

**STUDENT-TEACHERS' PERSPECTIVES OF THE ROLE
OF ENVIRONMENTAL EDUCATION IN
GEOGRAPHY EDUCATION.**

HALF-THESIS

**Submitted in partial fulfilment of the
requirements for the Degree of
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by

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DECLARATION

This research represents original work by the author and has not been submitted in any form to another University. Where use was made of the work of others it has been duly acknowledged in the text.

ABSTRACT

The ideas contained in socially critical Environmental Education cannot be ignored given the current environmental crisis and the need to achieve democracy in South African society. In order to achieve this learners need to develop the skills to make informed decisions which will facilitate the achievement of a sustainable society.

It is the contention of this research that a socially critical Environmental Education approach to education can facilitate the above.

Teachers of formal secondary school Geography Education are in the position to implement socially critical Environmental Education into their teaching.

This study therefore investigates the perspectives of student teachers regarding the role of Environmental Education in secondary school Geography Education. This was done within the Interpretative Paradigm using a case study which involved five Higher Diploma in Education Geography method students.

The research has revealed that even though the Geography method students have been exposed to an Environmental Education course, in their teaching preparation and are motivated to use it, they have limited understanding of the theory underpinning Environmental Education and how to apply it to their Geography teaching. The problems of bridging theory and practice was apparent.

Recommendations are made as how to best facilitate the gap between theory and practice.

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KEY

STUDENT PARTICIPANTS:

E - Emily Z - Zuki
G - Guy L - Lara
T - Tom

LECTURERS:

W - Geography lecturer
B - Environmental Education lecturer
S - Participant observer

SOURCES OF DATA:

I1 - interview one
I2 - interview two
I3 - interview three
A - assignment
D - discussion from workshop
N - participant observer's notes from the workshop
P - student participant's verbal presentation

Note : See page 42 for an example of how the key has been used in this thesis.

CHAPTER 1: INTRODUCTION

1.1 PRESENTATION OF IDENTIFIED NEED

The current global environmental crisis is seen by some educationists as a complex manifestation of the way in which natural resources are being exploited and wasted (Huckle, 1991; Fien, 1993b; UNESCO-UNEP, 1993). This exploitation has left a legacy of scarred landscapes littered with pollution. Fien suggests the causes of environmental problems are located in "the very nature of our current social, economic and political systems and in the world views, institutions and lifestyle choices that support them." (Fien, 1993a:v) One of the proposed ways of dealing with the situation in which we find ourselves is through education (UNESCO-UNEP, 1993). In order to address environmental issues in South Africa through education, an approach which is broadly acceptable to all South Africans may have to be found.

One possible broad unifying approach has been mooted by O'Donoghue and McNaught (1989) and Fien (1993a) in which environmental problems are seen to be multifaceted in their causes and their subsequent effects. This approach emphasises that environmental issues do not exist only in the bio-physical domain, but also within the social, political and economic structures of society. Thus, in addressing such issues, a socially critical and pro-active stance, which involves all of the potential stakeholders, is proposed.

Following Fien's (1993a) typology, Environmental Education has in the past emphasised Environmental Education **in** and **about/through** the environment rather than education **for** the environment. Environmental Education **about/through** the environment provides the learner with environmental knowledge and enables him/her to understand ecological processes. The integration of natural systems and social systems is often not emphasised in this approach. Environmental Education **in** the environment uses the student's experiences in the environment as a medium for education and as a means of developing an appreciation of the environment. It is argued that both approaches, however, fall short

of integrating reflection with action (Fien, 1993a).

Current thinking in Environmental Education (Huckle, 1991; Fien, 1993a; Fien, 1993b; O'Donoghue, 1993) has shifted towards being more socially critical and transformative while still acknowledging the importance of knowledge and experiential learning. This view may be found in the notion of education **for** the environment where all learners are encouraged to become actively involved in the resolution of environmental questions and problems. The role of the individual and society in the environment with regard to the socio-political, economic and historical aspects linked to environmental issues is recognised. Within the above context Huckle (1991), Fien (1993b) and Martin (1993) argue that Environmental Education should promote a world ethic incorporating social justice and ecological sustainability.

The potential of Environmental Education to encourage and sustain a new educational approach within the framework of education **for** the environment has been theoretically explored by, amongst others, Huckle (1991), Fien (1993b) and Paxton (1994). There is now a need to identify how subject areas within the formal curriculum can facilitate the transformation of theory into effective practice. Recent research by Nduna (1994), Wasserman (1994) and Taylor (1994) have explored Geography teachers' perceptions of the role of Environmental Education in the teaching of Geography and as a possible approach to the teaching of Geography. A perception of the link between Environmental Education and Geography already exists (Pemberton, 1989; Rogerson and McCarthy, 1992), but this perception has not been translated into a coherent and effective pedagogy suited to teacher education in the southern African context.

If it is a given that Environmental Education is a necessary and a desirable part of formal education and that Environmental Education is to be incorporated into the various subjects of the current school curriculum (Department of Environment Affairs, 1989), it then follows that teachers need to be able to effectively and confidently educate their pupils through the use of an environmental approach in their subject.

However, in order to do this, teachers need to understand the theory on which this approach is based. There needs to be, on their part, an acceptance of the theory, and a belief in the worth of Environmental Education. Teachers also need to see the relevance of the theory to and in their subject. Lastly, they need to have developed an understanding as to how this theory can be converted to meaningful and effective practice.

This is all very well. However, for this to occur teachers would be asked to change their whole approach to teaching. This change would include calls for changes in their views of appropriate teaching materials, teaching approaches and their view of knowledge, amongst other facets of education. Hence, a major change is called for in terms of the way they view their subject matter and knowledge. This need for change also applies to student-teachers who arrive with preconceived ideas about educational practice.

Hence, in order to really see the necessity for Environmental Education in their subjects, teachers need to develop more than a cerebral awareness and intellectual understanding of the theory and content of Environmental Education and its role in their subject. They need to really believe in it, thus providing the motivation required to help facilitate the changes which are demanded when using an environmental approach.

In order to facilitate this, teacher-educators need to understand how to develop effective student-teacher education programmes that will enable teachers to incorporate Environmental Education into their subject areas. It is necessary in the researcher's view to explore the students' understanding of the nature and point of Environmental Education and their chosen disciplines during their professional preparation. If one accepts the constructivist premise of knowledge being socially constructed it is vital for teacher-educators to gain a sense of the student-teacher's emerging knowledge: how it was constructed, how this may impact on the assimilation of new knowledge, and on their future practice.

Thus, through gaining an understanding of the students' perspectives, educationists may be better equipped to facilitate the students' understanding and realisation of the potential transformative nature of their field. The student-teachers could then be effectively encouraged to develop the necessary tools to become active and critically reflective Environmental Education practitioners (O'Donoghue and McNaught, 1989; Hungerford and Volk, 1990; O'Donoghue, 1993; Fien, 1993a).

1.2 GOAL OF THE RESEARCH

1. To explore student-teachers' perspectives of the role and value of Environmental Education in secondary school Geography.

Given the above, it was argued that without understanding students' perceptions with regard to Environmental Education within their subject areas teacher-educators would be unable to develop effective teacher education programmes.

1.3 CONTEXT OF THE RESEARCH

The five student participants of this research were studying for their post-graduate Higher Diploma in Education (HDE) in 1994 at Rhodes University. Each student within this group had chosen to study Geography as one of their method courses.

