

**ENVIRONMENTAL EDUCATION IN
PRIMARY SCHOOLS IN
BOPHUTHATSWANA :
A CASE STUDY IN CURRICULUM
IMPLEMENTATION**

by

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of Master of Education in Environmental Education Degree

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ABSTRACT

This study examines the extent to which teachers in Senior Primary Schools who have obtained a professional qualification in Environmental Education, implement Environmental Education in their schools. It also explores factors which influence the implementation of Environmental Education at the Senior Primary School.

Teachers who had qualified from Tlhabane and Hebron Colleges of Education were interviewed as were the principals of their schools and some of the lecturers who had taught them Environmental Education. The implementation of Environmental Education was addressed by means of comparing the teacher's responses with Primary Environmental Education Teacher Competencies as suggested by Glasgow and Robinson (1986) and Lahiry et al (1988). The information was deduced from the teachers responses from semi-structured interviews and were qualitatively analysed.

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ABBREVIATIONS used in the Text

- * UNESCO - United National Educational Scientific and Cultural Organisation.
- * IUCN - International Union for the Conservation of Nature and Natural Resources.
- * UNEP - United Nations Environment Programme.
- * EEASA - Environmental Education Association of Southern Africa.
- * PEUP - Primary Education Upgrading Programme of Bophuthatswana.
- * UNIBO - University of Bophuthatswana

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CHAPTER 1

INTRODUCTION

1.1 AN INTRODUCTION TO ENVIRONMENTAL EDUCATION AND THE RESEARCH RATIONALE

In Bophuthatswana, as in much of the world, Environmental Education is regarded as an approach to encouraging individuals to adopt environmentally sensitive attitudes, values and behaviour. Much of the literature in Environmental Education reflects that, in most countries, efforts to retard and redress environmental deterioration in a more formalised nature are strongly influenced by the resolutions reflected in the published World Conservation Strategy (UNEP 1977, Halverson 1982, Disinger 1986, O'Donoghue and McNaught 1989, Van der Merwe 1991).

The internationally agreed-upon principles of Environmental Education are acknowledged as fundamental to the designing and running of programmes aimed at educating people and encouraging responsible behaviour towards the environment. But it must be pointed out that while many states have perceived Environmental Education as a necessary part of environmentally sound development (Musonda 1982, Halverson 1982, Lahiry *et al* 1988) few have identified teacher training institutions for dealing with Environmental Education issues.

In Southern Africa Environmental Education is poorly developed and uneven (Irwin 1982, Ledger 1984, O'Donoghue and Taylor 1988). It must be mentioned however that this situation is changing as many institutions for example are now beginning to develop Environmental Education programmes. In the territory of Bophuthatswana, (See Figure 1.1) by contrast, Environmental Education is well developed particularly at tertiary level and this may to some extent be ascribed to the high level of official government support (Irwin 1987).

UNESCO-UNEP (1987), reports a worldwide shortage of qualified teachers for Environmental Education at all levels, especially for intermediate formal instruction.

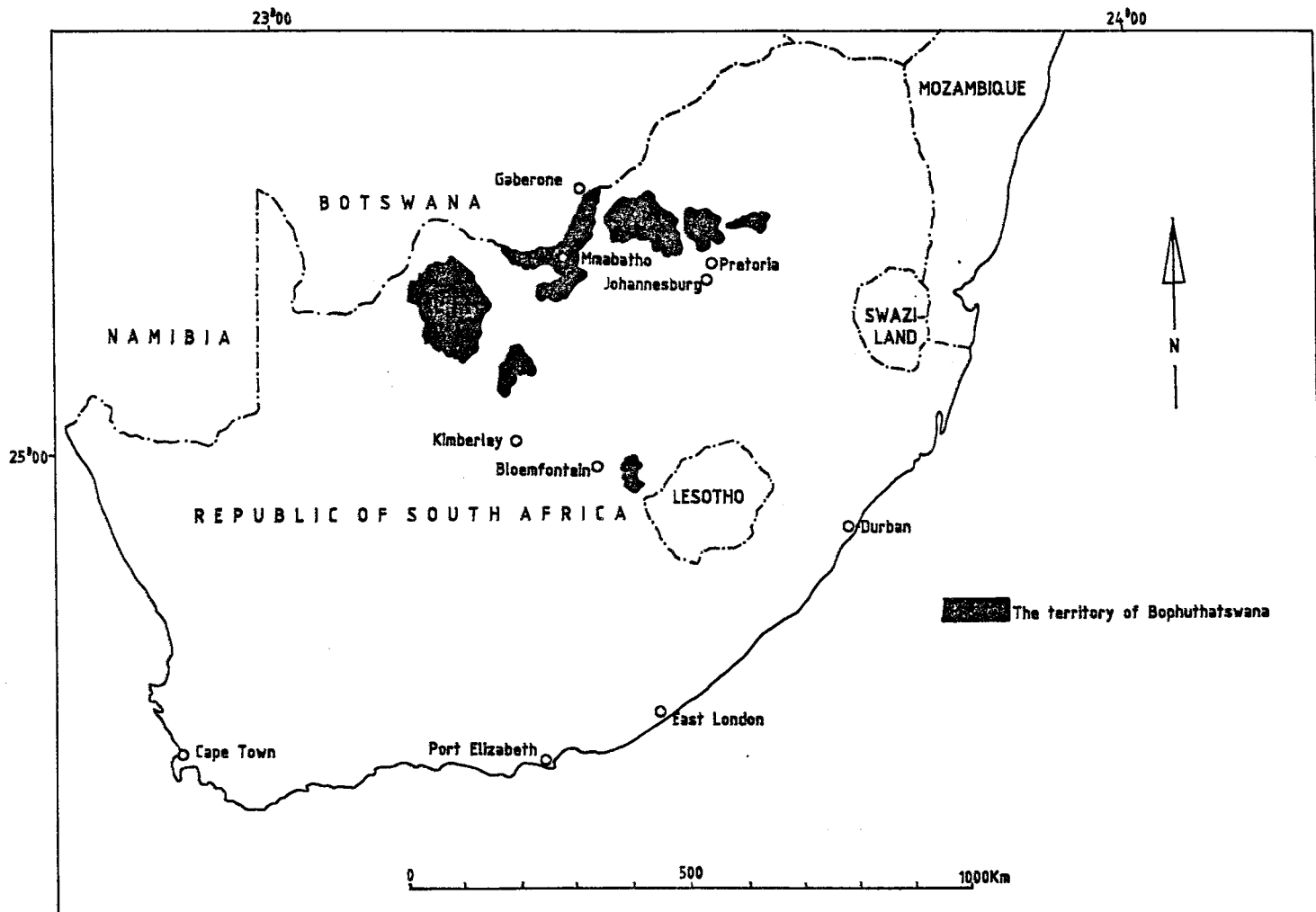


FIGURE 1.1 BOPHUTHATSWANA LOCATION MAP.

Until 1982 the University of Bophuthatswana (UNIBO) and the Bophuthatswana National Parks Board were the only recognised institutions engaged in Environmental Education programmes in Bophuthatswana. At that time it was proposed (Irwin 1982) to the Bophuthatswana government that Environmental Education be formally incorporated into the teacher education curriculum of the Colleges of Education (Irwin 1987). By 1985 approval was given for the incorporation of Environmental Education.

In general, environmentalists have accepted that education about the environment has to a large extent become the responsibility of the school system (UNEP 1977, Halverson 1982, Ham and Sewing 1988). Among the various possibilities for the development of Environmental Education programmes, the formal education system offers the best condition, due to its having an institutional base i.e. the school (Vulliamy 1987). Schools may be employed as instruments in accomplishing the aims and objectives of Environmental Education.

1.2 A BRIEF OVER VIEW OF ENVIRONMENTAL EDUCATION

Defining Environmental Education is not an easy task (Jeta 1982, Hurry 1987). Also, describing the goals of Environmental Education has, over the years, proved to be problematic (Ballantyne and Oelofse 1989). Environmentalists such as Forbes (1974) and O'Riordan (1981) have only presented descriptions of Environmental Education. Despite such difficulty there is consensus among Environmental Educators that Environmental Education should be interdisciplinary i.e. drawing from biological, sociological, anthropological, economic, political and humanistic sources (Jeta 1982). Irwin (1991:11) states that

Environmental Education has amongst other things been described, as a 'goal of education', a 'process', a 'subject', a 'field of study' a 'medium for skill development' a 'way of life' and a 'style' of education.

He further states that Environmental Education is regarded by educationists as an approach to education which helps to develop individual potential and promote a sense of responsibility for the consequences for personal and social actions. It is also acknowledged by Irwin (1983:1) that "the international community has had some difficulty in reaching a universally acceptable definition of Environmental Education".

By far the most widely accepted definition of Environmental Education is that of the IUCN (1971)

Environmental Education is the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among man, his culture and his biophysical surroundings. Environmental Education also entails practice in decision making and self-formulation of a code of behaviour about issues concerning environmental quality.

Another useful and widely quoted description of Environmental Education is that of UNESCO (1985) which states that Environmental Education aims to foster clear awareness of and concern about economic, social, political and ecological interdependence in urban and rural areas, to provide every person with opportunities to acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment and to create new patterns of behaviour of individuals, groups and society as a whole towards the environment.

In summary, it can be said that Environmental Education refers to any educational philosophy or programme intended to increase or promote sensitivity, knowledge or values about the environment (Irwin 1991). The relationship of Environmental Education and Primary schools is now referred to.

1.3 ENVIRONMENTAL EDUCATION IN SCHOOLS

Teachers are recognised as being key figures (Potter 1988) in the actual implementation of Environmental Education and its eventual success or failure in schools. Forbes (1987:138) states that "Environmental Education is a cross-disciplinary field of study. As such it is difficult to incorporate into a system tramlined by disciplines". Lucko et al (1987) state that it is interdisciplinary and virtually a part of every curriculum area. Clacherty (1989:42) also points out that :

Environmental Education is a relative newcomer in education circles and as such it has not yet achieved a generally accepted understanding of what it is and how it should be implemented (sic)

It is notoriously difficult for new subjects to become established in a formal curriculum (Gayford 1986). The opportunity to implement Environmental Education in the schools is to a large extent going to be influenced by the curriculum presented to the schools. The curriculum essentially determines the content and approaches to achieve defined objectives (Hale 1986). The

implications are that, since Environmental Education is an innovation, teaching approaches may need to be assessed and changed drastically. At the centre of curriculum development is the actual implementation of an innovation by the teachers in the classroom (Abbs 1980, Ballantyne and Tooth-Aston 1985, Maher 1986). Changes may not only be restricted to the curriculum but may also affect teachers, principals, pupils and the whole school ethos (Taylor 1975).

It must not be overlooked that the school itself is the 'crucible' of the curriculum and that the teacher is its principal 'agent'. The teacher is the agent for the translation of the curriculum into effective teaching in the classroom (UNESCO 1985). Clearly the initiation of an innovation is intimately bound up with norms and values, the relationships within and the organisation of the school as an institution (Dalton 1988). The teachers definition of their role, their perception of the school and judgement of what is possible within it must provide the starting point for curriculum development (Dalton 1988).

Thus any curriculum review may affect among others, the educational values held by the teachers and principals and may change working patterns and relationships (Taylor 1975, Dalton 1988). Pupils are often presented with unfamiliar teaching methodologies. New learning process will occur in a rather unfamiliar or unusual manner (Owen 1975). Such changes necessitate intensive orientation of both the teachers and all significant participants in the school so as to be convinced that the changes are worth making (Gigliott 1990).

1.4 ENVIRONMENTAL EDUCATION AS AN INNOVATION

Research has shown that the incorporation of any innovation into the formal curriculum often poses problems for teachers (Rogan 1985, Williams 1985, Gayford 1986), especially when teachers are not part of the actual process of developing the innovation. In Bophuthatswana, consultation between teachers and the curriculum designers for Environmental Education at school level appears to be non-existent. Consultation with teachers in curriculum development is necessary because

teachers as users of an introduced innovation often have to make decisions and cope with a number of factors which can limit or enhance implementation (Owen 1975). Examples are the apparent worth of the innovation and whether it is perceived to have practical relevance to classroom conditions. (Morris 1985, Graves 1986).

Certain aspects of an education system present constraints in the process of developing and implementing Environmental Education in schools. Emmlin (1986:74) cites the "fragmentation of knowledge caused by the discipline-oriented, single-subject structure of formal education" as the major problem that inhibits the greater contribution of Environmental Education and thus affects its integration to the traditional subjects.

The important issue in schools is the co-ordination and integration of Environmental Education across the curriculum (Ledger 1984). In the Third World, Environmental Education faces yet another obstacle as it is vulnerable to being perceived as not important by teachers, parents, pupils and others, as it does not necessarily teach the conventional basic skills of reading and writing. Also, Environmental Education has a local bias and emphasizes practical involvement. As Knamiller (1981:4) notes:

.... this is not what children and parents and teachers regard as relevant education. To them, the school should maintain its academic abstract and urban middle-class bias. Schooling is a vehicle out of the community, not a process for improving local conditions.

This position of Environmental Education has considerable implications for its implementation by teachers. In general, innovations change both subject and methodology. Environmental Education as a method or approach will influence the manner in which subjects are presented and thus "the need for teacher training in Environmental Education programmes can hardly be over emphasised" (Lahiry et al 1988:15).

If an innovation such as Environmental Education involves a radical departure from custom and practice, a failure to learn new skills can lead to rejection or inadequate implementation. Barriers to change may result from teachers lack of knowledge and skills, lack of clarity about the approach, unavailability of materials and incompatible school arrangements (Dalton 1988).

Therefore, the teacher training programmes should be developed against the background of the environment in which the teachers will be teaching (Hurry 1984). Teacher training in content, methods and learning process of Environmental Education plays an important role in enhancing the implementation of this approach. A survey carried out (UNESCO-UNEP 1978) on the status of Environmental Education revealed that some teacher training programmes, both pre-service and in-service, are deficient in effectively preparing teachers to achieve Environmental goals and objectives in the classroom. This situation, in the opinion of the writer, is gradually improving as programmes are conducted by different institutions.

1.5 ENVIRONMENTAL EDUCATION TEACHER TRAINING AND THE RESEARCH RATIONALE

In an effort to train Environmental Education teachers in Bophuthatswana, the University and three of the seven Colleges of Education (See Figure 1.2) now offer Environmental Education as an elective and work in close co-operation with the National Parks Board and the Department of Education. The Institute of Education at UNIBO is to present for approval to the curriculum committee of the University who oversee the College programmes, that Environmental Education be offered as a compulsory course for students following the primary programme at the College of Education and as an elective at the secondary level. This means that as from next year (1992) all Colleges will have to offer Environmental Education.

Among other objectives, the Environmental Education electives specifically aim to introduce students to Environmental Education, the resources available for its execution and the ecological foundations upon which it is based. Students are presented with comparative studies of Environmental Education and possibilities for application in the school teaching situation (Irwin 1987). The syllabuses for the courses are drawn and developed by a panel of Lecturers involved in Environmental Education from all Colleges of Education through the leadership of the Institute of Education at the University of Bophuthatswana. This teacher training programme since 1986 has been offered at three of the Colleges namely Tlhabane, Taung and Hebron which have since graduated teachers qualified in Environmental Education and who are now in teaching service.

