

4. EXCURSIONS/OUTINGS/FIELD STUDIES

Planning and preparation.

Excursion.

Follow-up and consolidation.

Adapting the experience to the school system.

(Suggested Period Allocation : 10)

5. PROJECT/PRACTICAL WORK

Interpretation and production of "guides" on the local environment. (To be integrated with 3 above).

(Suggested Period Allocation : 5)

EVALUATION CENED 310

Semester Mark :

Examination : One 3-hour written paper.

Final Mark :

CENED 320

DURATION : 3 Lectures per week

COURSE METHOD :

RECOMMENDED BOOKS : See CENED 110

CONTENT :

1. VALUES CLARIFICATION (Theory and exercises)

(Suggested Period Allocation : 10)

2. PUBLIC PARTICIPATION AND DECISION-MAKING IN ENVIRONMENTAL ISSUES

(Theory and principles).

(Suggested Period Allocation : 5)

3. EVALUATION

3.1 The theory of evaluation in education.

3.2 Evaluation of Environmental Education programmes operated

a. within school.

b. by other agencies offering Environmental Education programmes.

(Techniques and criteria).

3.3 Evaluation of the curriculum in terms of Environmental Education.

3.4 Evaluation of this three year course now being completed by the students.

(Suggested Period Allocation : 15)

4. EXCURSION

Primarily to evaluate the course/programme/place visited.

(Planning and follow-up).

(Suggested Period Allocation : 5)

5. PROJECT/PRACTICAL WORK

Developing school grounds for educational use. This should be work done either in college grounds or at a nearby school.

(Suggested Period Allocation : 10)

EVALUATION CENED 320

Semester Mark :

Examination : One 3-hour written paper.

Final Mark :

APPENDIX I

AN EXAMPLE OF AN ENVIRONMENTAL EDUCATION EXAMINATION
QUESTION PAPER



University
of
Bophuthatswana
Affiliated Colleges of
Education : Examinations

PAGE 1 OF THREE PAGES

NOVEMBER EXAMINATION 1990

SUBJECT : CEEDP/S 220
COURSE : PRIMARY AND SECONDARY
MARKS : 100
TIME : 3 HOURS
CHIEF EXAMINER : Ms. D.L. DLAMINI

INSTRUCTIONS TO CANDIDATES

1. Answer FOUR questions as follows:
TWO questions from Section A
TWO questions from Section B
2. Above each question write the number of the question.
3. Start each answer on a new page.
4. Number your questions exactly as the questions are marked.

PAGE 2 OF THREE PAGES

SECTION A

Answer TWO questions from this section.

1. Select any ONE important environmental issue in the world today e.g. the depletion of the ozone layer, global warming, over population etc. and show how you would use the Cross Curricular approach in its teaching. (25)
2. Discuss some of the problems which you think a teacher, who recognises the importance of environmental education might face in our present day educational system. Suggest solutions to these problems. (25)
3. Critically discuss the role of the National Parks Board of Bophuthatswana in developing environmental awareness among Bophuthatswana Citizens. (25)
4. Write short notes on TWO of the following topics:
 - (i) conservation education
 - (ii) Deforestation
 - (iii) Categories of Environmental Education objectives
 - (iv) Ozone layer

(2 x 12½) (25)

(50)

SECTION B

Answer TWO questions from this section.

5. "Games and simulations are seen as a way of opening up a situation for pupils so that further learning may take place as a result....." (Walford).

Explain briefly the following:

- (i) The meaning of games and simulations.
- (ii) The advantages associated with gaming and simulations in teaching environmental issues.

(25)

SECTION B (contd.)

6. Write an essay on "The value of excursions to teaching environmental issues."
7. Using your School Campus, design a trail that you can use in teaching some environmental issues.

(25)

8. Select any topic which deals with environmental issues and construct a lesson plan. Your lesson plan should have the following information:

- (i) Subject and Class
- (ii) Duration of lesson in minutes
- (iii) Aims and Objectives
- (iv) Teaching Aids
- (v) Introduction
- (vi) Presentation
- (v) Closure.

(25)

(50)

APPENDIX JAN EXAMPLE OF A LETTER WRITTEN TO RECTORS

Department of Education
RHODES UNIVERSITY

P.O. Box 94, Grahamstown, 6140 SOUTH AFRICA
Telegrams 'Rhodescol' Fax (0461) 2 5049 Telephone (0461) 2 2011 ext 383 384

The Rector
Hebron College of Education
Private Bag X1084
GA-RANKUWA
0208

21 February 1991

Dear Mr. Mokhaba

This letter serves to introduce Mr. M.P. Leketi, a lecturer at Thlabane College of Education and a bona-fide Master's student of Rhodes University. Mr. Leketi has successfully completed the first part of his Master of Education Degree and is now required to write a thesis. The topic which he has chosen and which has been approved by Rhodes University is:

"An evaluation of the Environmental Education programme in Bophuthatswana College of Education".

Mr. Leketi's research topic also has the approval of the Institute of Education at Unibo (where Prof. Holderness has agreed to co-supervise the work) and the Bophuthatswana National Parks Board because of its close involvement with the Bophuthatswana Department of Education on the issue of Environmental Education. Within the wider Southern African sphere this is also considered to be an extremely valuable topic for research investigation.

Mr. Leketi will be visiting you and your college over the next 6 to 8 weeks to request permission to conduct some interviews with your staff and students. Any assistance which you are able to give him will be greatly appreciated by all concerned.

Yours sincerely

A handwritten signature in dark ink, appearing to read 'P.R. Irwin'.

PROFESSOR P.R. IRWIN
HEAD OF DEPARTMENT

PRI/sb

c.c. Director, Institute of Education, Unibo
Professor W. Holderness
Director National Parks Board
Mr. M.P. Leketi