The Geography method lecturer and the Environmental Education lecturer were also participants in this research.

All participants expressed their willingness to participate fully prior to the commencement of this research.

The context of this research will be more fully explored in Chapter 4.

1.4 CHAPTER OUTLINE

Chapter 1 introduced and explored an identified need and associated problems within teacher education. Through the exploration of relevant literature in **Chapter 2** current ideas within teacher education, environmental and geographical education are presented. This is followed by **Chapter 3** in which the methodology and techniques used for this research are presented. Subsequent to that, in **Chapter 4**, the context of the research is explored in the form of personal cameos of the participants, background information with regard to the HDE course, and the perspectives of the Environmental Education lecturer and the Geography lecturer about their courses.

Chapter 6 involves the exploration of a significant environmental experience as identified by each student. Chapters 5 and 6 provide the basis from which the students' emerging perceptions with regard to Geographical and Environmental Education are explored in **Chapter 7**. Finally, in **Chapter 8** conclusions and recommendations are made about the research findings and an evaluation of the research is done.

CHAPTER 2 : EXPLORATION OF RELEVANT THEORY

2.1 INTRODUCTION

The adoption of a democratic model for society carries with it the expectation that education's role ought to facilitate the tenets of democracy. Equally within the current democratic model adopted by South Africa there is a tacit acceptance, given the state of the environment, of the need for sustainability.

The theory explored in this chapter underpins the search for appropriate education programmes for the preparation of future Geography teachers. The programmes need to provide them with an approach to Geography which is linked to sustainable and democratic development.

To this end the following themes are considered:

- * The dominant philosophy in South Africa, its effects on education and more specifically on teacher education (Chapter 2.2).
- * International perspectives on teacher education (Chapter 2.3).
- * The New Environmental Paradigm as perceived by Fien (1993a) (Chapter 2.4).
- * The ideas contained within socially critical education (Chapter 2.5).
- * The importance of social constructivism in education thinking and research (Chapter 2.6).
- * Exploration of the approach to education for the environment (Chapter 2.7).
- * Two examples of how socially critical Environmental Education has been implemented (Chapter 2.8).
- * Possible links between the aforementioned areas and Geographical Education (Chapter 2.9).

Lastly, the threads of thinking within each of these aspects will be drawn together (Chapter 2.10).

2.2 A CRITICAL LOOK AT THE DOMINANT PHILOSOPHY OF EDUCATION IN SOUTH AFRICA

In order to achieve the desired democratic ideals there is a need in South Africa during the current period of transition to critically explore new philosophies of education that might provide the necessary framework through which education may help South Africa move towards the desired democratic society (Hofmeyer and Hall, 1995).

Much of South Africa's past and present educational thinking and practice has been shaped by Fundamental Pedagogics (Du Plooy et al, 1982; De Jager et al, 1985) which was the underlying educational theory in Christian National Education (CNE) policies (Du Plooy et al, 1982) of the apartheid era in South Africa.

Key features of this education can be identified as the following:

- * education being presented as a "viewless view" of the world (Enslin, 1984:8);
- * education used as a means of "contribut[ing] to the reproduction of the dominant ideology" (Enslin, 1984:8);
- * education being mainly achieved through transmissive teaching styles;
- * students are seen as empty vessels waiting to be filled;
- * recipients are seen as passive with little or no thought given to their ability to critically analyze what is presented to them nor to their ability to generate their own meanings and knowledge;
- * the teacher is viewed as the source of all relevant knowledge (De Jager et al, 1985:81);
- * rote learning is encouraged (Du Plooy et al, 1982:188);
- * solutions to problems are seen to lie solely within the narrow realm of the pure sciences and applied technology;

- * the narrow view of science presented by teachers views science as embodying the best and most acceptable way of understanding the world (Beck, 1992).

This view of education has been identified by Beck (1992), amongst others, as being couched within 'scientism'. This includes the unquestioning belief in rational scientific enquiry and is upheld as the best and often the only accepted means of finding solutions to environmental problems. Linked to this is 'rationalism' which is the belief that knowledge can be seen as being value-free. Stemming from this are the problems associated with 'reductionism'. 'Reductionism' leads people to view environmental problems as being solvable through viewing them as discrete entities, which can be solved without any cognisance being taken of factors such as social interests. This is often encountered together with a technicist approach when solutions are offered to a given problem. This embodies an overriding belief in the ability of a technical solution being the most appropriate when finding solutions. Often there is no consideration taken of the social and economic factors impacting on the problem and hence there is scant recognition of the need to change social and/or economic factors in order to find a solution to the problem (Beck, 1992; Paxton, 1994).

The influence of Fundamental Pedagogics is still found in people's thinking and in the realities of education today. A scrutiny of documents such as **The National Teacher Audit** (Hofmeyer and Hall, 1995) indicates that while the philosophy in which they are located espouses the notion of education for democracy there is a dichotomy between the philosophy and the practice.

This paradox illustrates how deeply entrenched scientism is in the South African education system.

The above is in direct contrast to the calls for the meaningful participation of education in the transformation of South African society as found in the following statements from the NEPI document (NECC, 1992) National Education Policy Investigation: Curriculum.

The following are some proposed aspects which may be included in the broad aims of education:

... [to] reflect the norms and values of non-racial, non-sexist, and democratic society and [that] which is relevant to ... the needs of the individual as well as the social and economic needs of society ...

... general education integrating academic and vocational skills which will prepare individuals to adapt to the needs of a changing and dynamic economy and will ensure equality of opportunity ...

... the development of a national democratic culture which allows for cultural and regional diversity ...

It is within this recognition and understanding of the predominant educational practice of the past and also to an extent of the present that education in South Africa must move forward.

Critical educational issues which need to be addressed in the South African context have also highlighted the crucial need for teacher education to be transformed.

Hence, as we grapple in South Africa, during this period of transition, towards finding democratic solutions it may be valuable to consider thinking about teacher education elsewhere in the world.

2.3 CURRENT TRENDS IN TEACHER EDUCATION

In looking at current thinking in teacher education and the call for a democratic society in South Africa, the following areas are highlighted (Zeichner, 1993:5):

1. The importance of theory and its relationship to practice.
2. The importance of the development of the various forms of knowledge by teachers.
3. The enabling of teachers to be critical and reflective learners and teachers.
4. The empowerment of teachers as agents of social change and as facilitators towards achieving a truly democratic society.

Criticism has been levelled at many teacher educational institutions throughout the world for "leaving teachers unprepared to face the messy complexity of educational problems" (Alarcao and Moreira, 1993:31). Much of teacher education has been in the form of "recipes" and "models" formulated by outsiders (Dewey 1916:199 in Hlebowitsh and Tellez 1993:45).

Zeichner (1993:13) highlighted the following four problem areas which he saw as undermining the potential for real teacher development:

1. A focus on helping teachers to better replicate practices suggested by research conducted by others and a neglect of the theories and expertise embedded in their own and other teachers' practices.
2. A means-end thinking which limits the substance of teachers' reflections to technical questions of teaching techniques and internal classroom organisation and a neglect of questions of curriculum.
3. Facilitating teachers' reflections about their own teaching while ignoring the

social context in which teaching takes place.

4. An emphasis on helping teachers to reflect individuality.

Even though Zeichner (1993) was reflecting on the American situation, many links can be made with the current South African situation in teacher education as one considers the following aspects.