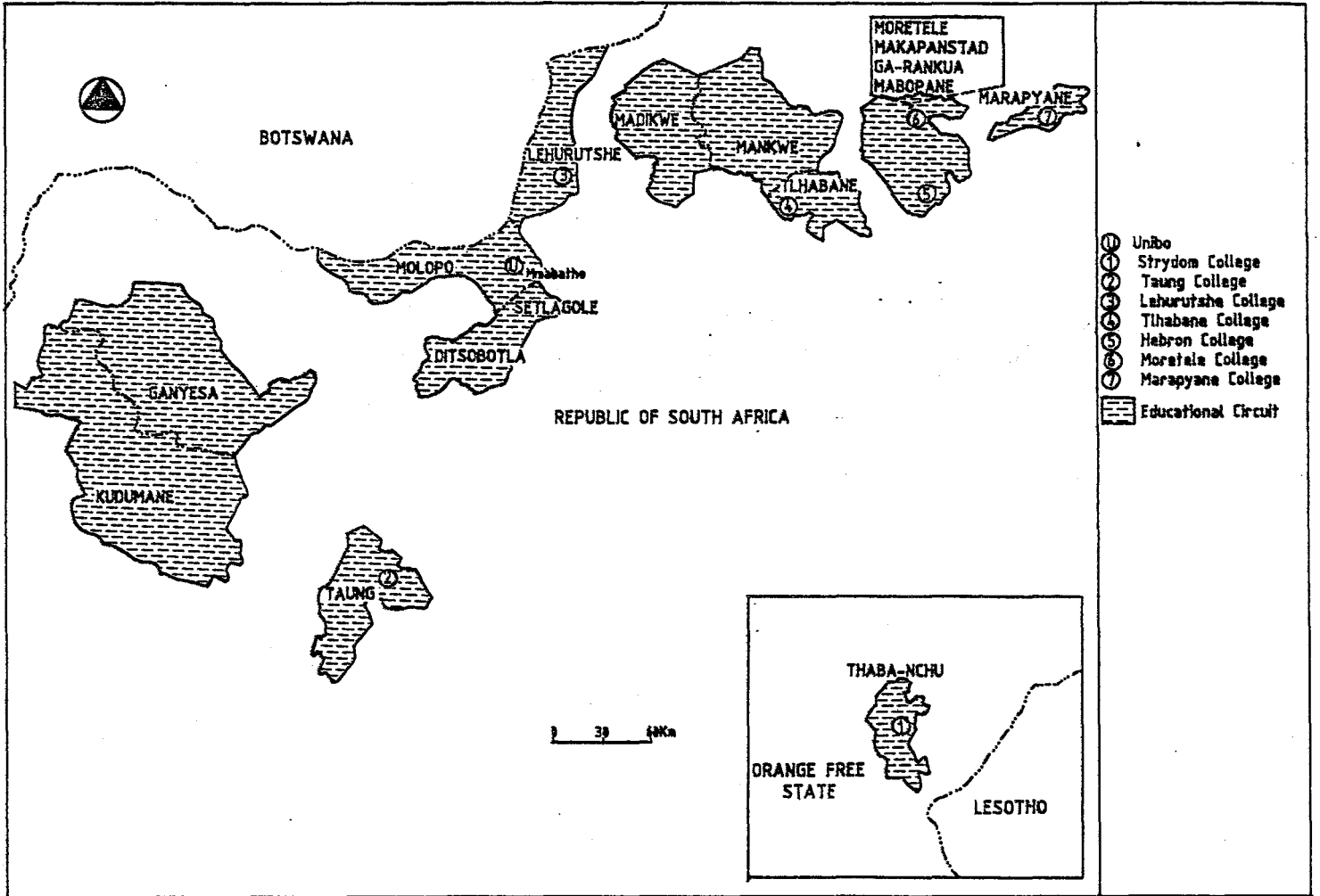


FIGURE 1.2 MAP SHOWING THE EDUCATION CIRCUITS, UNIVERSITY AND THE SEVEN COLLEGES OF EDUCATION.

The need to evaluate the complex teaching and learning process involved in the implementation of Environmental Education is often overlooked and research in the actual implementation of Environmental Education in the classroom is limited in Southern Africa (Ballantyne and Oelofse 1989). It is however, necessary to undertake systematic research to evaluate the real effectiveness of educational and training processes with a view to making, where appropriate, the necessary adjustments to improve their relevance (UNESCO 1985).

Lucko et al (1989:7), state that there has been an increase in environmental education programmes run by educational institutions but "little systematic evaluation of the effectiveness of these programs, assessment of curriculum materials, gains by the student, knowledge, attitude shift, behavioral change or teacher effectiveness has taken place". In other words, there is a need for programmes, (especially new programmes) to be continuously monitored with the aim of gathering more information that may be utilised to improve them and make them more relevant. The mention of the term evaluation should not conjure up ideas of evaluation in the traditional sense of examining a programme - namely whether or not it has reached its required standards on pre-specified criteria but to investigate and gather information that can improve the programme (Stufflebeam 1983, Nevo 1983). This research project aims primarily to investigate the factors which influence the implementation of Environmental Education in primary schools.

Ham and Sewing (1988), state that there have been indications through research that barriers do exist in schools as far as Environmental Education is concerned. They identified four major categories of such barriers. Firstly, conceptual barriers which mainly result from lack of agreement of what Environmental Education should include as its content. Sometimes the perception that Environmental Education is a separate subject also creates confusion. Secondly, logistical barriers that emanate from perceived lack of time, lack of funding, resources and unmanageable class sizes. Lack of instructional materials is also seen as a major logistic barrier. Thirdly, there are educational barriers that result from the teachers lack of confidence in the actual presentation of the Environmental Education materials and Environmental Education programmes. Insufficient background knowledge of Environmental Education may be a demotivating factor. The fourth

barrier identified by Ham and Sewing is that of attitude. Attitudinal barriers are strongly created by the attitudes of teachers towards Environmental Education in relation to other subjects. If the teacher's perception of the value of the approach is inadequate it is likely that classroom instruction is going to be rather low. These issues will be explored later in the discussion.

In view of such findings through research, it would be naive to believe that the implementation of Environmental Education in Bophuthatswana schools would be without problems. At present in Bophuthatswana primary schools 'Environmental Studies' is taught as a separate subject in Std 1 and 2. The Environmental Studies syllabus adopts a thematic approach with emphasis on the child's immediate environment. This is done with the aim of promoting understanding of the physical and non-physical environment. The presence of environmental studies as a subject may create confusion in cases where principals and teachers who are not trained in Environmental Education are presented with Environmental Education as an approach.

A formal Environmental Studies draft syllabus is to be presented to the Bophuthatswana National Curriculum Committee before the end of this year (1991) Lehobye, S. (personal communication). One of the intentions of this new syllabus is to develop knowledge and understanding of the pupil's environment, encourage pupils to take care and to participate actively in preserving and improving their total environment. It aims to encourage an appreciation of nature in general. The syllabus also aims to promote observation, classification, recording, expression and co-operation amongst pupils. This new syllabus seems to share largely the intentions of Environmental Education. Whether such efforts are easily achievable or not is yet to be seen.

It is against this background that research may reveal factors influencing the implementation of Environmental Education in Bophuthatswana primary schools. Further the research hopes to examine the extent to which teachers in senior primary schools, who have obtained professional qualifications in Environmental Education while at College, implement Environmental Education. The researcher holds the view that once a programme is underway some form of feedback is essential, hence the project.

The subsequent chapters of this study attempt to discuss and provide a survey of the literature and views of some of the writers relevant in the field and the teachers and principals perceptions of Environmental Education and their implications. To realise the objectives of the study, issues on the implementations process of Environmental Education in the schools are also discussed (taking into cognizance the Environmental Education teacher competencies as outlined by Glasgow and Robinson (1986) and Lahiry et al (1988) with comments on factors that influence the implementation process. Finally, conclusions are drawn based on the findings of the research process.

CHAPTER 2

LITERATURE REVIEW

2.1 THE IMPORTANCE OF ENVIRONMENTAL EDUCATION AND THE FORMAL CURRICULUM

Robinson and Wolfson (1982:5) state that

the quality of the environment on Earth has deteriorated to the point that continued existence of life is threatened. In order to reverse present destructive trends caused by people-related activities and styles of life, an environmental literacy and environmental ethic must become a basic objective of education at all levels, within the school system

Okot-uma and Wereko-Brobby (1985:142) add that

if rich natural resources of Africa are to be tapped to assist development, then we suggest that the appropriate framework is that which inculcates and promotes environmental consciousness with the developmental process. This inculcation to our mind, cannot be provided through a series of "marginal" awareness - creating exercises. On the contrary, it must be rooted deeply into a formal educational system

Education has also been viewed as the salvation of pending environmental problems (Gayford 1986, Giglotti 1990). It is stated by Vulliamy (1987) that after the publication of the World Conservation strategy, with its main purpose being to 'persuade the nations of the world to adopt ecologically sound development practices' many nations have regarded the formal educational system as the most important system for influencing the behaviour of future generations. He shares this view with Environmental Education commentators such as Kiroro (1987) and Okot-uma and Wereko Brobby (1985).

According to Caduto (1984), if schools are to be successful in influencing learners to be socially and environmentally responsible people, governments will need to conceive, develop, and implement a comprehensive Environmental Education programme as part of the general education curriculum.

The benefits and advantages of Environmental Education being incorporated into the curriculum would be that it is cross - curriculum, broad - based, easily integrated (if staff is well orientated)

and amenable to treatment at all levels of formal education. It also to a large extent relates learning to real life issues: thus learning becomes potentially more meaningful (UNESCO 1985). Smyth (1987:48) argues that

although there are many routes into education ..., formal education has a special significance, not just because it provides the only access to a whole population (while at school) but because of the seal of importance which it attaches to the subject with which it deals,

He states further that the call for a concerted effort to give education a more specific environmental dimension has been widely recognized. This has led to some modern curriculum designs with an emphasis to incorporate Environmental Education, though its implementation has generally been slow (Hale, undated).

Various writers in Environmental Education for example Hurry (1984), Williams (1987), Kiroro (1987), Clacherty (1988), Giglotti (1990) agree that Environmental Education is not a subject in itself but an integral part of all courses. Its content should be drawn from across the whole of the curriculum (Williams 1989). Also there seems to be little controversy over how to place Environmental Education in the curriculum (Knamiller 1987). Environmental Education should be a dimension of all subjects and areas of education taking into account both the social and the natural aspects (UNESCO-UNEP 1987).

It is stated by Ballantyne and Tooth-Aston (1989), that curriculum planners often take for granted that educational structures such as the school allow the achievement of Environmental Education aims and objectives. But, according to Parry (1987), the development and implementation of Environmental Education at the school level is complex. In spite of this, teachers play a central role in effective implementation of change in schools such as that brought about by Environmental Education (Stein and Wang 1988).

2.2 CURRICULUM CHANGE IN SCHOOLS

Writers in the field of curriculum development (such as Mclure 1967, Saylor et al 1981, Sharpes 1988), who have focused their concern on theoretical perspectives relating to curriculum implementation, tend to agree that teachers who believe they are involved and effective in curriculum development tend to show greater congruence between intended and actual use of a curriculum. It should however be borne in mind that although teachers may agree about the importance of curriculum development work, they are orientated towards instructional, not curricular development (Kimpston, 1985). Environmental Education in the formal sense in which it is understood today is a recent innovation into school curricula; (Ham et al 1987), and since it is relatively new, teachers may raise questions about it.

It is acknowledged by many that a teacher is entitled to ask for a well- grounded assurance that new work in the curriculum is properly co-ordinated (Ham et al 1987). Also, since curriculum change doesn't take place in a vacuum, even insignificant change has implications for the total teaching process (Taylor 1975). Therefore, there needs to be clarity and agreement about aims and methods through which the new work is to be handled (Maclure 1967). This can only be achieved when consistent values throughout the process of change are upheld, so as to avoid the confusion which often follows when people only half understand or half share the values which are implicit in what they are doing (Maclure 1967).

Taylor (1975) argues that one of the basic conditions needed is a climate within the school which is high in receptivity to new ideas. This is supported by Pannell and Alexander (1990:40) as they state that "no worthy developmental situation should ignore the life culture of the school". Schools, like all organizations, are usually faced with a continuing struggle to maintain stability and they tend to reinforce themselves by solidifying their belief in the "rightness" of their present practices (Maclure 1967). There are therefore implications for the incorporation of Environmental

Education in Bophuthatswana Schools.

2.3 BARRIERS TO ESTABLISHING ENVIRONMENTAL EDUCATION IN THE FORMAL CURRICULA

As noted in section 1.5 at present there are conditions existing within schools that are perceived as barriers to establishing and implementing a well developed Environmental Education programme (Caduto 1984, Ham and Sewing 1988). It is through research that it may be possible to identify some of the major constraints which programmes for Environmental Education are experiencing, and it is through clear understanding of such constraints that appropriate procedures to overcome them can be adopted (Vulliamy 1987, UNESCO-UNEP 1987).

Vulliamy, (1987) argues that in the Third World, schools are regarded as structures that promote mobility out of the subsistence sector (and this often characterises most Third World societies), to more 'white collar' jobs through passing examinations and obtaining certificates. Therefore, any attempt at curriculum re-structuring must recognize that parents and students may reject any innovation which does not lead to recognition by a certificate. The school in this case is not perceived as an institution for learning but a vehicle to self-promotion to a high level in the society. In such circumstances, if Environmental Education as an approach is not perceived as a method to improving performance to examinations, then it is likely to be rejected.

Also in these schools, teaching in the classroom is formalistic, stemming from the manner in which the teachers themselves were taught (Vulliamy 1987). In some cases teachers go through poor training and this leads to reluctance to venture away from the stipulations of the syllabus and textbooks. Such circumstances often result in considerable dampening of pupils' enthusiasm to question the subject matter yet this questioning is crucial for the realisation of Environmental Education objectives.

Teachers need to be trained through a curriculum that has Environmental Education as a component

which can facilitate their teaching to promote Environmental Education (Vulliamy 1987). Kimpston (1985:186) states that "pedagogical innovations, usually not so clearly stated and demanding that teachers change their own behaviours, have less chance for across the board implementations". Morris (1985) identified motivation, leadership, and attitudes of participants, the structure and incentive system and resources of an organization, as some of the reasons that are used to explain why certain innovations are not implemented.

Among others, Havelock and Huberman (1978:227) identified two major barrier factors to innovation as, one "personality conflict and motivation - i.e. understanding others, lack of energy, rigidity, no openness to change, insufficient personal rewards" and two "underestimating the process (of innovating) - poor co-ordination and concession from political leaders, confusion and inadequate planning". In some instances teachers tend to implement most effectively curricula which allow them use of methods with which they are already familiar. Also the nature of the relationship between attitudes and implementation depends on the innovation itself (Kimpston 1985). If the innovation is seen as a learning process, it is likely to be successfully implemented (Dalton 1988).

An innovation assumes a different form in every situation and is interpreted differently by teachers and pupils. With reference to Environmental Education, Gayford (1986:147) states that "part of the problem of Environmental Education lies in initial confusion, even among advocates of Environmental Education, over its nature and identity and how it should relate to the curriculum". Further, some of the reasons for this stems from the variety of sources from which Environmental Education has been developed. Environmental Education is often equated with outdoor education and in some cases perceived as a subject (Ham et al 1987).

According to Lahiry et al (1988) the development of Environmental Education is yet to be completed and the methodological question remains to be elucidated. Essential to Environmental

Education is the aspect relating to the **affective** nature of the subject. This often creates problems for those teaching within the formal curriculum where cognitive areas are the main consideration so as to meet examination requirements (Gayford 1986).

Caduto (1984) isolates other problems frequently encountered in Environmental Education as 'lingering' doubts on the use of the classroom for Environmental Education by teachers, administrators, and parents, inadequate teacher training in Environmental Education, exclusive concentration on subject matter and fear of community reaction to handling Environmental Education issues in the classroom. The persistent difficulties of a conceptual and structural nature within education systems prevents Environmental Education from being fully implemented (Lahiry et al 1988). A further challenge to actually getting Environmental Education operational in classrooms arises from the nature of the school itself and the forces that determine what goes on inside "without a clear and realistic awareness of what motivates children to learn, teachers to teach, parents to accept and education officials to encourage, innovations in Environmental Education are unlikely to take root and grow" (Knamiller 1987:72).

Following Hamilton, (1982) the introduction of integrated studies is not merely equivalent to introducing a new syllabus but implies a radical change of emphasis in the organisational context and thinking. For Environmental Education to be fully incorporated and integrated with other disciplines or subjects, certain conditions need to be met. Hamilton (1982:180) identifies four conditions for integration of which three are discussed. First the integrated idea may only work where there is high ideological consensus among staff and widespread agreement on its aims and objectives. Secondly, the linkage between the integrating idea and the knowledge to be coordinated must also be coherently spelled out. To retain the idea of integration, the various contributing subjects must be linked at a higher conceptual or cognitive level.

Thirdly, there should be close face to face discussion and feed-back between staff and students. This emphasises the issue of context. Consideration should be given to the context in which any innovation is attempted (Vulliamy 1987). Failure to do this often results in programmes and

approaches becoming counter-productive. Many educational innovations rely on teacher education (MacDonald et al 1985) and the effectiveness of any Environmental Education programme depends on the quality of the teachers' training and experience (Kostova 1989).

UNESCO (1985) maintains that full incorporation of Environmental Education into the curriculum, teaching and learning process demands a realistic and practical renewal of an educational system to educate teacher-educators and teachers. Also the teachers must be involved in the conception, formulation and implementation of the new innovations. Teachers need themselves to be well orientated and possess the knowledge and skills to cope with the implementation process.

In general the preparation of primary school Environmental Education teachers needs special programmes that provide information about the obtainability of different Environmental Education resources, allows application of different methods and strategies with opportunities for practising and building confidence and provision of skills to overcome educational and administrative constraints for the practice of new methodologies (UNESCO 1985). Also teachers may need to be trained to adapt to new conditions in which Environmental Education as a new approach may be implemented. The most effective means of improving learning experiences for children is to improve the preparation of their teachers (Halverson 1982). In Southern Africa "the need for Environmental Education teacher training is identified as vital for the effective introduction of Environmental Education into schools" (Ballantyne and Tooth-Aston 1988).

CHAPTER 3

METHODOLOGY

In studying the implementation of Environmental Education in Bophuthatswana primary schools, a major focus was on the newly trained primary teachers who were responsible for introducing it. This study attempts to assess the impact which the Environmental Education training programme has had on the teachers and the manner in which they put into practice what they had learnt. This is a case study using a tracer study approach. As noted by (Psacharopoulos and Hinchliffe, undated:1)

Tracer studies of graduates from educational institutions have been commonly suggested as a tool to generate information which can then be used to increase both the internal and external efficiency of education.