1. The importance of theory and its relationship to practice

Barrow (1990) asserts the critical study of the theories of others and the encouragement of students to carry out their own theorising in a disciplined and informed manner is of vital importance in a teacher education programme. Nance and Fawns (1993:167) are in agreement with Barrow and emphasise that through the understanding of theory, students are able to understand the connection between theory and learning and "to judge new theories needed to cope with new situations".

In this regard teacher-educators should make theory accessible for the students by revealing the relevance of the theory to everyday situations experienced by the students; or by the students being able to make sense of the ideas through relevant case studies and/or through the exploration of their own experiences (Barrow, 1990:314) during observation and practical sessions.

Zeichner (1993) states that the relationship between theory and practice should be seen as a dialogic one in which the experiences and thoughts related to practice and that of the theory inform each other in a critically constructive manner.

Students would then be able to assess the value of specific theories and begin to form or further develop their own theories. This would enable the students to own their own sets of beliefs, develop their theories and move away from the concept of their education being

a technical procedure predetermined by outsiders (Zeichner, 1993). He refers to this as "knowledge in action" which he believes needs to be recognised and used to contribute to the "knowledge base for teaching". (Zeichner, 1993:9)

2. The importance of the development of the various forms of knowledge by teachers

During much of the researcher's education and professional career the greater emphasis has been on the acquisition of factual and procedural knowledge. Little emphasis has ever been given to the development of declarative knowledge and related skills. The value of personal and contextual knowledge was not afforded any great value by her past educators especially with regard to its value in educating students. This has primarily been developed only through subsequent teaching experience. This "craft knowledge" (Zeichner, 1993:6) of the teachers needs to be developed and seen as valuable and afforded a rightful place in teacher education (Lytle and Cochran, 1990 in Zeichner, 1993).

The emphasis on factual knowledge in most of South Africa's education has had a profound influence on the type of knowledge that is seen as valuable in teacher education, and the virtual ignoring of other types as if they are of little importance in the building up of the student teacher's ability to truly educate students. Rote learning and the emphasis on results restricted much of teachers' preparation to the teaching of procedural and factual knowledge, leaving the other vital knowledge forms out. Many of these types of knowledge and related skills need to be identified and verbalised by teachers in order for them to be acquired, tested, honed and used. Knowledge should no longer be seen nor presented as something that can be transferred from one situation another. The student-teacher needs to be able to deconstruct and then be able to rebuild knowledge according to the situation being experienced. This has been referred to as "cognitive flexibility" in which teachers are able to cope successfully with new situations (Alarcao and Moreira, 1993:31) by being able to use their knowledge and skills flexibly.

Similarly, Alarcao and Moreira (1993) state that this type of approach to knowledge would

enable the student-teachers to develop a flexible approach to any situation they might come across. This type of approach would demand that the teachers develop the skills to be able to assess the needs of the situation, to enable students to gain access to creating knowledge, to act accordingly and then to critically assess their own and the students' actions in terms of communication effectiveness and the value of the lesson. Self-evaluation in this and other respects by the teacher is an important skill for them to learn (Alarco and Moreira, 1993).

Hence, as later observed by Alarcao and Moreira (1993:36):

... students learning teaching have to go through a series of inferences, observations, and tests to get information about the process of learning and teaching. This involves being prepared to analyze the data which are presented to them according to the context of its occurrence, comprehend it in its novelty and ecology and to respond to it accordingly.

The building up of the various types of knowledge and the ability of teachers to utilise them effectively in their practice should be seen by the student-teachers as something that needs to be continued during practice so that they "make schools places where teacher-learning is valued as much as student learning ..." (Zeichner, 1993:6). Teachers must begin to see themselves as having the potential and ability to contribute to the building up of educational thought through taking responsibility for their own continued professional development (Zeichner, 1993).

3. The enabling of teachers to be critical and reflective learners and teachers

Zeichner (1993) called for the focus in teacher education away from individual self-focus during reflection towards social and group reflection which he believes is the only real way meaningful growth can occur in teachers. Through this activity, beliefs, values and

practice will be challenged by others and the individual concerned. The social context then becomes an important aspect of reflective thinking and consequently practice and its surrounding structures would also come under critical scrutiny.

This could only be truly effective if the students are in a mutually supportive and safe environment in which they are secure enough with their fellow students in order to handle both self- and mutual-acceptance so that they can critically reflect and assess their and others' realities (Breen, 1992).

Breen (1992) continues that this type of situation would be more beneficial if the teacher-educators are familiar with their students' own reality. This he believes would facilitate a more meaningful interaction between the students and between the educator and the students.

The sharing and understanding of realities might also be explicitly reciprocated by the educator especially if it is taken for granted that the educator takes part in the critical reflection experiences of the group especially, if the educator was to act both as a facilitator and as a learner. Thus putting into practice the theory which would underlie the teacher education course itself.

Within a reflective-based model for teacher education the following are some areas of which cognisance should be taken (Breen, 1992:36):

1. The new course should be about learning rather than teaching
- learning about ourselves as teachers, mathematicians and human beings.
2. Wherever possible we should engage with each other in
social situations - playing games, learning games, working in
constantly shifting groups - so that we try to build up trust.

3. An increase in energy is welcomed and indeed actively sought. Activities are selected to engage students in some form of conflict so that different realities can be explored.
4. We should try to refine the ability to observe ourselves in different situations, to consider the possibility of acting differently and of creating opportunities to test these possibilities in a supportive environment.
5. Most activities/discussions should return to the self. What do I think? How did I react? Why? What else is possible?

Breen (1992:36) recognises "the power of tension and energy as a means of ensuring involvement and discussion".

Teacher-educators are warned by Alarcao and Moreira (1993) that reflection must not be done in a vacuum, but within a context in which the students can make meaning of the situation or practice. However, in order to do this the student-teachers need to have the knowledge and skills to be able to benefit from the learning situation.

There should also be room for the students to be able to make their own decisions about their learning, their needs and what they perceive as appropriate to their situation as learner-teachers (Breen, 1992).

Within the above, "research-based knowledge and learning by reflecting on action" (Alarcao and Moreira, 1993:32) may be emphasised if the aim of the course was to enable teachers to become critical and reflective practitioners.

4. The empowerment of teachers as agents of social change and the achievement of a truly democratic society

It is suggested (Hlebowitsh and Tèllez 1993, Zeichner, 1993) that teachers need to move away from pre-packaged lesson strategies and the deterministic process-orientated view of the learning to teach. They need to follow many other teacher-educators who view their work as critically important in the fostering of societal equity and justice (Hlebowitsh and Tèllez 1993, Zeichner 1993). Thus, teacher-educators also need to emphasise issues such as race, class and gender (Hlebowitsh and Tèllez 1993) as being central to their own concerns during training and beyond to their everyday practices.

Efforts need to be made by teacher-educators to negotiate socio-civic territory in teacher education which would enable teachers to become agents of critical societal transmission and societal transformation (Hlebowitsh and Tèllez 1993).

In this light it must be remembered that teaching should never be seen as a neutral activity, and that through any action or verbal interaction in the classroom the teacher is taking a political stand (Zeichner, 1993). Therefore there is a great need for teachers to be able to "extend their enquiries to consider how their actions challenge and support the access to and achievement of a high quality education by all students" (Zeichner, 1993:17). Clear thought needs to be formulated about who will also benefit from current teacher empowerment initiatives and the types of teaching approaches being used by the teachers (Zeichner, 1993). In this vein Zeichner (1993) warns against teacher self-knowledge and professional development occurring at the expense of the students and the broader societal issues.

Hlebowitsh and Tèllez (1993) highlight the need for wider questions to be raised about school experiences which would enable the students to unify their intellectual abilities and their sense of morality and thereby becoming "smart and good" (Hlebowitsh and Tèllez 1993:50). They assert that this would enable the student-teachers through the process of

reflective thinking to expand and alter the idea of teaching to facilitate meaningful academic and social advancement (Hlebowitsh and Tèllez, 1993). This may be linked to Schor's statement (1986:422 in Hlebowitsh and Tèllez 1993:50) when he declared

... teaching should offer an illumination of reality which helps
all of us grasp the social limits that constrain us.

Teachers need to know that any actions will have consequences on others (Zeichner, 1993) and on themselves, and they need to understand this and take it into consideration when thinking and ultimately acting.

It should also be remembered that in the move to empower teachers and restructure the school environment the important question about "the purposes of education in a democratic society sometimes gets lost. Teacher education development becomes an end in itself unconnected to broader purposes" (Zeichner, 1993:14).

If teachers are to be seen as important players in the achievement of democracy and empowerment, they must have the skills and be given the space to develop and build on their power in the school arena. They must experience it in their training and place of work. If this does not occur it is questionable whether teachers can realistically be expected to provide opportunities for empowering others.

However, in order to facilitate the above, ideas on teacher education need to be located within a particular paradigm which will help inform both the theory and practice underpinning these courses.

Current thinking in Environmental Education has led to the development of a New Environmental Paradigm (Fien, 1993a).

This paradigm, unlike others in this genre, has a socially critical orientation which has

been evident in the above exploration teacher education. This paradigm as interpreted by Fien (1993a) has a strong orientation towards facilitating the empowerment of people and strives for the ideals of democracy.

Hence, the New Environmental Paradigm will be explored as a possible framework for teacher education and also as a guide for the introduction of Environmental Education into Geographical Education.

2.4 THE NEW ENVIRONMENTAL PARADIGM

According to Fien (1993a:24) the New Environmental Paradigm is "an emerging ideology" which is contesting the assumptions and beliefs of the Dominant Social Paradigm. He states that the Dominant Social Paradigm

... refers to the world view or ideology which has become entrenched as a result of the structures of power in a society. It is diffused through society by hegemonic values, institutions and social processes and, in turn, is maintained and reproduced by them.

And according to Cotgrove (1982:27 in Fien, 1993a:23) this paradigm

... serves to legitimate and justify institutions and practices ... it is the taken-for-granted common sensical view which usually determines the outcome of debates on environmental issues

Table 2.1. which follows presents the contrasting values and beliefs between the Dominant Social Paradigm and those of the New Environmental Paradigm as presented by Fien (1993a:25).

Table 2.1 The values and beliefs of the Dominant Social Paradigm and the New Environmental Paradigm.

Dominant Social Paradigm	New Environmental Paradigm
1. Low valuation on nature	1. High valuation on nature
* use of nature to produce goods; * human domination over nature; * economic growth over environmental protection	* nature for its own sake; worshipful love of nature; * holistic relationship between humans and nature; * environmental protection over economic growth.
2. Restricted compassion for those near and dear	2. Generalised compassion toward
* exploitation of other species for human needs; * a lack of concern for other people; * concern for this generation only.	* other species; * other peoples; * other generations.
3. Risk acceptable to maximise wealth	3. Careful planing to avoid risk
* science and technology a great boon to humans; * swift development of nuclear power; * emphasis on hard technology; * de-emphasis on regulation; use of the market; individual responsibility for risk.	* science and technology not always good; * halt to further development of nuclear power; * development and use of soft technology; * government regulation to protect nature and humans.
4. No limits to growth	4. Limits to growth
* no resource shortages; * no problem with population; * production and consumption;	* resource shortages; * increased needs of an exploding population; * conservation.

Dominant Social Paradigm	New Environmental Paradigm
5. Present society satisfactory	5. Completely new society needed
* no serious damage to nature by humans; * hierarchy and efficiency; * emphasis on market; * competition; * complex and fast lifestyles; * emphasis on jobs for economic needs.	* serious damage by humans to nature and themselves; * openness and participation; * emphasis on public goods; * cooperation; * simple lifestyles; * emphasis on worker satisfaction.
6. Current politics satisfactory	6. New politics needed
* determination by experts; * emphasis on market control; * opposition to direct action; use of normal channels; * left-right axis; argument over ownership of means of production.	* consultation and participation; * emphasis on foresight and planning; * willingness to use direct action; * new party structure along a new axis.

(Adapted from Fien, 1993a:25)

Fien (1993a) viewed the New Environmental Paradigm as presenting a fundamentally alternative view of the environment. There is a dramatic shift from a people-centred view of the environment to one in which people and the environment are seen on an equal footing. All actions taken by people should be undertaken with this in mind.

A problem exists as how to use the ideas and beliefs found in the New Environmental Paradigm to bring about social change (Fien, 1993a).

Current theory indicates that an approach to Environmental Education within a socially critical orientation may suggest the way to ensure the transformation of values and beliefs of society to one which will embody the ideas contained within the New Environmental Paradigm.

2.5 A SOCIALLY CRITICAL ORIENTATION IN EDUCATION

This is a further move away from the aims of Fundamental Pedagogics as protagonists of socially critical education believe schools and other educational institutions can play a role in social transformation with the end goal of achieving, amongst others, a democratic society (Fien, 1993a:22).

Some protagonists of this orientation believe that although the development of the individual is an important focus, this is not the sole focus. It is believed that there is a focus on the individual, but within a group in which the inequalities of the world are critically and reflectively assessed from a social perspective (Kemmis, Cole and Suggett, 1983 in Fien, 1993a:22).

The main ideas found within this orientation can be found in Table 2.2. Further discussion of this area may be found in the discussion of education for the environment (Chapter 2.7)

Table 2.2 Major characteristics of the socially critical orientation in education

Social role of the school	School and society reflect one another; school may help in overcoming social inequalities and preparing students for participation in social, political, economic and environmental activities, with a stress on socially, morally and politically justifiable conflict resolution.
Desired student outcomes	A critical and constructive co-participant in society who sees self-actualization in a social context, who pursues the 'true and the good' in transforming and being transformed by society, not purely individualistically.
Teacher's role	A project organiser and resource person, organising critical and collaborative projects in negotiation with students and community.

Student learning role	A co-learner, using available knowledge through interaction with others in socially significant tasks of critiques or collaborative social action.
Teacher-student relationship	Teacher is a coordinator with emancipatory aims; involves students in negotiation about common tasks and projects; emphasises commonality of concerns and works through conflicts of interests in terms of social justice and ecological sustainability.
Knowledge	Dialectical: an interplay of subjective views of the world and the historical and cultural frameworks in which they are located. Sees knowledge as socially constructed. Thus, knowledge is not easily specified: it has its meaning in actions or projects whose significance is in specific contexts. It places a central role of knowledge in social action: the emancipatory interests of knowledge. Mental and manual aspects of knowing are integrated in group work.
Learning theory	Social constructivist-interactionist; sees the learner as reconstructing a social reality that is socially constructed and subject to reconstruction through historical and political processes.
Assessment	Negotiated assessment, peer assessment and/or work-based assessment within a framework of negotiated requirements for successful completion of work; teacher and co-learners look for evidence of contribution to action and critical response to social-political context of school, community and environment.