3.1 THE SAMPLE

In view of the nature of the study and the fact that teachers identified for the study was widely dispersed in Bophuthatswana schools, it would be impractical to attempt reaching teachers in distant areas. Also, as it is expensive to travel longer distances, especially on poor roads like those in Bophuthatswana, convenience sampling was decided upon. This is in line with the retrospective tracer study approach which is "to focus on a sample of people who graduated, say, two or three years ago, and to analyse their progress up to the present" (Psacharopoulos and Hinchliffe:1). The retrospective tracer study approach tries to analyse what has been the actual post-school (college) experiences of people who graduated in the past. According to Cohen and Manion (1989), convenience sampling involves choosing the nearest individuals to serve as respondents. In other words the researcher identifies the person to be interviewed (Travers, 1978).

As the main focus of the study is the implementation of Environmental Education in Primary schools, the teachers interviewed were those teaching in Primary schools. It is noteworthy that some teachers teach at Middle schools or High schools though trained for the Primary school and that the opposite is not true. No teacher with a secondary level qualification was identified to be

in a Primary school. The implication is that those teachers at Middle and High schools (though trained for the Primary) were lost as part of the research population.

The sample consisted of five teachers who completed their Environmental Education programmes and graduated in 1989 from Tlhabane College of Education and had completed one year's teaching experience. Also, five principals of these schools formed part of this sample . A further ten teachers, 1990 graduates from Tlhabane and Hebron College, were interviewed together with their principals. Principals are important figures in the school situation and these particular principals were interviewed to establish whether their administrative styles were enhancing the implementation of Environmental Education or otherwise, and to counter allegations, if any, of principals not being supportive towards Environmental Education demands.

Emanating from issues raised by teachers during the interviews, Environmental Education college lecturers were also interviewed. This involved two lecturers at Hebron College and two from Tlhabane College as they were the only ones who taught this particular group investigated i.e. the first Environmental Education graduates. The total number of interviews conducted was thirty-four (34).

3.2 DATA COLLECTION

The research project is an indirect evaluation of the effectiveness of the Environmental Education programme offered at Bophuthatswana Colleges of Education. Direct contact with the teachers was necessary to obtain information about the training process and their experiences at college. Interviews were adopted as the principal method for the data gathering process. According to Best (1981), when a researcher gathers data by participant observation and interviews, little measurement is involved and the study is qualitative. This research is set in a qualitative research framework as in-depth interviewing was the main strategy for the data collection.

3.3 TRACK-DOWN PROCEDURE

According to Measor (1985), the quality of data collected through interviews is dependant on the quality of the relationships one builds with the people being interviewed. As an interviewer, one needs first to find the informants and get them to agree to be interviewed. In the case of this study, tracking down the subjects for the research presented certain problems.

To reach the Environmental Education teachers in Bophuthatswana Primary schools, various 'track-down' strategies were employed. Firstly, the Registrars of the different Colleges of Education in Bophuthatswana (seven of them) were requested in writing to furnish the researcher with a list of names and addresses of Environmental Education graduates from their colleges. This was to enable the researcher to approach the teachers to set appointments for the interviews. The letters of request were however not successful as all the college Registrars did not respond. Computer Print-outs from the Institute of Education which oversees the running of the programmes in the colleges were then obtained. In cases where these print-outs were not available college graduation programmes and class lists bearing the names of the Environmental Education graduates were provided.

The documents obtained only reflected the names of the students without their addresses where they could be contacted. However, it was later noted that the addresses were not significant, as students, after graduation, often accepted employment in areas other than their permanent residential address, the one required by the college for administration. Subsequent to attaining the list of names, the teachers were traced by following clues initially provided by the Environmental Education lecturers who happened to know where they were.

A particular teacher identified was approached and requested to provide further information about the whereabouts of those with whom he/she was familiar. This process was repeated to locate other teachers. It became obvious that not all the Environmental Education teachers were to be reached. Only those known by their college counter-parts could be tracked down. The method

described was further supplemented by personal visits to the various circuit offices (Fig 1.2). Circuit offices visited were those of Lehurutshe, Mankwe, Mabopane, Madikwe, Tlhabane and Ga-Rankuwa. These circuits were approached based on the clues provided by the teachers already contacted. Permission to go through the teachers records was then sought at the circuit office.

Mention must be made that circuit inspectors approached in this respect were very co-operative and willingly allowed the researcher to work with an official at the circuit office to trace the names of schools where teachers who had qualified in Environmental Education were located. The names of the teachers traced were then compared against the names on the list held by the researcher.

Unfortunately some circuits did not have up-dated records in the sense that, in instances where a particular teacher resigns from a certain school to go to another school, the records at the circuit will still reflect that he/she is still at the school they had resigned from. This presented problems to the researcher in terms of time and travel costs, as these situations involved long distances.

3.4 THE INTERVIEW

For successful interviews, it is necessary to develop a guide to be used during the interview, but a key element of qualitative research is the avoidance of structured interviews (Measor 1985). Semi-structured interviews (Burroughs 1975, Borg and Gall 1979) allowing the researcher flexibility and some freedom to ask questions depending on the development and direction of the interview, were therefore adopted. Precaution was taken to avoid losing the purpose and direction of the interview by constant reference to the interview schedules drawn. See Appendix A, B and C for interview schedules used with teachers, principals and lecturers respectively.

Every effort should be made to gain the cooperation of all individuals identified for the interview. Those teachers who had telephones either at school or at home were contacted to set up interview appointments. Those who did not have telephones were visited (if within short distances). Teachers which could not be easily reached were interviewed without prior notice. This did not appear to

have any significant influence on the interviews as the teachers readily participated in them.

The interviewer asked a series of structured questions and then probed more deeply, using open-ended questions. The semi-structured interview has the advantage of being to some extent objective whilst permitting a more thorough understanding of the respondents opinions (Borg and Gall 1979). The process of building a good relationship with people to be interviewed has a strong influence on the quality of data collected (Measor, 1985).

The researcher's personal attributes (i.e he is black and can speak Setswana) was an advantage in building rapport before the actual interview. The Bophuthatswana National Parks Board uniform worn by the researcher probably helped to put the respondents at ease, as the wearing of uniforms is perceived by Black people as being for those less educated. Since a tie and suit is regarded as a symbol of being highly educated and respected, the uniform was not seen as threatening. True access to the teachers involved being accepted by them and ultimately gaining their trust. Before the interview, the researcher explained the purpose of the study and assured the respondents about confidentiality and that information provided was purely for the writing of the thesis and was to be presented in an anonymous form. In certain instances the interviewees demanded the interview schedule before the interview began in order to study and determine the nature of questions. The researcher was always happy to accede to their request.

The interviews were taped. Tape recording is usually used as a method to preserve information and is a permanent record of what was actually said instead of what the interviewer thought was said. This prevented the researcher from making unconscious selection of data favouring his biases. The duration of the interviews was, on average, 90 minutes for the teachers and about 60 minutes for College lecturers.

3.5 PILOT TESTING OF THE INTERVIEW SCHEDULES

Slavin (1984 :133) points out that the importance of a pilot study is to give the researcher some idea of what the method or instrument will be like in operation and what effect, intended or not, it is likely to have. According to Borg and Gall (1979:70) "for some pilot studies two or three subjects are sufficient and it is rarely necessary to include more than twenty subjects."

Two teachers and two principals (all in different schools) were interviewed during the pilot study. During the pilot study the interview schedules for teachers and principals were then tested and adjustments made accordingly. All items in both schedules were retained as in originals. Improvements were only in the manner and tone of presentation of the questions to the interviewee.

It became apparent from the pilot interviews that certain principals did not control teachers' work and the task is delegated to Heads of Departments. This meant that information with regards to the teacher's preparation and style of teaching could not be obtained from the Principals only, but also from the Heads of Department. This necessitated that the Heads of Departments supervising the Environmental Education teacher also be interviewed. In this case the Principals interview schedule was still relevant and was retained as original. It is noteworthy that the researcher gained more confidence and became more clear in asking questions and maintaining smooth running of the subsequent interviews.

3.6 TYPES OF INTERVIEWS

3.6.1 INTERVIEW SCHEDULE FOR TEACHERS (Refer to Appendix A)

In the construction of the interview schedule care was exercised to grade the questions on the basis of being non-threatening and difficulty so as to enhance confidence and trust of the interviewee. The interview guide for the teachers investigated areas in which the Environmental

Education teacher was involved as these are perceived to be pertinent to implementation. The questions on the schedule attempted to reveal the over-all understanding of the Environmental Education concept and whether the teacher was in fact active in issues involving Environmental Education. Some of the information about the previous knowledge of the teacher with respect to the course at college was also investigated. Whether the teacher was implementing the principles of Environmental Education or not is fundamental to the aims and objectives of this study.

3.6.2 INTERVIEW SCHEDULE FOR PRINCIPALS AND HEADS OF DEPARTMENTS (Refer to Appendix B)

This consisted of 20 questions which aimed at revealing the knowledge of the principals or Head of Department and their perceptions of Environmental Education. This is imperative to the principals reaction to the innovation, and initiative by the teacher. It was also investigated whether the principal had observed the Environmental Education teacher as different or not from other teachers in teaching styles and preparation. This question was considered as important because it would suggest that the Environmental Education teacher to some extent was utilising the approach which the other teachers were not trained for.

3.6.3 INTERVIEW SCHEDULE FOR COLLEGE LECTURERS (Refer to Appendix C)

This interview schedule addressed mainly issues raised by teachers during the first pilot study and perceived by the researcher as having a strong influence on the ability of the teachers to implement the Environmental Education approach. These were whether the teacher, whilst at college, did in fact choose his/her subjects and whether Environmental Education was taken by choice or not. Whether or not Environmental Education was integrated across the curricula into other subjects is crucial for this implementation in Schools and thus lecturers were also questioned about this matter. Further the lecturers were asked about the areas they emphasised when teaching. The researcher aimed at discovering the directions or emphasis of college programmes, and attempted to find out whether lecturers were optimistic or not about the implementation of Environmental

Education by their students.

The researcher acknowledges that concentrating only on the interviews without using other sources of information like observing the teachers during lessons and inspecting the pupils work is a major flaw in this project. This approach has limited the ability to validate the information gathered by the researcher. In spite of this, valuable information was gathered directly from the teachers and attempts to present it with less distortions were made.

CHAPTER 4

4 PERCEPTION OF ENVIRONMENTAL EDUCATION ISSUES BY TEACHERS AND THEIR PRINCIPALS

4.1 INTRODUCTION

McNamara (1991 : 115), referring to teachers, states that

if the aim of teaching is to enhance children's understanding then teachers themselves must have a flexible and sophisticated understanding of subject matter knowledge in order to achieve this purpose in classroom ... Teaching entails knowing about and understanding ways of representing and formulating subject matter knowledge ... This in turn requires teachers to have a sophisticated understanding of a subject and its interaction with other subjects.

During their training, teachers will have acquired some knowledge of Environmental Education at college. They may therefore have developed attitudes towards the way Environmental Education is studied.

It is considered by the researcher that before conclusions can be drawn as to whether teachers do implement Environmental Education or not, it is imperative to establish whether they do perceive and define Environmental Education as reflected in most Environmental Education literature. One may ask for example, whether they see environmental education as presented by the IUCN definition which is widely accepted, or whether they, through their training, perceive Environmental Education differently. Their perceptions of Environmental Education may affect the manner in which they implement it. For the Principals, their perceptions may have an influence on their support for the implementation of Environmental Education by their teachers.

Adequate tools for evaluating the effectiveness of Environmental education programmes and materials are limited. Before the effects of any Environmental Education program can be evaluated, one must have not only valid, reliable, measurement devices, but also a clear statement of the expected outcome of the programme (Doran 1977). In order to determine or assess the perceptions of Environmental Education and Environmental Education issues by the teachers and Principals in

question, the researcher chose to use the IUCN definition (given in section 1.2) to assess the extent to which teachers could define their level of understanding of the concept of Environmental Education.

4.2 RESEARCH FINDINGS

The question

"What do you understand by the concept of Environmental Education?"

was presented to the teachers. The Principals as supervisors of the teachers were also interviewed and asked about their understanding of Environmental Education. The question to them read;

"Are you aware of the concept of Environmental Education, what does it mean?"

The teachers and principals responses, words or phrases whose meanings are closest to meanings of significant phrases in the IUCN definition were compared and matched. It was then counted how many times corresponding meaning could be deduced from the responses. The results of this are shown on Table 4.1. In the researchers view a high frequency of a corresponding phrase from the teachers responses, implies greater understanding of Environmental Education.

TABLE 4.1 FREQUENCY OF CORRESPONDING PHRASES TO IUCN DEFINITION

		<u>Teachers</u>	<u>Principals</u>
*	A process of recognising values and	2	0
*	Clarifying concepts to	7	2
*	Develop skills and attitude	0	3
*	Necessary to understand and appreciate the inter-relatedness between man culture and the biophysical surroundings	8	2
*	Practice in decision making and self- formulation of a code of behaviour	13	6
*	Leading to environmental quality	2	0

4.2.1 TEACHERS' RESPONSES

All 15 teachers interviewed responded to the question. One teacher saw Environmental Education as a science or a study through which pupils can be introduced to concepts related to the environment. From such concepts he saw that pupils may be influenced to develop awareness and knowledge of the environment and from such knowledge, he foresaw that respect or a code of conduct may be formulated by the pupil.

Environmental Education according to my personal discoveries, it is a sort of a science or study where we introduce the environmental concepts to pupils so that they must develop awareness about their environmental knowledge so that they respect it (Teacher).

It may be inferred from this that the teacher sees Environmental Education as a process of recognising values.

Environmental Education as a process of practising decision making with the aims of inculcating a code of behaviour towards the environment was mentioned by seven teachers. These teachers stated that Environmental Education was an approach that attempts to educate people about the environment, especially the immediate surroundings. The education aims to get people to refrain from practices such as littering, indiscriminate chopping down of trees and inconsiderate utilisation of resources.

I think eh, that's how man must live with his surroundings, how man must look after his animals, the plants and man as a head of all these things and how he can make use in the correct way of these things (Teacher).

Another example:

Something related to your immediate surroundings, you learn something about your surroundings, how to be aware about your surroundings, to develop concepts of looking after their environment (Teacher).

According to the researcher, these teachers display a high level of understanding of the concept of Environmental Education with reference to self-formulation of a code of behaviour which was mentioned 13 times.

Amongst the teachers interviewed, three perceived Environmental Education as a process providing information necessary to understand and appreciate the inter-relatedness between man, culture and the biophysical surroundings. In all three responses phrases such as "make children aware...", "making people aware...", "gives people an awareness of their surroundings" were mentioned, emphasising awareness more than other dimensions of Environmental Education.

Only two teachers seem to reflect that they viewed Environmental Education as a subject. But even in these two cases the term subject was not used in its true meaning. Teachers used subject as in approach. This is evident in the following responses,

Eh well, Environmental Education as it is, is a subject in itself and eh, eh it has a lot to do with eh, conservation and eh,eh, what can I say, em and teaching our kids how to take care of these living things, for the kids to be aware, creating awareness in the kids

and

by the concepts of Environmental Education, I can say it is eh, Environmental Education is a cross-curriculum that includes all the subjects eh, Geography, English and Science and so on

The remaining two teachers saw Environmental Education as a process of guiding people to look after their environment and to enhance the quality of the environment.

The development of skills and attitudes was not mentioned at all, though maybe these were closely linked with the formulation of a code of behaviour as in such responses

eh, ah, Environmental Education the way I understand it eh is eh to, to I can to improve the environment initially so that the problem you encounter, you should try by all means to minimise

Based on the teachers' responses and the experience of the researcher having interacted with the teachers, it may be concluded that the teachers have a fair understanding of what Environmental Education is about. There seems to the researcher to be a gross lack of concern and forecast by teachers of the consequences of a good code of behaviour which may possibly lead to a good quality of life.

4.2.2 PRINCIPALS RESPONSES

All 15 principals responded and 9 answered that they were aware, while 5 indicated that they were not aware, with only 1 being not sure. As in the case of teachers, the IUCN definition was utilised

to determine the level of understanding and perception of the concept Environmental Education by the principals (see Table 4.1). Three principals saw Environmental Education as a way to develop skills and attitudes to the environment. In general the responses of the principals were rather thin in content i.e. the terminology was lacking and thus very little could be drawn and inferred for interpretation, for example, "it [Environmental Education] entails, animals, plants, how to care for animals." Also there seems to be some amount of confusion between Environmental Education and environmental studies that is taught in these Primary schools, for example:

I am aware, well its, it involves eh, involves, Environmental Education and it has an influence on the child, eh in the beginning to start with, this Environmental Education is a subject in the school, it starts from Std 1 but as a child eh, as time goes on it forms eh a very important part of the education

Other examples,

sometimes we take it as nature study or Geography and History, animals, plants, littering, how to care for animals....