(Adapted from Fien, 1993a:20-21)

Much of the above may be linked to the calls for learner empowerment through critical reflection; achieving democracy through participation, and the identification and use of appropriate learning theories as identified in Chapter 2.2 and 2.3.

The question is then raised: how are educationists able to achieve the ideas of the New Environmental Paradigm within a socially critical orientation?

Much depends on how knowledge is perceived. Reference has already been made to knowledge being seen as "socially constructed". (See Table 2.3) Some of current

education thought with regards to the nature of knowledge lies within constructivist thinking.

A discussion now follows of the characteristics of social constructivism and its possible role in facilitating achievement of identified desired changes in education in South Africa.

2.6 SOCIAL CONSTRUCTIVISM

According to Ernest (1993:3 in Taylor, 1994:22) social constructivism

... regards individual subjects and the realm of the social as indissolvably connected. Human subjects are formed through their interactions with each other.

However, in order to fully understand the above an exploration of constructivism is needed. Table 2.3 illustrates a comparison between the assumptions of objectivism which is the dominant view of knowledge within the Dominant Social Paradigm (Chapter 2.4) and constructivism.

Table 2.3 Assumptions Inherent in Objectivism and Constructivism.

Objectivism	Constructivism
Reality is external to the knower.	Reality is determined by the knower.
Structure can be modelled.	Structure relies on experience/interpretations.
Thought is disembodied; independent of human experience.	Thought is embodied; grows out of bodily experience.
Thought reflects external reality.	Thought grows out of physical and social experience.
Meaning is external to the understander.	Meaning is determined by the understander.
Symbols represent reality.	Symbols are tools for constructing reality.

Source: Klein & Merritt (1994:15 adapted from Jonassen, 1991b:9)

In order to further explicate the assumptions of constructivism the following points may be considered:

1. Cognitive conflict and curiosity are two ways which encourage learners to learn.
2. Peer interaction is a vital element in producing cognitive restructuring.
3. Reflection is the principal catalyst which prompts constructivist restructuring.
4. Numbers 1, 2 and 3 are seen as cyclical.
5. The learner is actively involved in reconstructing his ideas from personal experience.
6. This process empowers the learner to be in control of his learning. (Adapted from Pyle, 1994:41)

No claim is made that the above are new ideas to those in the educational field. However, what constructivist thinking attempts to do is to bring these ideas together in order to formulate a new philosophy of teaching (Klein & Merritt, 1994:16). The value not only lies in "enhancing the student's personal understandings" but it also helps to improve teaching practice through the teacher "being more able to communicate in terms of the student's ideas". This, together with "the promotion of a general awareness of the constructed and tentative nature of these beliefs" can lead to the students' ideas changing through the possible reconstruction of their ideas (Robertson, 1994) through joint critical and reflective analysis.

Further, whether using a constructivist approach for teacher education or school education, according to Robertson (1994:18-19) it has the following potential for the practice of Environmental Education:

1. [A]s an initial step and throughout the course, students are encouraged to make explicit their personal understandings of "that which is being discussed". At the outset, then, the individual's beliefs are accepted as relevant to the entire venture.
Student's prior knowledge is important in gaining understanding and facilitating learning.
2. Once explicit, these conceptions can be subject to scrutiny, both by the student-`owner' as well as the instructor. Such a process will benefit the instructor in that he/she will be more likely to `see' the phenomena from the student's perspective and, consequently, be more likely to challenge those beliefs in a manner which makes sense to the student.
3. Following the explication of personal beliefs, the student may develop an increased understanding of them. Thus, education may occur, for example, through the student becoming more aware of reasons for holding a

particular conception as opposed to alternative possibilities.

This may be facilitated through productive group interaction or 'conversations' during which time they ask questions, 'take initiative and risks in attempting to solve the problem ... and validate learning.' (Klein & Merritt, 1994:16). There is sense of ownership of learning.

4. [A] teacher education program in Environmental Education should promote an exploration of the diverse ways in which concepts such as "nature" and "environment" are understood [and] have been understood in the past (Merchant, 1989 in Robertson, 1994:19) as well as the relationship between these understandings and behaviour toward/in the environment ... [thereby] encouraging practitioners to become clearer about their own environmental and educational values, as part of its critical and re-constructive agenda. **Important here would be the critical and reflective exploration of why they hold certain ideas in relation to their experiences of their social and physical world.**

(Bold information are ideas inserted by the researcher.)

Robertson (1994) believes the above are imperative for Environmental Educationists to take cognisance of if they are to successfully fulfil the 'education' part of Environmental Education. He notes the vital lack of Environmental Education's focus on learning theories and the critical exploration or awareness of the various views of knowledge contained in each.

When one examines the characteristics of social constructivism one finds it has a promising role to play in the realisation of the goals of socially critical Environmental Education. This is especially the case if one considers the approach of education **for the environment** (Fien, 1993a) in which people's perceptions of the environment need to be understood in the light of their social reality. After which their emerging understanding needs to be critically analyzed and reflected upon in order to be able to take action

towards change whether it be in their perceptions or of society itself (Chapter 2.7).

An examination now follows of Fien's (1993a) education **for** the environment. This will serve to illustrate a possible approach towards achieving identified educational changes.

2.7 EDUCATION FOR THE ENVIRONMENT

This approach to Environmental Education builds on the approaches of education **in** and **about/through** the environment (Chapter 1). Education **for** the environment has a socially critical orientation with political action goals (Stevenson, 1987:69 in Fien, 1993a:5). The underlying character of this approach is one which challenges the established hegemonic forces in society through the values of the New Environmental Paradigm (Fien, 1993a:5) and there is a belief in the transformative potential of schools. Hence the language of possibility is embraced (Fien, 1993a:10). Maher (1985:25 in Fien, 1993a:9) describes this approach as covering "dangerous knowledge" as it questions the interests and actions of the dominant group.

This approach is often criticised for not being precise about its ultimate goals (Sterling, 1990b:1-2 in Fien, 1993a:37). This approach largely involves the unpacking and critical analysis of environmental issues with the ultimate aim of bringing about social change. There is a lack of specific 'answers' being proposed. However, it may be argued that there cannot be only one answer to be found given the diversity of situations and factors encountered. The researcher believes if the general aims of sustainability are to be achieved then this approach does not need to present specific political and social models. These will vary from situation to situation.

Five defining characteristics of education **for** environment as presented by Fien (1993a:12) will be explored in the boxes:

1. Education **for** the environment emphasises the development of a critical environmental consciousness based upon:
 - a. a holistic view of the environment as a totality of the interdependent relationship between natural and social systems;
 - b. a historical perspective on current and future environmental issues; and
 - c. the study of the causes and effects of environmental problems, through the examination of:
 - i. the relationship between ideology, economy and technology, and
 - ii. the linkages between local, regional, national and global economics and governments.

This approach is overtly ideological as in all human action it is not value-free. However, due to its emphasis on critical self-analysis there is the space to view the socially critical underpinnings of this approach in a critical light.