In terms of the notion of 'process' there seems to exist a close correlation between the responses of teachers and those of the principals as six of the principals' responses refer to Environmental Education as a process necessary to encourage practice in decision making and self-formulation of a code of behaviour. But it should be noted that the level of content was not entirely the same as that of teachers as phrases from the principals were rather poor in content. Therefore the frequency of phrases in this instance should not be interpreted as reflecting a high level of understanding of the concept.

The fact that a good relationship between man and the environment may result in a good quality of the environment and of life is not apparent or evident from the responses. It is apparent however that although most of the principals indicated that they were aware of Environmental Education, their knowledge and understanding of the subject is limited. This may be attributed to the fact that Environmental Education is not yet incorporated in schools and the principals have not been familiarised with the approach. This may also explain why they mistake Environmental Education for environmental studies. The implications are that it is imperative that practising teachers and principals are consulted and orientated accordingly before attempts are made for the incorporation of the approach in schools. In the writers view however it is not sufficient to know the teachers'

perceptions and level of understanding without knowing how much knowledge they have about environmental issues and it is to this issue that we now turn.

4.3 ENVIRONMENTAL ISSUES IDENTIFIED BY TEACHERS AND PRINCIPALS

The assumption made in this study is that, for teachers to implement Environmental Education they should have full knowledge of issues at hand. They are obviously trained in Environmental Education, therefore they should possess a high level of knowledge. Although this may be the case, the researcher acknowledges that to go through a training programme does not necessarily ensure adequate and full command of concepts offered. Other factors may come into play.

Stone (1990; 43) states that

Environmental Education competencies needed by teachers include knowledge of ecological concepts, knowledge of environmental issues, skills in investigation and evaluating environmental issues, and knowledge and skills in carrying out environmental action

Against this statement, teachers and the Principals were asked about their knowledge of environmental issues.

In order to establish the level of knowledge about environmental issues, it is necessary to delimit first what these issues are. In general, documented Environmental issues by various authors (e.g. Alaby 1986, Brundtland report 1987, Huntley et al 1989, Wilson and Rampele 1989, Irwin 1991), range across such topics as the greenhouse effect, rapid loss of species including both plants and animals, disposal of nuclear and toxic waste, ozone depletion, poverty, desertification and shortage of fresh water. Local concerns may include littering, pollution, soil erosion and lack of wood supply. People tend to react to and get involved in environmental issues that they perceive to be of direct relevance. Environmental Education should therefore:

bring about a closer link between educational processes and real life, building its activities around the environmental problems that are faced by particular communities and focusing analysis on these by means of an interdisciplinary, comprehensive approach which will permit a proper understanding of environmental problems (UNESCO 1978:2)

4.3.1 TEACHERS

Teachers mentioned a number of problems when they were asked about issues that concerned them most.

The actual questions asked were:

"Which environmental issues in your school/area concerns you most and why?"

"Which environmental issues in the R.S.A. concerns you most and why?"

Responses are summarised and tabulated in Table 4.2.

TABLE 4.2 ENVIRONMENTAL ISSUES MENTIONED BY TEACHERS

PROBLEM MENTIONED	FREQ- UENCY	RANK ORDER	FREQ- UENCY	RANK ORDER
	LOCAL	LOCAL	R.S.A	R.S.A.
Littering	6	1	2	2
Shortage of water	4	2	0	0
Soil erosion	3	3	1	3
Air pollution	2	4	4	1
Chopping trees	1	5	4	1
Ozone depletion	0	0	1	3
Squatting	0	0	1	3
Poverty	0	0	1	3

Littering was highlighted by teachers as their major area of concern. It was mentioned six times at a local level and twice for South Africa and ranked number one at the local level and two in South Africa. Littering in schools is quite common especially when the majority of the children

originate from homes where there are no litter collection facilities, so that to throw litter anywhere becomes a norm. Also most villages in Bophuthatswana may be described as semi-urban, that is, in a transitional stage to become urban, so they have facilities such as supermarkets that supply plastic bags, candy wrappers and many other things that finally end up as litter. The schools in these areas also experience considerable generation of litter while the majority of members of the public are not environmentally literate and again littering is the norm.

Water shortage was the next major concern. It was mentioned four times at a local level and ranked number two although not mentioned at all at the regional level. The researcher is not surprised by this result as Bophuthatswana is a semi-arid country with erratic rainfall and often experiences drought cycles. The villages usually have limited water supply facilities, yet often have a high density of people (Wilson and Rampele 1989). Wilson and Rampele (1989:50) mention that:

it is fair to say that the overwhelming mass of evidence points to the lack of adequate supplies of clean drinking water as a major problem facing black communities throughout the rural areas of South Africa, particularly but not only in the reserves. From Bendell north of Kuruman (a region of Bophuthatswana) to Kwa Zulu in the east the story was the same: we need water!

This is viewed by the author as a serious problem facing Bophuthatswana.

Soil erosion was mentioned three times at a local level and once at a regional level (R.S.A.) In both instances it ranks number three. Though limited, Bophuthatswana has some evidence of erosion particularly sheet erosion. Because it does not receive a lot of rainfall the signs of erosion are not critical except where soils are poor. In the experience of the researcher, erosion is often overemphasised as a problem in written materials. It is often highlighted in newspapers and books and this may have magnified the problem such that the teachers perceive it to be serious.

The problem of **air pollution** ranked number four at local level and one in South Africa. Bophuthatswana has limited industrial activities and most industries are found in South Africa, thus the teachers responses are relevant to the real situation. Air pollution as it occurs in the townships was highlighted.

For the writer, a rather interesting outcome concerns the **chopping down of trees**. One would

expect it to be ranked high in Bophuthatswana as there is evidence of excessive cutting of trees for wood as illustrated in Fig 4.1. To the contrary, teachers mentioned this problem only twice and ranked it five at the local level and number one in South Africa. The reason for such an outcome was not followed up by the researcher but it may be argued that teachers take for granted the wood collection which they see around the villages as part of the home lifestyle, that is, not as irresponsible action, thus it is not perceived as a problem. Research currently being carried out by Johnson, S. (personal communication), also suggests that perceptions of what is desirable and undesirable environmental behaviour are largely shaped by contextual factors.

Squatting, ozone depletion and poverty was said to be of concern at the regional level (R.S.A.) but not mentioned for Bophuthatswana. All these three ranked the same despite the fact that most communities around where these teachers work and live are poor. Only one teacher mentioned squatting at regional level:

... em, the whole of South Africa, em this issue of squatting, I hate that very much, I think its spoiling our environment and endangering. They remove trees and put their shacks, they are not aware that they are destroying the environment when they feel pressed they go anywhere, its not okay, I hate that very much

In the view of the researcher such a response reflects a rather naive interpretation of the situation and lacks commitment on the part of the teacher to address the real problem. Other responses such as this are common in the teachers responses, e.g. "this happen in South Africa, Bop sometimes people kill animals to reduce the number", and "the environmental issues in South Africa eh, is the question of touring, maybe we can have a club, I wish I take that up "

Teachers seem not to be conversant with environmental issues on a broader scale as reflected in the responses above and also "acid rain no, its for the first time that I hear about it." Some of the teachers probed as to where the mentioned problems occurred, did not know for example, where most of the cutting of trees took place. They would just provide a vague response "in South Africa eh, I can say those of eh, cutting some trees in some areas to build some maybe factories and killing of animals....". "it occurs, unfortunately I haven't have a specific place where it happens, but according to my discretion its happening".

Figure 4.1



pic: Paul Weinberg

Collecting wood, Bophuthatswana

Source. New Ground. 5 : 11

From these responses it seems to affirm the assertion that people are more sensitive to problems that affect them directly. As Irwin (1991:10) notes "Problems are perceived with varying degrees of abstraction or immediacy by those who identify them or suffer as a consequence of them".

4.3.2 PRINCIPALS

Principals, because they are not exposed to Environmental Education issues unlike the teachers who went through a course at college, tended to concentrate on issues that they are in direct contact with and thus did not comment on problems outside their school and the immediate community. When asked about issues at a regional level i.e. South Africa, they indicated no problems e.g. "eh, there is nothing". At a local level the principals, like teachers, saw littering and shortage of water as the most important environmental issues.

4.4 TEACHERS WIDER COMMUNICATION WITH REGARD TO ENVIRONMENTAL ISSUES

The perceptions of Environmental Education by teachers and principals will to some extent influence the manner of disseminating information and the motivation to do so. If the teacher feels confident about what the subject matter contains, the tendency is to present material confidently and the tendency to share ideas is enhanced. In other words the perceptions and understanding of Environmental Education and issues may influence the implementation of Environmental Education in terms of giving and discussing information with others.

Teachers were asked if they ever discussed Environmental Education issues with other people, if yes, with whom, which issues and what was the response? Also another interview item was concerned with teachers having given any information about Environmental Education to other staff members and how was this done (Refer Appendix A)

To the question;

"Do you ever discuss Environmental Education issues with other people?"

Nine teachers answered yes and mentioned discussions with friends. These friends were mainly former students, "Yes I do discuss it when I'm with the former students...". Issues discussed were at a local level like soil erosion and cutting down of trees and discussed in passing "so we just discuss them in passing, we don't, we never have time just sitting discussing that". Another similar response reads

I do discuss it when I'm with former students 'cause we did do environmental they say that environmental was just as an ancillary, we use to do environment as wasting time, we use to do environment as an ancillary, so that only that word 'ancillary' makes them less interested

The other six teachers said they did not discuss Environmental Education issues nor environmental issues with anyone. No reasons were provided, for example, "No, nobody, it never occurred to me that I can present the problems to somebody you, I do not know", "No, around here not yet, I can't tell you why I haven't yet, I'll try to do it, I haven't yet, I have not yet had enough time". Some teachers mentioned that they did not involve themselves

no, eh, at the moment not so much, I didn't involve myself so much in it,.....at the moment I haven't tried it. At the moment I am having some problems which make me to involve myself so much in this. My problems were, those are personal, should I say them eh the problem, my biggest problems, I am new in the field and being new, eh, let me say my colleagues, cause at the moment it was just a temporary work.... (sic)

Also, only littering and soil erosion were mentioned as being discussed casually. The impression given by the responses is rather regrettable because it appears that the teachers lack commitment to Environmental Education and are not motivated to developing Environmental Education. A variety of factors may be speculated about, for example, the lack of commitment from the lecturers who taught these teachers at college. This may be ascribed to the fact that lecturers themselves are untrained in Environmental Education. From this discussion it is evident to the researcher that teachers seem to have good understanding of the concept of Environmental Education but have limited information about environmental issues. As environmental education is about redressing environmental problems, this situation has serious implications. For the teachers to be effective and contribute meaningfully in addressing environmental problems they need to have knowledge about

issues. Poverty, for example, is one of the most serious environmental problems but teachers do not view it as such. Because teachers are not sure of the issues, they are reluctant to or simply do not discuss environmental issues. It may need to be recommended to colleges that teachers need to be fully orientated about environmental issues and how to solve them.

Principals also need to be provided with more information, so as to be in the know and support the teachers. The implementation of Environmental Education in schools is to a large extent, dependent on the issues raised in this section; in other words, what is perceived to be important and what is the level of knowledge. Competencies for Environmental Education teachers are outlined in the following chapter, with mention of appropriate methodologies for Environmental Education.

CHAPTER 5

IMPLEMENTATION OF ENVIRONMENTAL EDUCATION IN PRIMARY SCHOOLS**- A CRITICAL ANALYSIS****5.1 INTRODUCTION**

This chapter discusses the extent to which Environmental Education is implemented or not, with emphasis on appropriate methodologies.

Wolsk (1977:35) states that in Environmental Education

there is no standardised system of classifying teaching methods in one sense, there are as many methods as there are teachers, or, even worse, as many as there are individual lesson days.

What then can be expected from teachers who qualify in Environmental Education? Lahiry et al (1988) groups Environmental Education competencies into three categories:

1. Environmental Science competencies comprising:
 - (i) ecological foundations
 - (ii) economic foundations and
 - (iii) human ecosystem foundations.

2. Educational competencies comprising:
 - (i) problem solving
 - (ii) handling of values and controversial issues and
 - (iii) use of materials and local situations pertaining to the environment

3. Methods of teaching environmental education comprising:
 - (i) aims and objectives
 - (ii) Environmental Education methods and techniques
 - (iii) resources for learning and group dynamics

- (iv) curriculum design and
- (v) fieldwork and environmental ethics.

The fundamental criteria are in the understanding of the nature and characteristics of Environmental Education. In the actual teaching and learning situation, methods adopted by teachers generally depend on the way the curriculum is organised, the manner in which pupils are to be assessed and the authority that the teacher has over the class and the learning process (Stevenson 1987). This situation is changed when it comes to Environmental Education because Environmental Education as an approach incorporates a variety of methods, is interdisciplinary and focuses on problems. The aim is to resolve identified problems to benefit mankind. The manner or process through which a resolution is gained has to be determined by the students together with the teacher. In this case there is no control over knowledge and the outcome of the teaching and learning process is not known or pre-determined.

According to Stevenson (1987) teaching and learning in Environmental Education are intended to be a co-operative process of inquiry into, and action on, real environmental issues. This demands active participation in critical thinking about real problems. In such a process a teacher would have to accept suggestions by students with reference to their learning and actions.

In order to illustrate the uniqueness of Environmental Education it is compared with two other approaches namely the traditional approach and those used in the Bophuthatswana Primary Education Upgrading Programme (PEUP). According to Stevenson (1987), the traditional approach is characterised by a teacher who is the only dispenser of factual knowledge. During lessons the pupils are not allowed to participate except when they have to respond to question which will not in anyway deviate from the expectations of the teacher and the requirements of the textbook. The teacher is frequently the only participant who actively engages in high order thought processes such as critical analysis of explanations and arguments and the making of value judgements. Pupils' thinking is limited to simple low level factual information. Often, such information refers to familiar well-structured problems with unambiguous definitions and a single correct solution which has

already been determined.

Whether the pupils have grasped the subject matter or not is often assessed by privately performed sessions i.e. examinations. Examinations are removed from the real life experience of the pupils. Approaches utilised in PEUP are governed by a child centre/philosophy that emphasises methodology that recognises active participation by pupils as well as individual and group work.

It encourages and promotes an inquiry attitude and discovery learning. The PEUP approach also encourages continuous assessment of the pupils; a task recently made easier at the senior primary level through dispensing with the Std.4 external examinations (Holdernes 1991). The methods advocated by the PEUP also encourage personal development and language competence. The overall approach is holistic and as such has considerable similarities to Environmental Education. Similarities and differences of approaches isolated are presented in the Table 5.1 below.

TABLE 5.1 UNDERLYING PRINCIPLES OF SELECTED TEACHING APPROACHES

	TRADITIONAL VIEW	Environmental Education	P.E.U.P.
1	The teacher a dispenser of knowledge	The teacher learns with the pupils. A co-operative effort	Active participation by pupils through the learning process
2	Restricted student participation	Demands pupils' active participation	Individual and group work promoted
3	The students' responses confined to text book, syllabus factual knowledge	Resolution of problem involves a variety of suggestions from pupils thus varied answers to problems	Promotes an inquiry attitude
4	Only the teacher engages in higher order thinking processes	Involves students in critical thinking and demands creativity	Engages pupils in higher order thought processes through activities that pupils engage in
5	Learning assessed through written examinations	Class performance will be seen through good options presented by the participating pupils	Allows continuous assessment for both the teacher and the pupils
6	Generally well defined and limits creativity	Resolution of real life problems is not predictable	It promotes personal development and language competency

5.2 APPROPRIATE METHODOLOGIES FOR ENVIRONMENTAL EDUCATION

UNESCO report of 1985 suggests that teachers trained in Environmental Education should be in a position to utilise/employ/use methods such as :

- * Problem solving
- * Experimenting
- * Case studies
- * Out of classroom activities or field studies
- * Project work
- * Surveys
- * Simulation and role playing
- * Brain storming sessions
- * Discussion or debates involving issues that effect local resources and community participation.

These would be ideally regarded as some of the methods that a basic curriculum for training teachers should have bearing in mind that the choice of a method in the classroom is influenced by factors such as the developmental stage of the child and the demands and expectations of parents, communities, education authorities and the pupils themselves.

On the other hand Stone (1990) maintains that competencies which Environmental Education teachers must possess include knowledge and skills in the selection, utilisation and implementation of Environmental Education and teaching programmes and strategies designed to achieve the accepted goals of Environmental Education. Also teachers need to be trained in tactics in infusing Environmental Education in curricula and this can be achieved by a sound knowledge of ecological concepts, knowledge of environmental issues and knowledge and skills in carrying out environmental action.

Another contribution to delimiting Environmental Education methods is that by Wolsk (1977). He suggests the following as being the appropriate methods for Environmental Education:

1. Field trips
2. Outdoor areas
3. Mini-plots and mini-environments
4. Experiencing the environment
5. Simulations
6. Role-playing and games

Fundamental and significant in these approaches is the element of co-operation and active participation by the pupils. There is a considerable deviation from the traditional 'chalk and talk' method. Attempts to cater for individual differences of pupils are made i.e. some children learn quickly from extracting information from books while others learn more from active participation and benefiting directly from interacting with their peers. Creative teaching, including methods such as drama, puppets and music, provides variety in the class and may enhance the learning process.