There is a conscious drive for the emancipation of the students in that there is the desire to free them from ignorance, thereby enabling them to determine their plans and actions according to their own identified needs (Fien, 1993b). This is not to say these needs are acquired in a self-centred manner as decisions are informed by the underlying recognition that, whatever action is taken, it must ensure a sustainable future for all.

2. Education **for** the environment emphasises the development of critical thinking and problem-solving through a variety of practical and interdisciplinary learning experiences which focus on real-world problems and involve the study of a wide range of sources and types of information.

Importantly the students are not seen to be equipped for solving problems in the future only once they leave school and enter the workplace, **but** that "education must engage society and social structures immediately ..." (Kemmis, Cole and Suggett, 1983:9 in Fien, 1993a:22). These authors continued that the emphasis is also not on the individual developing the ability to take action, but that it is also a group process.

Hence, as Fien (1993a:23) noted, school and society have a two-way relationship in which "formal education is both shaped by and responsive to the needs of society and, in turn, helps to shape the society of which schools are a part".

The above leads to the political facet of education **for** the environment whose role can be understood through the following five concepts and associated sets of questions:

1. Resources and production: what resources are being obtained, used, produced, argued about or mobilised? For what purposes are they being used, by whom and why?
2. Distribution and redistribution: how are resources currently distributed and redistributed, and according to what principles and methods?
3. Power and decision making: how are decisions taken about such matters, by whom and according to what procedures and rules? That is, what is the structure of the power, and how is it distributed?
4. Social organisation: what is the social organisation associated with this structure of power? For instance, is it composed of sharply defined and unequal groups, which are hierarchically arranged in relation to both the distribution of resources and power?
5. Culture and ideology: in what ways do culture and ideology reflect and influence all this?
(Leftwich, 1983: 26-27 in Fien, 1993a:31).

Thus, through the critical engagement of students with the above questions, they should come to understand that they are part of the problem and solution associated with each.

3. Education **for** the environment emphasises the development of an environmental ethic based upon sensitivity and concern for environmental quality.

Education **for** environment is not solely interested in achieving changes in the bigger structures of society but recognises that the transformation of individual's perception of the environment also has to be challenged.

4. Education **for** the environment emphasises the development of the understanding, attitudes and skills of political literacy which promote participation in a variety of forms of social action to help improve and maintain environmental quality.

Education **for** the environment according to Bennet (1993:90) promotes an "informed action" where personal response is informed by a critical understanding of the intricacies inherent in all environmental problems. Bennet (1993:90) notes that motivation to act is linked to values education and she quoted Huckle (1983:109) to substantiate this claim:

By encouraging values awareness, moral reasoning and development, empathy, and sound behaviour, values education can help pupils to adopt a more critical attitude to the world in which they live.

An emphasis is on the power of the average individual to bring about change, and therefore the answer to problems is no longer seen to be only in the hands of the 'experts'. The individual has a richness of contextual knowledge and power which an outsider does not always have.

5. Education **for** the environment requires teaching strategies that are consistent with its goals.

Methods are used which encourage approaches such as interactive team teaching which are interdisciplinary and innovative in nature. They should be participative with the focus on

the process and not on the content. Through these approaches students are encouraged to evaluate contrasting positions, clarify their own views, develop a willingness to explore through open debate and then to act (Fien, 1993a). It must be remembered:

Either a teaching activity serves to integrate children into the current social order or it provides children with the knowledge, attitude and skills to deal critically and creatively in order to improve it ... one cannot fully understand the significance or consequences of an activity unless one also considers that activity in the light of the more general issues of social continuity and change.

(Grant and Zeichner, 1984:15 in Fien, 1993a:15)

These strategies need to encourage the understanding of agency and its role in establishing bias (Bennet, 1993) in actions or in presenting a biased perspective of an environmental problem, and what forces are to blame.

Teachers should not shy away from contentious issues (Bennet, 1993) as this is where the most potential for societal change lies. It is in this very contention that lies the seed for critical engagement by the pupils. Often a local issue arises due to different groups of society trying to protect their interests. This type of issue is more likely to promote a personal response which is the type of context needed for the development of a critical and reflective response by those involved as advocated by education for the environment. Hence as indicated by Bennet (1993:94):

The ability to clarify one's personal values and express clear ideological positions on issues, as well as the ability to empathise with or challenge the views of others [and oneself], increases people's ability to be actively involved in environmental issues.

Links may be drawn between education for the environment and those presented with

regard to teacher education. These may include calls for emancipation of both the teacher and learner, critical reflection on the whole educational experience, the political nature of education, the space within schools for bringing about change, relevancy of the school experience to wider social and economic activities, and the need for the learner to develop empathy for the world they live in, amongst others. Education **for** the environment provides the focus for education: the need to achieve sustainability.

The threads pertaining to the identified needs of South African education, teacher education and those of the New Environmental Paradigm will now be explored through current examples of socially critical Environmental Education in Australia and in South Africa.

2.8 TOWARDS ACHIEVING CHANGE THROUGH SOCIALLY CRITICAL ENVIRONMENTAL EDUCATION

One would question why socially critical Environmental Education (Huckle, 1991, Fien, 1993a) is needed and can it work?

Its value lies in its underlying drive to seek societal transformation as outlined in the New Environmental Paradigm and in the recognition that real change will take place according to Paxton (1994:12) if educators -

... **equip** societies and communities to **reflect critically** on the structures and processes which perpetuate ... environmental problems, and to **meaningfully address** them (Researcher's emphasis).

The basis of the view of socially critical Environmental Education is that of critical theory (Gibson, 1986) which has been criticised for its lack of focus on current conditions and how society may be changed even though it has emphasised reflective knowledge (Nielson, 1992 in Paxton, 1994).

However, environmental educators have developed means of overcoming this disadvantage in projects such as the one described by Greenall Gough and Robottom (1993) in which pupils from different schools embarked on water study programmes in their local environment. Greenall Gough and Robottom (1993:313) point out the following as some outcomes which resulted when a socially critical Environmental Education orientation was used:

... work of participating schools stimulated social and environmental change: the schools played a role in changing community consciousness about an instance of human impact on an important aspect of the environment ...

... changes in community consciousness stimulated by activities ... brought about a major distribution of resources aimed at environmental protection ...

... changes in the ways certain sectors of the community related to other sectors of the community ...

... criticism of conventional wisdoms ... [of] the government agency's authority in respect to water management need not and should not be questioned ...

... realisation that individuals can act collectively to shape society ...

An important part of socially critical Environmental Education is reflexivity. Janse van Rensburg (1993a) and O'Donoghue (1993 in Paxton, 1994) view reflexivity as an important component of socially critical Environmental Education. Paxton (1994) highlighted from Beck (1992) the following features of reflexivity:

... the recognition of the value of different epistemologies of forms of knowledge and, second, the dialogue and negotiation between them.

Janse van Rensburg (1993a:5) made the following points with regard to a reflexive approach to Environmental Education:

... [it] engages with the social construction of meaning and the temporal and historical nature of knowledge.

In order to gain an understanding of the use of reflexivity in socially critical Environmental Education see FIGURE 2.1. This figure is an excerpt from Janse van Rensburg (1993b:6) in which she critically reflects on a way she approached the Environmental Education component of the Rhodes HDE course in 1993. Janse van Rensburg (1993b:6) noted that in 1993 students -

...learned much ABOUT the local environment in all its dimensions and ABOUT the principles and practices of EE. This has value, but to stimulate meaningful changes in our pattern of thought and practice in changing environments, education FOR the environment should also allow for collective reflexive action - a combination of action within and critical reflection on socio-historic contexts.