More specifically for the primary level, teacher should following (Glasgow and Robinson 1986 : 126) be competent to:

1. select effective instructional methodologies which are appropriate for desired cognitive and affective outcomes
2. effectively implement the following methodologies to achieve environmental education goals :
 - A. outdoor education methods
 - B. affective education methods (e.g. values clarification)
 - C. simulation games (including role playing)
 - D. Case study methods

- E. Community resource use (ecological, issue related, human resource).
 - F. Methods of autonomous students and/or group investigating, evolution and action planning for resolving environmental issue.
 - G. Appropriate teacher behaviours while handling controversial environmental issues.
3. develop and use effective means of planning for instruction.
 4. effectively enforce appropriate Environmental Education curricula and methods into all disciplines to which the teacher is assigned.
 5. effectively evaluate Environmental Education curricula and methods achievement with respect to both cognitive and affective domains.

In an attempt to assess whether the teachers trained in Environmental Education do in fact implement Environmental Education or not, and the extent of implementation, levels of implementation are discussed. The researcher considers the implementation process to be reflected on three levels:

1. Curriculum level relating to direct teaching strategies in the classroom and elsewhere.
2. Implementation level in general with reference to issues that promote Environmental Education e.g. talking to others about Environmental Education, and by doing practical things.
3. Administrative level where issues that support or discourage Environmental Education are considered e.g. whether the principals are sympathetic to the views of the Environmental Education teacher or not, whether he supports field trips, teaching outside the class or not.

Each of the levels will now be discussed.

5.3 THE CURRICULUM LEVEL

Following the model outlined above, the researcher is of the opinion that if teachers are implementing the Environmental Education approach, they should be:

- * utilising creative teaching methods such as group work, drama, problem solving techniques, outside class observations and investigations, participation by the pupils, games and role play to name but a few.
- * in a position to provide meaningful examples of Environmental Education issues they have successfully tackled.
- * engage in utilising the immediate surroundings as a teaching resource and have taken children for field trips.
- * in possession of full and clear understanding of how to integrate Environmental Education with other subjects.

With reference to methods, a question was asked:

"Which is your favourite teaching method or technique e.g. group work, 'chalk and talk', discussion with problem solving, discussion on real issues, which one?"

In this case an assumption is made that often a teacher will use a method that he/she favours most which will in turn influence the teaching. To verify whether the teacher actually meant to be using the method mentioned, a follow on question was asked i.e. how was the method used and how often. This was to counter the temptation by teachers to just mention a method, especially from the examples, given without commitment and meaning.

All 15 teachers responded to this question, results of which are given in Table 5.2

TABLE 5.2 TYPES OF METHODS MENTIONED BY TEACHERS

METHODS MENTIONED	NO OF TEACHERS
* discussion and group work	3
* Games	3
* Telling "chalk and talk"	1
* Question and answer	4
* Field work	1
* Variety/combination	3
Total	15

For each of the methods listed in 5.2 detailed responses are presented in Table 5.3.

TABLE 5.3 TEACHERS' ELABORATION AND METHODS USED

WHY METHOD IS LIKED	HOW METHOD IS USED
GROUP WORK	
*"Eh, group method is my best, pupils are given the opportunity to expose the subject matter themselves. They are independent."	"I give them questions, theirs is to look into the books and find the answer."
*"I like group method and discussion 'cause it involves pupils in these discussions and pupils are involved, the matter should not be just from the teacher."	"Sometimes I have to apply my knowledge."
*"Eh, I love group teaching."	"But at the moment I have not used it, I am still new in the teaching profession."
GAMES	
*"Games, I like games, in this case pupils are learning while they are not aware that, they are learning in games and they enjoy it, I must say it is as if they are doing nothing whereas they are doing something."	"Well in this case now I have been having problems in the school, eh, actually we were somehow overlooked, it is now that we have acquired the services of another teacher therefore, eh, games actually, I need time."
*"Games, eh I like them 'cause in games neh, the children they like to learn by playing."	"I do this by singing them the counting and the alphabets. I can't, I don't know their names i.e. type of game."

<p>*"My favourite teaching method is that one of eh, a game like."</p>	<p>"For example when I treating ecology, I took the pupils outside and when I put across the concept of the ecological pyramid, I took three children and they knee I down and then two of them climb on those three to form a structure like a pyramid and one at the top and ... and then I just push one of them and they fell down and then I told them that all these things are interlinked. If one component of the ecosystem is disturbed that means the whole thing is disturbed."</p>
<p>TELLING "CHALK AND TALK" METHOD</p>	
<p>"We most of the time, they sort of, we are talking not doing."</p>	<p>"Very little and then, eh, less time, more work, whilst you are trying to do this they say 'just go and supervise there'."</p>
<p>QUESTION AND ANSWER</p>	
<p>*"Question and answer"</p>	<p>"I think eh this can be taught in many ways by asking pupils what do they see, letting them go to Pilanesberg, the teachers and the Principal to create that awareness that the nature is very important and they have to look after it."</p>
<p>*"Question and answer, 'cause I don't want to pump knowledge in the kids, I want them to see what I am talking about."</p>	<p>"Yes it do but not most of the time, 'cause the kids they want to be drilled method is the most important method for the young ones "cause if you don't drill them they forget."</p>
<p>*"Question and answer since I said, I like it eh, 'cause it gives the chance to talk."</p>	<p>"I ask them questions and they answer back."</p>
<p>*"Question and answer 'cause we share ideas with the pupils and at the same time you learn from the pupils and the pupils in turn receive something."</p>	<p>"I do accept their contribution 'cause eh as a person you got to get some views from the other people, eh what they think, you might but be knowing what they are saying, it might be a new thing to you, they might come with something new, something different than what you know even if they are still small. This method is also conventional and it does involve pupils as it encourages some participation."</p>
<p>FIELD WORK</p>	
<p>"Discussion and groupwork and even going out of the classroom doing some eh, field work."</p>	<p>To learn the environment, to pick up papers, out of the grass, actually up to now I didn't do field work but I like them."</p>
<p>COMBINATION OF METHODS</p>	
<p>"Well I usually employ all methods."</p>	<p>It only depends on the topic you are going to treat, self-activities when coming to history, there are some activities that pupils have to do on their own, practical things like the Batswana people, they moulded pots, bowls, so when it comes to that section I would like pupils to draw then on their own. Another thing is self-discovery method, pupils discover things themselves rather than one dictating on them."</p>

	"Eh, em there are some methods that we use as teachers but at times you may find out that kids may understand you better using those methods and then you change and use another one, for example, I don't like the telling method, the kids this and that, I like involving them, so that they can be able to remember what I've done and be able to say it as time goes on."
	"I vary my methods, sometimes I use chalkboard eh story method, eh group method and so on."

From Table 5.3, it is evident that the teachers displayed some knowledge about the importance/value of group work, but evidence of meaningful application of the method is lacking and doubtful. With reference to games, the three teachers displayed limited ability to describe types of games and how they used them. The examples provided were not practical and not convincing. This situation is regrettable as games are recognised by many educationalists (Taylor 1983) as important, especially in primary school.

In the chalk and talk category the teacher responding reflects quite clearly his complete reliance on the traditional 'chalk and talk' method. The school administration is mentioned as having a negative influence as the teacher has to do more than he can handle. He claims that this results in a lack of time and discourages initiatives to test other creative methods of teaching. There is some doubt in this case as other teachers and principals have reported that time is not a problem as long as a teacher plans accordingly.

Referring to elaboration on the question and answer response, the last one is most interesting and close to the expectations of Environmental Education in terms of participation and accepting the pupils point of view. This is significant since it complies directly with the principles of Environmental Education being, i.e. that it must "enable learners to have a role in planning their learning experiences....." (van der Merwe 1991:13). In this one response it is reflected that both the teacher and pupils are going through the learning process (see Table 5.1) where the characteristics of Environmental Education are mentioned. In this particular instance the teacher acknowledges the fact that there are things that he may not know and may benefit from interacting with the pupils. On the other hand, the other three responses are simplistic and not meaningful.

With reference to field work this method is one of the most highly recommended methods for Environmental Education (Stephen 1986). If well planned and coordinated, field trips have great potential to develop the child both cognitively and affectively. From the single response in the table, it is obvious that the teacher has not committed himself to any serious learning activity through the method mentioned. He has only incorporated activities of the school grounds care and claims it to be field work. To a limited extent this exercise does contribute in changing attitudes of the pupils, but this is in no way different from the normal routine of the school.

From the three responses to the combining method there appears to be good justification for the option of adopting and incorporating different methods. There is no clear evidence for those methods regarded as 'the' appropriate method for the promotion of Environmental Education.

In general, the majority of the responses seem to reflect quite clearly that teachers have not as yet made efforts to incorporate appropriate methods that will directly enhance the goals of Environmental Education significantly. Subsequent chapters will speculate on possible reasons.

5.3.1 SUBJECT INTEGRATION

As part of the teaching process, teachers are expected to incorporate Environmental Education in different subjects. The question was asked:

"Where do you think Environmental Education can be integrated with other subjects?"

Teachers interviewed taught different subjects e.g. languages, maths, physical education, religious education and general science (Table 5.4). This is one of the bases for Environmental Education and teachers seem to be coping reasonably well with it. This is reflected from their confidence in discussing this issue. The examples provided convinced the researcher that the teachers have a reasonable understanding of what they are talking about.

As teachers teach different subjects, they tended to provide examples of integration in those subjects in which they perceived Environmental Education to be easily incorporated. English was mentioned by four teachers, which was the highest, and this may imply that this is the subject

easiest to integrate with Environmental Education. This statement is however made with caution as the number of teachers involved was small and subjects taught were not necessarily the same in each case. Only one teacher for example mentioned health education.

TABLE 5.4 **SUBJECT AREAS OF INTEGRATION AND NUMBER OF TEACHERS**

SUBJECT	AREA OF INTEGRATION	NUMBER OF TEACHERS
Setswana	Sentence constructions with Environmental Education element i.e. about trees, animals, water e.g. "mother drinks water. What would happen to mother if there was no water?"	2
English	Poetry based on trees and birds, creative writing and oral work e.g. talk about case of the school yard or write about how you would like your garden. Also story telling with emphasis on environmental awareness e.g. distant places and experiences. Importance of plants, composition of water etc.	4
Health Education	In subjects of cleanliness and institutions involved with the environment and its state e.g. municipality collecting paper, and other issues such as air and water pollution	1
Maths	Measuring distances, outside use of natural (actual) materials e.g. rocks sticks, trees i.e. things found in the environment. Use of objects from the environment for counting	3
General Science	Topics dealing with natural resources, including plants and soil conservation.	2
No Integra-tion	Teach it as a subject. "I can't use it".	3
	Total	15

One may conclude from the table that the sample of teachers interviewed see Environmental Education in terms of a cross-curricula approach i.e. through languages and science subjects. This may be attributed to the lecturers influence at college because lecturers saw it this way and emphasised it (see chapter 6).

5.4 **IMPLEMENTATION LEVEL**

As part of the implementation process, teachers are expected to identify and address environmental issues. At the primary school level resolution of problems that demand abstract and theoretical agreements may not be easily achieved but practical and action orientated approaches may be more suitable.

Teachers were asked which Environmental Education issues they have tackled either in class or as a practical exercise and they were further asked how they dealt with that particular issue mentioned. Planting of trees in the school yard to improve its aesthetic appearance was mentioned.

Cleaning and improving the school premises was also reported by all teachers. More specifically, amongst the 15 teachers, three mentioned averting erosion and filling of dongas. All the other 12 graduates had not tackled an issue in Environmental Education. No reasons were provided but verbal signs of lack of commitment were evident. It was only when teachers tried to provide some form of justification that the blame was put on the lack of time and overload of subjects. The fact that the teachers are new and had not yet settled in the schools was also used as a reason as exemplified by the following response:

no eh, until now we have not yet tackled any Environmental Education issues, like I said earlier on we are still new in the field and we are not yet used to many things and we are still struggling to keep up with our work

One of the teachers indicated that she did not take Environmental Education seriously because Environmental Education was not a subject:

up to so far I haven't tackled any problems because I think that if there could have been a subject, that is, if Environmental Education or if we had it as a period it could have been better to tackle the problems because in this subject, especially Geography, we have a section on Environment but is just a simple one, but Environment is given little time

With reference to field trips and activities outside the classroom, only two teachers among the five 1989 graduates indicated that they did conduct classes outside. Work done involves among others, orientating the pupils about their surroundings and engaging them in physical cleaning of the school (This may be linked to school manual work). Teachers stated that the lessons presented included issues related to trees and grass, most of it emphasising natural beauty:

we implement it outside the classroom like for instance, cleaning eh, making the pupils aware, for instance, how trees are good to them but we don't have anything in the classroom

Three of the teachers did not engage in any teaching outside. No reasons were advanced, except for the fact that there was no topic yet that needed the teachers to go outside. Such a response may be interpreted as a lack of full understanding of the demands and approaches of Environmental Education. Responses specifically related to educational field trips; all the 1989 graduates mentioned that they undertook trips to nature reserves while they were still at college, "yes, we

visited Rustenburg Game Park, when I was still at college". One teacher stated that slow payments by pupils for a trip and political unrest were the only reasons for not undertaking trips.

Amongst those teachers who taught outside, reasons were seldom given as to why they did. The researcher gained the impression that teachers were not aware that the school grounds could also be incorporated as a teacher's resource. In those instances when pupils are taken outside at least they are shown different types of trees, insects and reptiles that may be available around the school yard. Children are taken outside to observe what happens after seasonal changes e.g. what happens after winter or summer. The majority (13) did not teach outside "I have not yet done that, but eh, I promise I will if necessary, if a topic want me to take them outside I'll do so, so far I haven't". "no, not yet, I have not thought about taking them out". Also, amongst the 15, 10 teachers undertook trips only when they were still at college. In all these instances teachers identified time, political unrest or in the case of the majority (5) gave no reasons "well, I won't say, to tell the gospel truth".

As part of the assessment of the implementation of Environmental Education by teachers the study attempted to establish issues such as dissemination of information to other people about Environmental Education and environmental issues i.e. promoting Environmental Education. Such as, anyone that the Environmental Education teacher associates with or comes into contact with e.g. other staff members, friends, other professionals on other fields and places. "Is there any information given to other staff members? How is this conveyed? Do you ever discuss Environmental Education issues with other people? If yes, with whom? Which issues? What was the response". Related to this, teachers pointed out having discussed issues relating to erosion, littering, and cutting down of trees. All these teachers (nine of them) discussed issues with friends and in the majority with former students. Very limited information is given to other staff members. Only one teacher mentioned that she discussed with other teachers. The reason given was that the teachers were still new, and others gave no reasons.

Six did not talk about Environmental Education and no reasons other than lack of concern and commitment to the promotion of Environmental Education were evident. "At the moment not so

much, I didn't involve myself so much in it ". " No, I can't tell why". "Nobody it never occurred to me" (sic).

5.5 ADMINISTRATIVE LEVEL

Also contributing to the curriculum issues especially methodology, principals supervising the teachers were also interviewed. Questions attempted to establish whether the Environmental Education teacher was in any way different in his teaching and preparation styles from the other teachers.

To determine whether principals are supportive to the demands of Environmental Education or not. The assumption is, if principals were negative towards Environmental Education then teachers would automatically be reluctant to implement Environmental Education, but if the principals are supportive then the responsibility for Environmental Education implementation lies fully with the Environmental Education teacher.

The question asked was:

"In going through teacher (A's) books (prep books and books submitted by pupils) are there any differences in preparation from the other teachers? In what way? Do you think he uses any different teaching methods, other than 'chalk and talk'? "

Out of the 15 principals interviewed one mentioned observing differences in the teachers preparation. He indicated that the teacher attempted to include as much as possible awareness about the immediate surroundings and a lot of illustrations that encourage the child to get involved in group discussions.

ya, well, there is a difference, they don't prepare like the old teachers which have been in the field. They always try to bring the surroundings to the attention of the child. They try to talk about an issue which is relevant and known to the child (sic)

The majority (14) principals reported no difference. They stated that teachers have to prepare in a certain acceptable standard preparation procedure and they (the principals) were making great efforts to orientate and show the new teachers how preparation must be done. This goes as far as showing the teacher how to teach as it is assumed that new teachers can not teach. The

teacher has therefore to adapt and comply with the acceptable traditions of the school

In fact up to so far, I haven't noticed any, in fact we've got a format of preparing, we are more or less we are preparing the same way (sic)

Another example

Yes sir in this case they are really new, we are bound and we have done so to show them the correct method of teaching, they have got the matter on only the method of delivering it, was not the correct one. No well, exactly because he is a new man we are still guiding him, ja he tries (sic)

Only the one principal was certain that the teacher was different in terms of teaching style. The teacher always takes children to teach outside. When she had to offer religious lessons, she referred to natural features and plants. In the other cases all 14 principals reported no difference. Further principals were asked if there were any environmental education related activities that they could ascribe to the new teacher. Four answered yes, and these were activities related to the cleaning of the school yard, planting of trees and an increasing interest in utilisation of the school grounds for teaching. Pupils were taken out to various places as part of environmental awareness. Places such as the Post Office, Station and local industrial areas were visited.

The other 11 principals said there were no activities as the majority of the teachers were not active and are new in the schools. This confirms (in the opinion of the writer) that the teachers were not actually trying the Environmental Education methodology outright and if they were, then only to a limited extent. They are incorporating Environmental Education in their traditional teaching and this may have only minimal consequences for the promotion of Environmental Education.

Due to the nature of the study it was not possible to find out views of the principals about all Environmental Education teaching approaches. Only field trips and teaching outside classrooms were taken as examples as these are often mentioned in Environmental Education literature. All fifteen principals stated that going out of class for teaching and learning purposes was good and needs to be encouraged at all times. The overriding principle for agreement was that going on field trips and teaching outside have the advantages that children are exposed to things/phenomena directly. If these are natural things (e.g. trees, plants, rocks), children can see and identify types of trees within their immediate surroundings. From such observations, comparisons between the school yard and home surroundings are made. The school yard was recognised by all principals as

a teaching resource where children can learn by handling and smelling.

I encourage teachers to go out yes, taking the pupils out goes together with the teaching aids which I am always trying to tell them about, that the child cannot learn without using something that can be handled or touched (sic)

Also, the school grounds provide the children the opportunity to see whatever they are taught about at that moment and thus they can assimilate ideas there and then.

Children are learning more when they are out, they see these things, practically they can touch them, smell them, see them, eh they won't forget to think (sic)

Principals did not see any disruption of classes, lagging behind by teachers on the syllabus, or any effects in the examination process as a result of teaching outside. They indicated that if the teaching is planned and well coordinated, the teacher is given full support by the principal.

Amongst the fifteen principals interviewed, only two believed that field trips could not change attitude, behaviour and learning by children. Both principals said that this is only applicable to high school children and not at primary level due to the age of the children, "I don't agree, no I don't agree, maybe high school students". "Ja, I cannot say much because we are having young children". But the majority unanimously agreed that field trips are important and improve learning as students receive a wider perspective of things and their perceptions are widened.

Principals identified kinds of places where field trips may be taken, such as botanical gardens, game parks and interesting geographical features e.g. mountains and rivers. Areas within urban settings e.g. museums, were not mentioned. The researcher attributes such a response to the fact that he was in uniform for a conservation agency and therefore it was inevitable that principals would mention such areas. Also, maybe due to 'Environmental Studies' emphasis on natural features, with less regard for urban man-made features is made. For the Environmental Studies syllabus, pupils are expected to visit either a game park or zoo.

What is significant is that in all cases they regarded the visit as an extra learning situation for the consolidation of what is learnt at school. Teachers often have to fill in reports after field trips have been taken and it is reflected therein that children come back impressed and tell interesting stories after the trip. Teachers report improved creative writing by pupils after field trips and more social interaction with peers.

It is not only the principals that support field trips but also the school council and the community (parents). This was revealed by principals as they were questioned about this. The support from the school council is high provided they are informed of the intentions of the trip and they are told in time.

Oh, they give us 100% 'cause the parents, in fact the right procedure is to inform the chairman, submit a plan to the circuit Education Officer, then inform the parents to pay, then we get 100%

From the parents side the support is shown by paying readily when their children have to undertake a trip, despite the fact that among the majority of the parents poverty is prevalent. Besides the financial support, parents readily grant permission for their children to undertake trips.

100% we get even from the parents side 'cause they know all these trips are educational

It is noted by the researcher that though the parents were fully supportive of field trips, they may not be aware of the limitations of field trips i.e. whether meaningful learning occurs or not. Often (through experience) the field trips involve long distances with limited learning experiences. The trips are often not well planned in the experience of the researcher as teachers seldom make use of the opportunity to research fully the areas to be visited beforehand. Teachers in most cases do not have the appropriate skills for organising and preparing good instructional materials for meaningful learning by the pupils.

Nevertheless in the light of all these conducive factors that prevail in the school situation, failure for not implementing the Environmental Education methodologies is entirely due to the Environmental Education teachers. The following chapter aims to investigate other factors that may result in the failure to implement the Environmental Education methods. Issues such as the training process of the students i.e. how the College has influenced the Students. Reference will be made to the methods at College and the Syllabus.

CHAPTER 6

THE INFLUENCE OF THE COLLEGE EXPERIENCE IN RELATION TO METHODS AND THE SYLLABUS AT COLLEGE**6.1 INTRODUCTION**

According to Hawes (1979) the implementation of a curriculum and the continuation of new approaches in schools depend on knowledge, skills and attitudes fostered during initial training. Teachers trained in a field are expected to possess adequate grounding in the approaches that they are trained for. For training of teachers in Environmental Education in Bophuthatswana, it was proposed that:

for each subject (at college) a practically orientated course on the relevance and implementation of Environmental Education within that subject be included in the curriculum (Irwin 1987:2).

The syllabus was then designed with the issues raised in the proposal hence the following syllabus 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 awareness issues and to develop environmental awareness in pupils in an interesting and affective way"

(College syllabus 1987:1)

The researcher observes/notes that the five objectives do not clearly reflect in them 'the how' but does provide a holistic approach and are adequate for training teachers.

The actual material presented in the colleges will to some extent vary as lecturers operate in different settings and they are not the same in their level of expertise and personality and that this is also true for the Students being trained. According to Irwin P. R, (personal communication) there are lecturers who did Environmental Education at the University of Bophuthatswana, but maybe because of inappropriate subject allocations in the colleges these lecturers are not lecturing in Environmental Education, but are given other subjects. An example is a lecturer who obtained a distinction in Environmental Education at B.Ed level and is studying for a Masters Degree in Environmental Education but is teaching Home Economics. Such a situation creates continued lack of qualified lecturers despite efforts to train lecturers. Presently there are only two lecturers in the colleges who have received some form of training in Environmental Education and are lecturing in Environmental Education. Teacher educators cannot be expected to impart Environmental Education competencies to their students if they do not possess these competencies themselves (Stone 1990:44).

Such a statement may create doubts in the minds of educators as to whether the experience gained by the students at Bophuthatswana colleges is in fact preparing them to fully incorporate Environmental Education effectively within the school subjects. Environmental Education teacher training programmes need to instil in the teachers themselves environmental sensitivity that will later be transmitted to pupils or students being taught. Lecturers who only vaguely understand the goals and objectives of Environmental Education may experience difficulty in achieving this ideal transfer of information.

Essential to effective teaching at the college is sound understanding of the subject matter and proper interpretation of the syllabuses. Also, the syllabus must be complete and provide a working basis for the lecturers. Beside the general objectives of the syllabus referred to in the beginning of this chapter, there are specific aims for each year of the syllabus. For the first year the aim is "to introduce students to environmental education, the resources available for its education and the ecological foundation upon which it is based" (Irwin 1987:19).

Themes presented in the first year of study include:

1. "an introduction to Environmental Education" which raises issues such as "why Environmental Education, what is Environmental Education, the origins, brief history and development of Environmental Education and Environmental Education in Southern Africa and Bophuthatswana."
2. "Resources for Environmental Education" which involves "identifying resources e.g. Lengau Clubs, using resources for teaching and using existing information"
3. "Excursions/outings/field studies"
4. "Project/practical work"

Thereafter the second term addresses "concepts in Environmental Education e.g. ecology, principles and relationship to human kind." Secondly it deals with "excursions/outings/field studies" a follow up to term one. Thirdly "project/practical work" e.g. compiling a scrapbook : ecological and environmental issues.

The second year of study aims to "provide a comparative study of Environmental Education and to examine its application in the school teaching situation". According to the purposes of this project this is the most important part of the syllabus for the training of the teachers as it aims to

address practical application issues, to orientate the students and prepare them for classroom performance i.e. train them for the actual classroom situation. For example it is intended from the syllabus that students are taught how to plan excursions, design teaching aids and practical projects (See Appendix E).

During the final year of training the syllabus aims 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 of an integral part of Environmental Education (Irwin 1987:20).

For details of the first, second and third year of the syllabus refer to Appendix E.

6.2 LECTURERS' OPINION OF THE COLLEGE PROGRAMME - WITH SPECIAL REFERENCE TO THE SYLLABUS

Four lecturers were interviewed two from each of Tlhabane and Hebron Colleges. Questions asked aimed at establishing views about the syllabus, teaching approaches and perceptions about whether the students they trained were implementing Environmental Education or not. (Refer to Appendix C)

The question was asked:

"What is your opinion of the Environmental Education syllabus?"

Only one lecturer felt that the syllabus was adequate with a lot of potential to train and develop students adequately in Environmental Education:

eh, I would say it's a good syllabus, in the sense that eh, it introduces them to the basic theory on what Environmental Education is all about and it incorporates practical projects that the students have to do, also it encourages activities like field excursions and the like, to me generally it's a good syllabus or a good programme to follow (sic)

The other three lecturers criticised the syllabus for having limitations and stated that it needed improvements. The syllabus presented lecturers with uncertainties and affected lecturers clear understanding:

Ja, I am not yet, you know, used to the rest of the syllabus,what I have been up to now I think it needs a little bit of changing 'cause it looks like eh, they've got to have a starting point that it is from course 1 continue with it or have the relevance or relationship between what they did last year, so it looks like the syllabus was done by picking out some topics or some themes from somewhere. I don't know, I am not sure as yet whether there is that sound relationship (sic)

From this response, the syllabus is criticised for the lack of continuity e.g. in a conventional subject like geography, students can be taught say, map interpretation in the first year concentrating on

basic skills like map orientation, identifying coordinates and measuring distance. In the second year they can be introduced to map analysis i.e. distribution of phenomena, production of three dimensional diagrams, with more advanced skills in the third year. The nature of Environmental Education does not provide for this and most certainly the syllabus does not openly reflect this. Themes are restricted to years of study and this presents students and lecturers with a 'disjointed perspective' as it deviates from tradition. Though the syllabus is designed to lead the student's training process through themes that complement each other and therefore have a continuous progression, this is not obvious to some of the lecturers. Reasons for this are not easy to identify as lecturers were heavily involved in the design of the syllabus and thus should possess some understanding of the features of the syllabus. What may be noted is that the lecturers are changed and it is not always the same lecturer who sits on the panel when syllabuses are reviewed.

Lecturers were further asked about areas of the syllabus which they considered important and less important. The actual questions were:

"Which sections do you think are important in the syllabus? Which ones are less important?"

Three (3) lecturers mentioned that emphasis on current issues should be regarded as more important. It was indicated that this is an area that needed more time and to be dealt with in detail; for example

things that affect the environment like pollution, degradation of natural resources, and other problems that we see to be caused by man either development or wars, like the Gulf War, such things, the political situation prevailing now in South Africa is such that the environment suffers a lot, for example, squatters, people squatting anywhere, we need to know more about this (sic)

This view reinforces the ideals for an Environmental Education programme being

teacher training curriculum must be relevant to students and so must be dynamic and able to incorporate contemporary vital issues (UNESCO 1985).

Despite the fact that in the second year the syllabus is devoted to preparing teachers for practical classroom activities, only one lecturer remarked about preparing students for classroom performance with practical skills as being important

eh, all of them need to be, eh, in fact the students should be exposed to all of the m (section of the syllabus) but I would like to see that en thing like field excursions which is a neglected technique in our schools, students should be exposed to how they can organise them with their students, the procedure in organising the trip and so on, I think that is the important one... (sic)

This may be attributed to lack of interpretation of the syllabus and thus lecturers not being able to identify areas of emphasis.

Themes considered less important include the History of Environmental Education and the Tbilisi principles. This was mentioned by two lecturers, for example

if we come to this History of Environmental Education where we also do not have enough materials to refer the students to read, I think that portion can be left out and maybe put more emphasis on current issues, things like at the moment affect our lives. Also the portion or section concerning Departmental documents or policies concerning Environmental Education which I think for Bop., I think we do not have enough information about, so its a useless venture really

The other two lecturers said that the syllabus was acceptable as it was and no eliminations were necessary, instead additions were recommended.

No, I would say nothing that I can say should be eliminated, for inclusion I can say this syllabus is open in the sense that it allows us to incorporate other aspects we feel are important, it is not restrictive, not prescriptive, it doesn't dictate to us which aspects to teach e.g. if you have to teach about the overall Environmental Education issues, it wouldn't say teach about the destruction of the ozone layer or the greenhouse effect only but it is open to you to teach all aspects, you can tackle around an area of Environmental Education

This response also raises an issue of openness of the syllabus.

This may have both advantages and disadvantages, some of which are that, if the syllabus is open it may invite temptation by lecturers to treat those issues they like most at the expense of the others. Also for examination purposes there will be a lack of uniformity. This may be a disadvantage to some students, but if it is also too restrictive, it discourages initiatives from lecturers as they have to present certain topics only in the manner prescribed by the syllabus.

Lecturers were also asked about their favourite teaching methods as this often differentiates sections of emphasis and students tend to copy and imitate their teachers. This to a large extent will affect how the teachers will present their lessons.

The question was:

"What are your favourite methods of teaching?"

The four Lecturers mentioned different methods and amongst these one mentioned Lecturing as the favourite while the other three mentioned field trips trails and outdoor activities.

The lecturer who favoured lecturing as a method maintains that in sections where students need new introductory information, lecturing is the best method and later in a lesson other methods may be incorporated where students would participate and give their views;

there are areas which I feel they lack information, I give a lecture, there are some instances where I suggest they give me their views about particular issues, and I try to work from there (sic)

For Environmental Education this is perfectly acceptable. The other three responses emphasised trails and field trips e.g.

oh, outdoor not classroom. I prefer to be as practical as possible, see like following methods like what is that method again, where you directly do practically what you are intending to do

This according to the lecturers is what students enjoy most "generally speaking students like trails 'cause of the pleasure they derive from just walking".

Lecturers also mentioned that Environmental Education at college should be presented independently from other subjects as a course with its own theory and more practical activities.

I think the way it is now within the syllabus..... if we can say choose another method, say perhaps we do it as it should be done through other subjects it would be a mammoth task (sic)

The lecturer further explained that organising other lecturers to co-operate with each other would be difficult. This is a typical situation in Tertiary institutions where differentiation between disciplines and practitioners is emphasised. This hinders the promotion of Environmental Education. In spite of this, all the lecturers viewed Environmental Education as a cross- curricular approach and the college syllabus does cater for integration of subjects

...when I teach them I usually show them that one can teach this subject through other subjects, like biology, and I also give them examples in Setswana, they are treating comprehension..... English they choose comprehension that talks about environmental things..... (sic)

For the practical implementation of Environmental Education in schools, the lecturer saw the application of skills learnt at college being the most important approach; skills such as organising field trips and production of instructional material that are familiar to the primary school child. He stated that teachers are to use more creative teaching approaches and this may be made easy by the fact that

the syllabus at primary schools, the curriculum there, doesn't have a subject that is called Environmental Education so almost all issues are in other subjects, so I think it would be implemented if the different syllabus would include environmental aspects then it can be taught (sic)

Lecturers were hesitant as to whether Environmental Education is being fully implemented as teachers need considerable support. According to the lecturers, teachers would not take initiatives when they reach schools so encouragement to join organisations concerned with Environmental Education is highly necessary. Teachers are to be engaged in Environmental Education projects and be called upon to lead others by organising and participating in meetings, seminars and conferences that are Environmental Education related. This will hopefully enable the teachers to gain more confidence and consolidate what is learnt at college.

Administrative procedure and lack of environmental literacy on the part of the education officials is perceived by the Lecturers to be a barrier to the implementation of Environmental Education by the teachers. Thus:

like any innovation that you can have in an educational system eh, should get support from the top officer, thinking of inspectors and the department itself, they should encourage a way that it will make it a compulsory involvement on the part of the principal and the teachers, I think it will be easy for it to be practised..... Also the bottom-up approach should be incorporated where the views of the existing teachers should be taken into consideration and on the basis of that maybe introduced as a whole (sic)

From this response it is indicated that, administrators need to be introduced and be provided with some basic information about the goals and demands for Environmental Education. It is from such knowledge that they can support and encourage teachers to implement Environmental Education because if they do not know anything about the approach they cannot make follow-ups. Educating the teachers who are already in service about Environmental Education is also necessary as they prove to be a hinderance

real teachers in schools who may be not educated enough in environmental issues might be a stumbling block 'cause whatever the new teachers might be doing, they would have an attitude (Lecturer)

It is noted by the researcher that the college syllabus does not provide for discussion of such issues of implementation or real practical implementation barriers. It does not consciously prepare the teachers to be aware of the realities of the working situation. Apart from the Lecturers, teachers also presented their opinions on their training with reference to Environmental Education.