Figure 2.1

.. The Education Department - students and lecturers - work together to develop environmental principles which have meaning in our common and diverse contexts. These principles would be environmental in that they would be co-constructed in the light of perceived historic changes in socio-ecological environments. They will lead to a range of objectives which could be:

to raise students' awareness of the link between consumerism, poverty and environmental degradation;

to equip them to work with large and unruly classes in the context of re-building a culture of learning;

to sensitise students to the needs of second-language speakers

to foster an understanding of the issues adolescents from various socio-cultural backgrounds have to deal with, and so forth.

We would then work in groups to audit processes and philosophies in the HDE course, in the light of these principles. This means that students and lecturers investigate, analyse and evaluate together aspects of the HDE programme, ranging from course content and teaching styles to paper usage and learning styles. In the light of our findings we may want to modify our practices - or the principles we originally constructed.

Through active engagement in such a process - searching for data, describing situations to each other, analysing practices, discussing, evaluating against the demands of changing contexts, and developing new tools and techniques both students and lecturers may renew their thinking about practice. In this way EE could become a motivation for reflexive practice (Beck, 1992) - "the ongoing conversation" for constant consideration of our praxis.

(Underlining done by researcher)

The contents of Figure 2.1. provides an insight as to how a socially critical environmental approach may be undertaken within teacher education and also paves the way for it to be used in a school setting.

What now needs to be done is to explore current geographical thinking in order to find if links exist between teacher education, education for the environment, and current geographical thinking. Ultimately, the purpose is to see whether there is a theoretical basis from which student-teachers could move in order to be able to adopt a socially critical Environmental Education approach to their teaching of Geography.

2.9 CURRENT GEOGRAPHICAL THINKING

The late 1980s saw the emergence of a 'new environmentalism' and it was hailed by Preston-Whyte (1982:2) as being a "unifying paradigm" as it called for the unifying of the physical and human geographies under a common umbrella of environmentalism. Following this, Hall (1984) presented his 'ecological perspective' which saw common ground being found between the rationalistic, empiricist and humanistic approaches in Geography. Subsequent to that, Knill (1991) presented his views on the 'green paradigm' in which he saw people as an integral part of a complex system, and he saw no "justification nor logic in exploiting the system for human benefit to the detriment of that system" (Knill, 1991:57).

These ideas were being presented during a time when most physical Geography was located and defined within a positivist framework while the human geographers were being accused of being egocentric in their research. This compartmentalisation of geographical thought was reflected in the way Geography was presented in school curricula, and in the way teachers were being taught to perceive and present geographical knowledge during their career preparation.

Within the ecological perspective this division was viewed as unnatural and no longer acceptable. There was a drive to join the objective thinking of physical Geography with the subjective thinking of humanism under the umbrella of an ecological paradigm. This was done in a largely uncritical manner where the perceived 'relevant and good parts' of each were assimilated into a new approach to the teaching of Geography. These two

'parts' of Geography were integrated. However, to some extent they were seen as two different and separate components of one 'Geography ecosystem'.

The ecological paradigm called for the re-orientation of geographical enquiry to focus on the interaction of man with the environment. It views the role of Geography as a discipline **with** and **in** the environment as it focuses on the impact of the cultural environment on the biophysical and their mutual interdependence.

What has happened in much of the Geography located within the ecological perspective is that it has been concerned with the production of knowledge. This knowledge is sought from the view of gaining technical insight into geographical phenomena and is seen as a valuable means of predicting, controlling and using environmental phenomena. It was also seen as a means of finding solutions to problems that may arise from the interaction of people with the landscape. Hence, there is a managerial interest (Unwin, 1992). There is little or no problematising of environmental issues and there is generally a narrow focus on process-orientated approaches within the above framework. A problem is also that geographical concepts are still seen as 'out there' and taught and learnt in that manner. It is suggested by Unwin (1992) that the teaching of Geography within the ecological perspective is still being taught within the framework of modernity.

The environment is not seen as a social construct or image (Unwin, 1992:191) which gains validity and meaning through people actively and continuously reconstructing their understanding. The subjectiveness and experiences of people are not seen as relevant in how it influences their perceptions of their environment.

This has led Unwin (1992:188) to call for the "forging of a new identity for the discipline, firmly situating it within the contemporary society of which it is part", and he believes if this is not done the current thinking in Geography will be "instrumental in preventing more geographers from tackling the central issues of environmental concern in contemporary society".

Unwin (1992) has made the important recognition of the need for Geography to reflect and critically interact with the changes occurring in society. And as is pointed out by Huckle (1994b) much of current Geography and Geography teaching is acting as one of the means by which society is controlled and maintained as a product of modernity in the interests of the ruling group. Thus, within critical Geography there is a call for research to commit itself to unravel and reveal the current character of our society to the people, thereby, enabling people to change it if they wish. Unwin (1992) notes that if there is to be any commitment to change in society there must be a recognition that current conditions are not acceptable. Critical Geography should therefore be seen as "a message of social action" (Unwin, 1992:210) through which

... emancipation rather than conformation ... [will] provid[e]
students with an opportunity to discover their own truths, and
their own ways of changing their social and economic
conditions. It is about making education an exciting and
enabling experience, rather than a chore to be undertaken
according to externally formulated principles. (Unwin,
1992:206)

If one examines the thinking of Unwin (1992) and Huckle (1994) many similarities may be drawn with that of socially critical Environmental Education contained within the Environmental Paradigm of Fien (1993a). There is the identified need to break away from all that which is embodied in modernism. There is also the common call for the learners to make sense of their own meanings when interacting with the environment. This reflects the ideas of social constructivism Fien (1993a) identified as an important component for effective practice within socially critical Environmental Education. Unwin also acknowledged the need for Geography to critically interact with society and provide opportunities for learners to critically reflect on society and its relationship to the physical environment - yet another link with the socially critical orientation of current Environmental Education thinking. There is also the common focus on the cultural and

the physical components of the environment.

However, if one looks at the reality of current teacher education and the teaching of Geography at school level, there is an undeniable gap between the practice of Geography within the ecological perspective identified by Hall (1984) and that presented by socially critical theorists within Geography and Environmental Education.

Hence, if we are to ask our teachers to make this quantum leap from the known and accepted Geography which is supported by the structures of modernity into an unknown and often emerging realm of socially critical education we need to provide them with the appropriate scaffolding.

It is the aim of this research to illuminate some of the problems faced by student-teachers as they grapple with the ideas and the practice of implementing a socially critical environmental approach to Geography education. Aspects which may be of relevance are to question if they understand what socially critical Environmental Education entails; what is it trying to achieve; whether they have accepted it as a relevant and worthwhile approach; are they motivated to use it, and finally do they have the ability to implement it through the use of a variety of relevant teaching methodologies?

Given the need to understand the perceptions of the research participants as highlighted by social constructivism (Chapter 2.6.) an exploration of the research context will now be presented.

2.10 THE ROAD AHEAD

The current educational situation in South Africa has been largely shaped by the beliefs of Fundamental Pedagogics found within Christian National Education. This has created an educational ethos which does not encourage fundamental change in South African society. Calls have been made for educational institutions to facilitate change towards a democratic

and sustainable society.