6.3 TEACHERS' OPINIONS ABOUT THEIR COLLEGE TRAINING (See Appendix A)

Teachers were also interviewed about their views of their college training. It is acknowledged by the researcher that it is not possible to cover all aspects of the training process. Only issues related to the teacher's opinion of the course at college can be investigated i.e. what is viewed as important, what do the teachers remember, what they liked most and disliked most and whether the course is helping them in their teaching.

All 15 teachers interviewed single out field trips as the most important aspect of the course;

what I remember most is going out 'cause we studied some trees and then we even went to Rustenburg National Park, we even went for a long time on foot.... (sic)

This is in line with what lecturers said about students increased interest on field trips. Significantly, all teachers acknowledged Environmental Education as being very important. They expressed high regard for the course which they experienced as students.

NB. Not all the questions on the interview schedule are discussed here as these are implied in the discussion. Thus in the opinion of the researcher those not discussed, on their own would reveal insignificant information.

Various reasons were presented in support for their positive view of the course:

- * Environmental Education is seen to be practical and relevant to real life situation and allows the student the opportunity to engage in practical projects for example;
eh, about the course we had at the college, we used to organise some cleaning campaigns. I think Environmental Education itself is a lively subject, I take it to be one of the liveliest subjects (sic)
- * Environmental Education created an awareness as many things were taken for granted by students;
It is a good course, 'cause some of the things I wasn't aware of, so 'cause I have done this course I am aware of my environment. It is a good course, they taught me so many things (sic)
- * Environmental Education is not an isolated and theoretical study, it integrates other subjects and broadens the student's perspective;
the Environmental Education course is effective because it addresses real issues, practical issues, it addresses the world in which we live in, is not an isolated study, it integrated other and one's horizons broader and the attitude is changed and then you become motivated outside and inner, you develop positive attitude about many things (sic)
- * Environmental Education provides the opportunity to investigate and analyse natural phenomena directly as it occurs;
... we've been told about abstract things which happen and which might happen. So Environmental Education gives us a chance to explore some to these natural phenomena, so we get to know the concrete things and see them and these things which affect us (sic)
- * Good lecturing

Other activities mentioned were club activities such as cleaning campaigns, tree planting ceremonies and lectures presented at Pilanesberg. Significant from the responses is that the course was generally considered to be informative and enjoyable and to have created awareness amongst the teachers.

In spite of the positive aspects, teachers pointed out areas of their training that they did not like.

**TABLE 6.1 PROBLEM AREAS OF TRAINING IN ENVIRONMENTAL EDUCATION IDENTIFIED BY
TEACHERS**

PROBLEMS MENTIONED	NO.OF TEACHERS
Lack of reference material i.e. text books, hand-outs	7
Drawing of surroundings i.e. drawing of College Map	1
Lack of incentive and lack of promotion of the Environmental Education Course	1
Theoretical aspects	2
Inadequate lecturing and irrelevant information	1
No problem areas identified	3
Total	15

The table reflects the lack of institutional material as the major problem since the majority seven (7) mentioned this. Teachers had to rely on the lecturers' notes and this limited their initiatives to explore and read further about Environmental Education issues;

....concerning the course, 'cause there are not written books specifically for Environmental Education, we depend on hand-outs, so the other section of information was being withheld from us (sic)

Only one teacher mentioned inadequacy of lecturers despite the fact that lecturers are not trained in Environmental Education.

This could be as a result of the fact that both lecturers and students met Environmental Education for the first time and therefore no comparisons could be drawn with other subjects. Also, the lecturers may be coping well with Environmental Education and meeting the students expectations.

Finally teachers in general see the course and their experience as worthwhile and helping them in their teaching. It exposed them to a different approach to teaching and enriched their training. It provided them with a variety of information and this knowledge is helpful in explaining issues even if they are not directly related to Environmental Education; "Yes, for I am aware even myself too can talk to these kids about the environment, so I think so it has helped me." Two teachers said that it would be more helpful if there was some support from fellow students and other related

Environmental Education institutions.

Environmental Education as a course at college, well it might help us if ever, eh, we were somehow co-operative in this , but due to lack of cooperation sometimes, we find ourselves, we find Environmental Education is just a course at the college having nothing to do with the school (sic)

From this discussion, it is apparent that the college training is well coordinated and the majority of teachers who graduated with Environmental Education feel really positive about their training and do not appear doubtful about it. There is generally no serious criticism about the training except the lack of instructional materials mentioned previously. Thus other factors besides training may be in existence either to enhance or frustrate the Environmental Education initiatives in schools. Some of these possibilities will be examined in the next chapter.

CHAPTER 7

OTHER POSSIBLE FACTORS INFLUENCING THE INTRODUCTION AND IMPLEMENTATION OF ENVIRONMENTAL EDUCATION IN SCHOOLS

7.1 THE ROLE OF THE PRINCIPAL

If education for and about the environment is to continue meaningfully in the total curriculum that pupils receive, proper implementation procedures are essential. The understanding of processes and issues which Environmental Education seeks to promote ought not to be left to chance or to individual initiatives but need a well coordinated program (UNESCO-UNEP 1987). In this respect principals of schools have a significant role to play. The Environmental Education teacher cannot be left alone and be expected to implement Environmental Education successfully without the support of the principal. According to Burger (1991:10):

although there are exceptions, the principal usually is the school. The principal is at the centre of a school value system and tends to exercise a particular style of leadership which often has significant influence on the way in which the school develops

This view is supported by Pannell and Alexander 1990. They state that the culture and climate of the school and its success depends largely on the influence of the principal. Having a good climate for change in a school is a necessary input to stimulate and guide the substance for the change. They also add that no school, however small it may be, can enter into a change process without effective leadership.

Ntsime (1991:5) a former Secretary and present Deputy Minister of Education has made it clear that;

- 1) the principal must have a commitment to the academic goals of the school.....

- 2) ...the principal must be an instructional leader. As a manager of a learning environment, the principal must concern himself, interest himself in the work of the teachers and teaching strategies - even if he does not actually take a class. He must at all times be ready to encourage appropriate change and development in teaching methods. The principal is therefore not just a manager in the structural and bureaucratic dimension of schooling, but a leader/motivator in the teaching /learning environment,
- 3) to be effective managers and creative instructional leaders, principals must be forceful and dynamic...,
- 4) principals must consult effectively with others. They must be authoritative / democratic, involving teachers in decision making, if they are to be successful in attaining the 'school quality' and school structure and climate....

There is little doubt that the principal is an important figure in the school and that his role needs to be duly recognised to facilitate the implementation of Environmental Education.

7.2 CHANGE AND SCHOOLS

It was noted in Chapter 1 that the objectives of Environmental Education and how it should be implemented, present educators with some problems as Environmental Education seeks to achieve a great change in formal education by adopting a new approach (UNESCO-UNEP 1987). The introduction of any change tends to create stress, anxiety and conflict amongst staff (Bill 1988).

Since change involves interaction between colleagues, this interaction forms part of the context of the change (Bill 1988). For this research, teachers and principals were interviewed to determine whether there was or was not any interaction between themselves through discussions or activities that are Environmental Education related. It is the view of the researcher that it is very important for the Environmental Education teachers to introduce themselves to the principal and other teachers as having done Environmental Education, so as to initiate discussions and create interest and the desire to know more about Environmental Education on the part of these other teachers in the school.

7.3 THE NEW TEACHERS POSITION

Teachers were asked if they had spoken to the principal about Environmental Education and whether the response from the principal was positive or not.

The questions asked were;

"Have you spoken to the principal about Environmental Education issues? Which ones in particular?"

"Is the principal in favour of your ideas on Environmental Education?"

"Have you introduced yourself to the principal as having done Environmental Education at college?"

The majority of the teachers reported not having spoken to the principal or introduced themselves as having done Environmental Education. Only one had done so, but casually; "just in passing". One other teacher did mention Environmental Education to the principal but indirectly;

I didn't tell him directly but in a meeting , we were talking something on the environment so I was just giving some ideas on that. By so doing I thought I have identified myself

The 13 teachers who did not introduce themselves and had not yet spoken to the principal, reported a variety of reasons. The discussion of these is appropriate as they affect the contributions or impact that the principal would have in supporting Environmental Education in the schools. Two teachers said that they lacked confidence to be in a position to talk about Environmental Education and needed more time to establish themselves in the teaching profession. These teachers were firstly trying to cope with the job situation and as time goes on they were planning to initiate Environmental Education projects:

Apparently I have not yet talked to her, the problem is eh, I wanted to reinforce this thing [Environmental Education].....

Another example,

em, not yet, not yet, the problem we are not used to the teaching profession but give us six months....no I haven't since I told you that I have only taught for three months, I didn't have any time to communicate with my principal....

Pressures on a new teacher are documented in a number of articles and books (Griffin and Hukill 1983, O'Neal and Hoffman 1984, Kremer-Hayon and Ben-Peretz 1986) and their discussion will not be attempted in this project. What is noteworthy in the literature is that some of the important points mentioned are also shown below.

One teacher expected to find Environmental Education activities in the schools and hoped to join and contribute accordingly. The teacher expected already established programmes and did not take any initiative as there are no such projects:

I thought I'll do it later 'cause I don't see anything about Environmental Education here in the school. It seems as if she (the principal) is not interested. I expected students doing lots of projects in the school yard, like flowers and everything...

From this response, it may be deduced that besides the lack of initiative on the part of the teacher, the innovating teacher needs some kind of support through already established structures i.e. if there were already Environmental Education activities in the school, this particular teacher might immediately contribute to the process. Hopefully the presence of Environmental Studies and PEUP approaches are serving this function in one way or another and in this instance this particular teacher did not realise this.

Two teachers indicated that their principals were not easily available as they were always absent attending meetings and training courses with limited time to consult with the staff. This was causing frustration to the teachers: "Because eh, the principal is most of the time occupied", "You know when I arrived he attended courses and he is been absent". [sic] The other dimension of the unavailability of the principal was that of being unresponsive. This was mentioned only once; "...I told her I have done Environmental Education but she didn't say anything".

According to Bill (1988), people react to change and its challenges in different ways. Some will support the change while others will oppose it and in this instance three teachers stated that staff including the principal were not receptive to Environmental Education ideas they presented for example;

....Environmental Education is something which is new to our schools so they don't find it helpful so much even if you tell them, they just ignore ever you suggest something it's not accepted. They just tell you are fresh from school, they come with these ideas long ago, so its not easy and at times it seems you despise authority. There is one thing I have noticed with teachers, it depends who suggests something. It's not easy for them to take anything if you are new (sic)

This was exacerbated by the fact that most primary teachers are holders of primary teachers certificates while the Environmental Education teachers hold diplomas thus causing some antagonism; "eh, it's not easy when you are new, they undermine you and say, they are wrongly concepted these Diploma teachers, they think they know a lot". This restricts the initiative by the new teacher.

Other reasons include lack of interest in Environmental Education due to it being compulsory at College:

..in 1988 you see, most of the students didn't want Environmental Education, you see, they 'cause other ancillary subjects like eh, Art, Guidance, Music, then the people who chose Environmental Education were very few you see, ...so they, take other students from those existing subjects...

This teacher said that this may have created negative attitudes towards Environmental Education although this view is not supported by the evidence in Section 6.3. From these responses it is evident that the majority of the teachers did not introduce themselves to their principals and took for granted that principals knew that they had done Environmental Education, as it is often reflected on students transcripts submitted for employment.

7.4 THE PRINCIPALS' POSITION AND RESPONSES

The key issue is that, though Environmental Education may be listed on teachers' application forms, the majority of the principals are not conversant with Environmental Education as mentioned previously. Also, the fact that most 95% of the principals reported that the teachers have not spoken to them about Environmental Education, they have limited knowledge of Environmental Education. There is, therefore, little chance for the principal to pursue and insist that Environmental Education is implemented.

Principals were asked about their views if the Environmental Education teacher were to initiate Environmental Education projects such as constructing ponds, organising an 'environmental day', cleaning campaigns and many more.

The questions were:

"If the teacher were to initiate Environmental Education programmes in the school, what would be your view? Which ones would you support?"

"How can a principal support such programmes?"

All the principals were positive and said they would fully support the teachers. Principals mentioned, among other things, financial support: "I am not well versed about this [Environmental Education], but whatever he could suggest, I would leave it up to him, whatever he could suggest, whatever he want to do, I can give him the moral support, by raising funds. Because there, we need money". Other principals said they can support the teacher by getting involved: "a principal can support the teacher by getting physically and financially involved...". Besides the principal's direct involvement other teachers would be encouraged by the principal to take part;

that would be gracious, I would definitely appreciate that and I would like Mr. Mothwane to give us projects to do with the children, he should not work himself alone, he should divide the work amongst the teachers so that ..we are all involved practically and psychologically

One principal mentioned that he would support Environmental Education projects by informing the school council which will in turn inform the community so as to accept activities such as outside classroom teaching, trails, field trips, cleaning campaigns. Such activities, at the moment, may be viewed by the majority of the community as being less important. This particular principal took cognizance of the fact that "the influence which parents and the community exert in the context and culture of the school is also important and it should be noted and recognised" (Pannell and Alexander 1990:40).

Another way to support the teacher is by reducing load in terms of subjects so as to allow the teacher some time to concentrate on Environmental Education projects: One principal demonstrated awareness of this: "eh I don't think, for me to overload her with all the necessities, I think it will

be for her to impose to other teachers so that they can be involved". Outside expertise was also mentioned, that is, a principal could facilitate the visit of people who may have information about certain Environmental Education issues to assist the Environmental Education teacher.

It is from responses such as these that the writer was convinced that the lack of implementation of Environmental Education is not intentional and will not in future be impeded by principals in the primary schools. As one principal remarked:

we would be very happy, very much you know we would appreciate it very much, we would really value it. In fact, I could support her, by instructing as a facilitator, I have to instruct these teachers to go and learn from her

For Environmental Education to be incorporated into other subjects, it would also be easily facilitated as principals are more than willing to involve all teachers in environmental education projects. So ultimately the onus is upon the environmentally educated teacher to initiate and coordinate systematic projects that will attract interest and convince the other teachers of the value of Environmental Education. It has become evident that principals might even demand that others engage in activities and projects that are Environmental Education related, as they would now know what to do.

7.5 SUBJECTS BEING TAUGHT

It is assumed by the researcher that when a teacher is allocated subjects, it is through those subjects he/she understands and enjoys most, that experimentations with unconventional teaching approaches could take place and Environmental Education methods may have a chance for application. Interest in certain subjects or topics were investigated i.e. which subjects does a teacher offer and among these, which ones were his/her favourite? Were there any particular syllabus/ textbooks/topics liked most by the teacher?

Besides the more curriculum related issues, teachers were asked whether they were advancing in Environmental Education related studies, participating in Environmental Education related community activities, whether they belonged to a conservation club, tree planting society, etc.

Such activities are regarded by the writer as having some influence on the promotion of Environmental Education

The Questions were:

"among the subjects you teach, which is your favourite one? Are there any sections of the syllabus/text book you like most? Why?"

The responses to the two questions are given in Table 7.1

TABLE 7.1 SUBJECTS MENTIONED AS FAVOURITES AND REASONS FOR CHOICE

FAVOURED SUBJECT	FAVOURED SECTION OF SYLLABUS	REASONS	NO OF TEACHER
1 English	-Grammar and literature -Story telling or games	-Acquaints you with language and grammar -I want to see whether they hear the language -a child can communicate some of his strengths and weaknesses	3
2 Maths	-geometry -number line and fractions -sets	-I like it from childhood and it's applicable in life -I get more challenge -I like the subject, I understand them better -teach pupils about similar things	4
3 Geography	-sections whereby issues including nature -ecology	-I enjoy it for I know it, most of the things we did in environmental at school (college) -geography is related with Environmental Education -my presentation is more forceful in geography though it's not practical, when I teach them I see progress	3
4 General Science	-Reproduction	-most of the topics are about animals, things that we meet in daily life. -I enjoy teaching it	2
5 Environmental Studies	all of it	it's fun, things you see, things you know, you touch	1
6 Religious Education	all sections	-I did them at college	1
7 History	about people like Tliso Plaatjie, past black leader	-children are used to the way I present the lesson	1

From this table it appears that there is no significant differentiation between subjects. Four teachers indicated maths as their favourite subject. Ironically Environmental Studies was the least favoured. One would expect these teachers to identify closely with Environmental Studies as it has some things in common with Environmental Education. But, it may be said that the majority of teachers did not even teach or were not in any way associated with Environmental Studies. As mentioned previously, teachers did not introduce themselves as having done Environmental Education, thus principals could not easily associate them with Environmental Studies. From this table one can conclude that interest is spread across the curriculum, and therefore Environmental Education has a great chance to be incorporated in all subjects, though teachers like the subjects for different reasons rather than the subject being suitable for the incorporation of Environmental Education.

7.6 SELF-DEVELOPMENT AND AFFILIATIONS RELATED TO ENVIRONMENTAL EDUCATION

Teachers would in the opinion of the writer gain more information and consolidate their ideas on Environmental Education if they were engaged in further studies related to Environmental Education. All 15 teachers indicated that they were not engaged in any study that is Environmental Education related. This is true for even those graduate teachers who have been teaching for at least a year.

Reasons advanced were that teachers did not know that they could engage in further studies in Environmental Education; "eh, I wasn't aware of any courses". For the new teachers priority was to establish themselves first at school. This is also acceptable in the opinion of the researcher as teachers need to practise and apply the knowledge gained in college before they can advance further in training.

With reference to affiliations to Environmentally orientated organisations, none of the teachers were affiliated to any organisation that is Environmental Education related. Teachers were only members of the Lengau conservation club when they were still at college. They participated at various levels of their committees and after graduation, membership was not renewed. Teachers stated that they

lacked information on how to renew membership. A typical response was;

during my time at the college we belonged to the Lengau conservation club and well, till now I have never joined any club, therefore, I don't know if I need to join the club on my own or whether we need to form a club and affiliate to the mother body

Subject associations such as EEASA were virtually unknown to the teachers; "no, no there is no such organisations around here". This situation may be attributed to lack of information to students by lecturers about Environmental Education organisations. If this is true it may also explain why students do not seriously attempt to put what is learnt into practice. It is the researchers opinion that lecturers do not emphasise action after training. More support in terms of information about organisations and their activities is needed. Publications and other Environmental Education material could be of great benefit to the teachers.

In view of these findings Chapter 8 attempts to draw some tentative conclusions about the Environmental Education implementation process.

CHAPTER 8

CONCLUSION

8.1 SUMMATION AND RECOMMENDATIONS

The research project set out to investigate whether Environmental Education is implemented in primary schools in Bophuthatswana where there are teachers who have qualified in environmental education. The project also aimed to establish the extent of information on Environmental Education if any, and attempted to reveal those factors that influence the implementation process.

In qualitative research there is heavy reliance on descriptions rather than figures as there is no defined criteria by which the implementation of Environmental Education can be measured. The researcher presents conclusions based on the guidelines of primary teachers competencies as presented by Lahiry *et al* (1988).

The researcher acknowledges that it is not possible that the teachers will possess and display all these competencies, but as trained Environmental Education teachers they should display them to some extent. The fact that teachers themselves differ and the situations they find themselves in are different, made the researcher rely heavily on those issues mentioned during the research.

The writer also acknowledges that Environmental Education is an innovation and its implementation in schools depends to a large extent on the school milieu and the nature of the curriculum presented in schools. Environmental Education, because of its nature, has great influence on the curriculum and the traditions of schools i.e. the school ethos. The approach needs a climate which is receptive to new ideas and approaches as it demands a radical change of emphasis in organisational content and thinking. The importance of training teachers while recognising the

actual environment where their training is to be implemented, cannot be over-emphasised.

The research project confirms that the development and implementation of Environmental Education is complete and some of the barriers as identified by Ham and Sewing 1988 (Chapter 1) are true. The responses by the teachers and their principals together with those of lecturers interviewed, reflect some elements of logistical, educational and attitudinal barriers. These have mainly affected the implementation process and to a large extent the process is not carried through.

Although the perceptions of Environmental Education by teachers and their ability to define Environmental Education as defined by I.U.C.N. is fair, their actual application of the Environmental Education approach is lacking. This is associated with the displayed lack of full understanding of environmental issues by teachers. Uncertainty about issues at hand leads to a reluctance to discuss them with other people. Also, initiation of projects that are Environmental Education-related in schools is frustrated. The responses by the teachers reflect that no environmental issues have been tackled both practically and theoretically in a form of a discussion. Principals confirmed that there were no Environmental Education activities that could be associated to the initiative of the Environmental Education teacher in their school. This only confirms that the teachers are not trying out the Environmental Education methodologies.

Lack of knowledge and limited understanding of environmental issues also lead to poor interpretation of such issues which often result in less commitment to promoting Environmental Education by the teachers (Chapter 4). For the College Environmental Education Lecturers, this is an indication that emphasis will have to be made to fully orientate their students about environmental issues. The lack of commitment to active participation in promoting Environmental Education by the teachers is also evident in their reluctance to introduce themselves to their principals as having done it during their training at College.

According to (UNESCO-UNEP 1987), only teachers who are themselves concerned with their own environment will be successful in developing similar behaviour in students. In other words, community involvement by teachers is another way of promoting Environmental Education. Teachers were asked as to whether they were in anyway involved in Environmental Education related projects in their communities. Regrettably, only one teacher saw her Sunday School teaching contributing to Environmental Education. The other 14 did not engage in any communal activities that are Environmental Education related. Teachers did not see themselves participating outside their formal teaching situation as other members of the public do not have any information about Environmental Education.

Teachers displayed lack of knowledge about the activities of the Lengau Conservation Club movement, and those who did have the knowledge did not associate themselves with it. Some of the teachers were members of this movement whilst still at College but did not renew their membership after graduation. The majority are passive. "Most of us are passive" declared one teacher. Lecturers at College should therefore be urged to concentrate and emphasise action after training.

Teachers did not convincingly display the competencies referred to in 5.1 and 5.2. Efforts to select and apply appropriate Environmental Education methods were lacking. Methods mentioned were poorly understood and incorrectly applied (see Chapter 5). The research projects reveals quite clearly that teachers have not as yet made efforts to incorporate appropriate methods that will directly and significantly enhance the good of Environmental Education.

It is encouraging, however, that some principals have indicated realisation of differences in the new teacher's ways of preparation and teaching and they do encourage this. Of those interviewed, these were unfortunately in the minority.

In those cases where teachers attempted to do something, teachers have the difficulty of breaking through school traditions. As teachers are new these traditions tend to restrict their initiatives. Among others the older teachers in the school contribute to withdrawal by the new teachers. Support for the new teachers is therefore important. Innovations that are already in schools, such as PEUP, can be utilised to introduce Environmental Education in Schools as it seems to have been accepted by teachers in the field. It can be employed to assist the implementation of Environmental Education and as its methodologies are similar to those of Environmental Education and it is already established in the school system.

According to the researcher, this approach may provide the opportunity to introduce the older teachers to the methods of Environmental Education. Given that the older teachers have been introduced to PEUP and have accepted it, they will actively participate as they will not be threatened by the new teachers. Instead, they will feel confident and proud as they also have something new to offer and they are in command of the situation.

The principals also tend to drive their new teachers to conform to practices which are often out-dated. Principals influence the teachers by resisting new teaching approaches. The principals would let teachers prepare and teach in a certain well established manner as in most cases, it is the way the principal himself was taught. This is not in anyway conducive to the introduction of Environmental Education in schools. Forcing the new teachers to adapt and comply with out-dated traditional methods in the school defeats the whole effort of training teachers for Environmental Education.

It is therefore strongly recommended by this research project that, before attempts are made to incorporate Environmental Education in schools, greater efforts should be made to fully introduce and orientate principals and other education authorities. Efforts should be made to see to it that principals of schools fully understand or have some ideas of the demands of the approach and how

it fits in the education system and the present curriculum. Also, so as to demand that the Environmental Education teachers become more active.

At College level more training for lecturers is necessary. The research has revealed that in some instances lecturers do not fully satisfy the demands of the Environmental Education Syllabus. For example, their failure to realise continuity of the Environmental Education Syllabus and the lack of emphasis on action after training. This is crucial for the training of teachers as they are expected to participate fully in teaching about environmental issues and solving real life problems. The lack of interpretation of the syllabus by the lecturers results in them not being able to identify areas of importance (see Chapter 6, 6.2).

It is therefore recommended that lecturers be trained first before being allocated to teach Environmental Education. After training these lecturers should be retained as Environmental Education lecturers and not allocated other subjects only to be replaced by untrained lecturers as is the case at the Colleges. Allocation of subjects to lecturers should be done not by need, but rather by what the lecturers can best offer.

Environmental Education lecturers sitting in panel meetings should preferably not alternate with others. The lecturer should have the opportunity to internalise and develop with the Syllabi as they are being improved. In other words, to maintain continuity so as to enhance better understanding and interpretation of the Syllabus.

It is the opinion of the researcher that the Institute of Education at Unibo is not doing nearly enough to support the Environmental Education lecturers. The process of developing Syllabi seems never to be completed and the lecturers are often uncertain as to what to teach. The Institute should ascertain whether all lecturers have the required Syllabus or not before the beginning of each year.

The Institute will need to conduct intensive in-service programmes for lecturers and train those lecturers not qualified in Environmental Education. Reliance on lecturers from other fields (as it is now) is not a good solution as such lecturers often lack the information and commitment that Environmental Education demands. Furthermore, the Institute must devise some means for the interaction between the curriculum designers, lecturers, teachers and principals. This process will facilitate the sharing of experiences and provide feedback to the lecturers about their students' experiences in the field. This research has managed to uncover some of the factors that affect the implementation process for Environmental Education in schools.

8.2 EVALUATION OF THE PROJECT

It is felt by the writer that innovations should be evaluated early in their inception. This project appears to be limited in revealing factors affecting the implementation of Environmental Education.

This view is influenced by the fact that teachers interviewed were simply trying to cope with the new job situation in which they find themselves. Concentration on and application of the Environmental Education approach appears to have been ignored. Thus, the evaluation process may not be revealing the true situation.

In spite of the limitations and those indicated in 3.7.3 it is the opinion of the researcher that the research project has revealed weaknesses in the approach by the Education System, e.g. lack of training of lecturers, lack of communication between the Training Colleges, the Department of Education and schools. Issues raised may influence the training process of Environmental Education teachers and facilitate the incorporation of Environmental Education in schools.

Finally, the research project reveals lack of implementation of Environmental Education by the teachers and concludes that implementation of an innovation must be accompanied or preceded by training.

INTERVIEW SCHEDULE FOR TEACHERS

- 1 Which subjects do you teach or taught last year?
- 2 Among the subjects you teach which is your favourite one?
- 3 Are there any sections of the syllabus text book you like most?
- 4 Which is your favourite method of teaching e.g. group work, "chalk and talk", discussion with problem solving, discussion on real issues (which one)?
- 5 What do you understand by the concept Environmental Education?
- 6 Which Environmental Education issues have you tackled so far? If none why not? If yes how?
- 7 How do you deal with these?
- 8 Have you done any work outside classroom? If yes, what? If no, why?
- 9 Any Educational trips related to Environmental Education? If yes to where? What specifically did you do? If no why?
- 10 Do you allow the pupil to bring up suggestions and opinions? If no, why? If yes, give examples?
- 11 Have you spoken to the Principal about the Environmental Education issues, which ones in particular?
- 12 Is the Principal in favour of your ideas on Environmental Education?
- 13 Any information to other staff members? How is this conveyed?
- 14 Do you belong to the Environmental Education issues with other people? If yes, with who? Which issues? What was the response?
- 15 Are you involved in any community work that is Environmental Education related?
- 16 Do you ever discuss Environmental Education issues with other people? If yes, with who? Which issues? What was the response?
- 17 Which environmental issues in your school/area concerns you most? Why?
- 18 How do you tackle these?
- 19 Which environmental issues in the RSA concerns you most? Why?
- 20 Have you visited any Environmental Education related place e.g. park, zoo or place of interest?
- 21 So far are you involved in any study or further self-development, that is Environmental Education related, what field?
- 22 What is your opinion of the course you did at college - what do you remember about it?

- 23 What did you like? What did you not like?
- 24 Is the course helping you in teaching? If no, why? If yes, how?

APPENDIX 'B'

INTERVIEW SCHEDULE FOR PRINCIPAL/HEADS OF DEPARTMENTS

- 1 Are you aware of the concept of Environmental Education? If yes, what does it mean? If no, (Doc answer).
- 2 What do you understand about the concept environmental issues?
- 3 Are there any environmental issues which concern you most? If yes, which ones?
- 4 In your opinion can these be solved? If yes, how?
- 5 In going through teacher (A's) books (prep books and books submitted by pupils) do you think there any differences in preparation from the other teachers? In what way?
- 6 Do you think he uses any different teaching methods other than "chalk and talk"?
- 7 Has he spoken to you about Environmental Education? If yes, what?
- 8 Has he approached you about anything concerning Environmental Education issues?
- 9 Which issues in particular? And what are your views towards these?
- 10 What would be your feeling about teachers talking to pupils out of class i.e. going on field trips? Do you think it is a good idea? If yes, why? If no, why?
- 11 It is said by some people that field trips are important because they have clear cognitive and affective benefits and may lead to students change of attitude, behaviour and learning. Do you agree? Do you not agree? If no, why? If yet, give example.
- 12 To which kinds of places do you think field trips should be undertaken to? Why?
- 13 What is the level of support from the school council when pupils have to undertake field trips? If low, why? If high, comment why?
- 14 What is the level of support from the community when pupils have to undertake field trips? If low, why? If high, comment.
- 15 After the field trips do teachers have to provide you with a report? If yes, what are the dominant issues that they report about? If no, why?
- 16 If the teacher were to initiate Environmental Education programmes in the school, what would be your view? Which ones would you support?
- 17 How can a Principal support such programmes?
- 18 In your school are there any environmental activities that you ascribe to the (A's) teaching approaches? If yes, why? If no, why?
- 19 Do you think pupils should be encouraged to ask questions about environmental issues and solve problems? If yes, why? If no, why?
- 20 Do you discuss environmental issues with other teacher/people? Who? Which ones in particular? What is their response?

INTERVIEW SCHEDULE FOR LECTURERS

- 1 What is the status of Environmental Education here at College?

 Is it becoming popular?
 If, no, why?
 If, yes, why?
- 2 What is your opinion of the Environmental Education syllabus?

 If positive, why?
 If negative, why?
- 3 Which sections of the syllabus do you like most?

 Why?
- 4 Which sections do you think are important in the syllabus?

 Why?
- 5 Which ones are less important?

 Why?
- 6 What are your favourite methods of teaching?

 Why?
- 7 In your opinion how should Environmental Education be presented at College?
- 8 How can Environmental Education be implemented in Schools? (Briefly).
- 9 Which parts of the syllabus do you think students enjoy most?
- 10 Which sections they do not like? Why?
- 11 Are Students given any choice as to which subjects they should do?
- 12 If they do choose, has this been always the practise?
- 13 In your opinion do you think the students who have graduated with Environmental Education implement it in school?
- 14 Do you think the Environmental Education approaches are well received in schools?

 If yes, why?
 If no, why?
- 15 In your opinion does the syllabus cater for examples of Environmental Education integration with other subjects?

 If no, why?
 If yes, cite example?

- 16 Your ex-students do you think they need Environmental Education support?
- 17 Are there any sections which they (students) struggle much with?
Why?
- 18 What is your opinion of field trips, are they a waste of time?
- 19 On your college course where do you think more time should be spent?
Why?
Less time, Why?
- 20 Comment about the future of Environmental Education in general?

APPENDIX 'D'

Colleges of Education - Bophuthatswana

Institute of Education - Unibo

ENVIRONMENTAL EDUCATION SYLLABUS (CENED)

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 and environmental 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 effective 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 integral part of environmental education.

SUMMARY OF SUGGESTED PERIOD ALLOCATION

YEAR	TERM 1	TERM 2
I	Introduction to EE (10)	Concepts in EE (25)
	Resources for EE (10)	Excursions (10)
	Excursion (10)	Project/Prac. work (10)
II	International overview (15)	EE in the schools of Bophuthatswana (25)
	Trails & Interpretation (10)	Excursions (10)
	Project/Prac. work (10)	Project/Prac. work (10)
III	Perspectives in EE (10)	Values clarification (10)
	School Community & EE (5)	Public participation (5)
	Resource utilisation (15)	Evaluation (15)
	Excursions (10)	Excursions (5)
	Project/Prac. work (5)	Project/Prac. work (10)

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 re 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 3 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 3 years.

- 5 Students should be encouraged to join the Environmental Education Association of South 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 the like-minded people throughout Southern Africa and enable them to develop long-term professional links.

YEAR 1**TERM 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 1**TERM 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 2**TERM 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 2**TERM 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)

YEAR 3**TERM 1****1 PERSPECTIVES ON ENVIRONMENTAL EDUCATION**

- 1.1 - Philosophies and concepts in Environmental Education
- 1.2 - The relevance of Environmental Education in the 1980's and beyond
- 1.3 - The relationship of Environmental Education to other disciplines (psychology, sociology, ecology etc.)

(Suggested Period Allocation : 10)

2 THE SCHOOL, COMMUNITY AND ENVIRONMENTAL EDUCATION

- 2.1 - Co-operation and links with environmental and environmental education 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
- Excursions
- 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)

YEAR 3**TERM 2****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)

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PERSONNAL COMMUNICATIONS

- Irwin, P.R. 1991. Head of Department of Education, Rhodes University, Grahamstown.
- Johnson, S. 1991. Deputy Director, Bophuthatswana National Parks Board.
- Lehobye, S. 1991. Vice Rector, Hebron College of Education. Bophuthatswana.