A possible path which may be taken is an education which has its foundations in socially critical Environmental Education as has been suggested in this chapter. It is believed by the researcher that this type of education can fulfil the role of bringing about the desired changes in both teacher education and the teaching of learners at school level.

Overseas views on teacher education echo the same calls as those found in South Africa for democracy. These were discussed with special reference to the following:

1. The importance of theory and its relationship to practice.
2. The importance of the development of the various forms of knowledge by teachers.
3. The enabling of teachers to be critical and reflective learners and teachers.
4. The empowerment of teachers as agents of social change and as facilitators towards achieving a truly democratic society (Zeichner, 1993:5).

Links between this and the New Environmental Education Paradigm were shown to be found within the broad concept of democracy which is extended to the larger concept of environmental rights.

In this chapter it was illustrated through the exploration of **socially critical education** within the philosophy of the **New Environmental Paradigm** linked to the **approach of education for the environment** that there is a strong case for this type of education facilitating **both a democratic society** and a **sustainable world ethic** amongst **South Africans**. A vehicle was identified in Geography education through the illustration of some common philosophical underpinnings.

There is therefore a strong theoretical framework and a practical approach available to educationists of all levels to take on board and to apply in order to facilitate the achievement of a sustainable society in which democracy is a fundamental pillar.

CHAPTER 3 : METHODOLOGY

3.1 INTRODUCTION

The goal of this research was:

To explore student-teachers' perspectives of the role and value of Environmental Education in secondary school Geography.

The research question of this thesis focused on the lack of a coherent and suitable model for the effective incorporation of Environmental Education into Geography method during the professional preparation of teachers. In order to accomplish the development of such a model, sense needed to be gained of the context and the participants within it.

This understanding led to the identification of Social Constructivism (Chapter 2) as a relevant and valuable means to gain insights into the participants' initial understanding. Given the need to understand the 'meaning-making' of individuals and the problem and goals of this research, the methodology adopted needed to:

1. Be participatory, thereby enabling the participants to make sense of their context.
2. Facilitate the interpretation of the participants' and the researcher's constructs.
3. Promote and enable critical reflection on the part the research participants.
4. Be flexible enough for a variety of techniques to enhance the analysis of the rich data required.
5. Enable an acceptable level of validity to be achieved.

Within the above parameters, the context and location of the research problem and the research location (Chapter 4) the most appropriate methodology was considered to be within interpretative research.

The sources from which the data originated is presented in the following manner:

Name of participant/lecturer : Emily

Source : interview

(E I 2)

Number of source : interview two

This chapter presents and analyses the following:

3.2 The Interpretative Paradigm

3.3 Data-collecting techniques

3.4 Limitations of the research

3.5 Conclusions

3.2 THE INTERPRETATIVE PARADIGM

Where positivism strives for objectivity the interpretative paradigm acknowledges and accepts the subjectivity of all knowledge (Cantrell, 1993).

Knowledge in this paradigm is viewed as context specific and individually bound.

Knowledge is seen as value-laden.

There is the recognition that if one is to try to understand the meaning a person attaches to phenomena, one needs to understand the person's prior knowledge, their values, beliefs and economic position. According to Cantrell (1993:3) interpretative research focuses on the exploration of the "subjective perceptions of the individual".

If one accepts the subjectiveness of knowledge, the researcher's interpretation of the presented knowledge must be viewed as an interpretation of what became an "agreed upon" reality for her and the research participants within the context of the research (Smith, 1989:171 in Cantrell, 1993:3).

In order to offer the reader a 'true' reflection of this reality the researcher must enter into a 'conversation' with the participants. The 'conversation' needs to be purposive according to the needs of the research and there must be an awareness that values are an integral part of the process (Cantrell, 1993).

As this research was based on such a 'conversation', the research developed and changed as the 'conversation' emerged. Inherent in this type of research the research methodology chosen needed to be flexible. It needed to be able to adapt to new aspects as they evolved. Based upon this Lincoln and Guba (1985:225 in Cantrell, 1993:7) argue the "design of a naturalistic inquiry ... cannot be given in advance; it must emerge, develop, unfold".

Viewed positively, these changes "signal movement to a more sophisticated and insightful level of inquiry" (Lincoln and Guba, 1985:229 in Cantrell, 1993). There is a focus on understanding and interpretation.

As this study was situated within the Interpretative Paradigm a 'conversation' needed to be established between the participants and the researcher. (See interviews Chapter 3.) This was done to try and establish a 'true understanding of a given context. The context of this study was both specific to a particular institution and particular group of students over a particular period of time. In this respect this research can be identified as a case study (Bailey, 1978; Labowitz and Hagedorn, 1971) located within the Naturalistic Paradigm.

The major purpose of this study was to describe the insights of the Geography students during their professional preparation. The intent of the study was to make observations

and draw insights about the group being studied on an ongoing basis (Chapter 4).

As the research emerged it became increasingly important to explore the perspectives of the HDE lecturers. The lecturers' perspectives were important as they helped clarify the students' perspectives.

Strengths and weaknesses of case studies

Thomas (1990:7) made the following observations as to the usefulness of case studies.

His comments are of special relevance to the second goal of the research

... it (the case study) is particularly good at shedding light on all aspects of a program and helping to construct a picture of what was attempted and what has been achieved.

Because each case study follows no set design, the scope of the study and the depth to which issues are pursued are at the discretion of the [researcher].

In light of the above the main questions which were asked were "why" and "how". These questions according to Thomas (1990:4) may be seen as appropriate questions for a case study.

Using case study methodology may be problematic for a novice researcher as "there is no list of steps to be followed so each ... has to be tailored to the particular situation" (Thomas, 1990:7). This required much preparation. However, as Thomas points out, "this is the sort of challenge that professionals normally seek [!]".

3.3 DATA COLLECTING TECHNIQUES

Given the interpretative paradigm and the case study framework chosen, it was necessary to identify and critically assess available data-collecting techniques which would enable the researcher to gain access to the thoughts and ideas of the participants. The techniques needed to be functional within a social setting in which first-hand experiences could be encountered.

The techniques also needed to be able to accommodate and reflect the changing nature of the reality of the participants. This included the changing perspectives of the participants and the researcher during the process of the research (Leedy, 1993). Thus the techniques chosen had to have an inherent flexibility which allowed the researcher to explore as the case study unfolded.

Using a variety of techniques would also provide an acceptable degree of reliability and validity as the data was analysed.

Reliability deals "with the replicability and consistency of the methods, conditions and results" (Wiersma, 1986:7).

Within general terms "validity deals with the accurate interpretability of the results (internal validity) and the generalizability of the results (external validity)" (Wiersma, 1986:6). When validity is achieved, constructive and informative insights may be presented, together with some evaluative comments.

In this type of research a high degree of reliability is not sought as it is a case study. Validity of the data presented is of much greater importance.

The following comments by Maxwell (1992:284) are pertinent when understanding validity for research framed within a constructivist epistemology and interpretative methodology.

Firstly he saw validity as being relative -

... because understanding is relative ... it is not possible for an account to be independent of any perspective.

And secondly,

Validity is not an inherent property of a particular method, but pertains to the data, accounts, or conclusions reached by using that method in a particular context for a particular purpose.

In order for this interactive research to be meaningful there needed to be coherence within the material and argument presented. This largely hinged on the validity of the insights made and the reliable use of the techniques employed.

All of the techniques utilised reflect primary sources of data and it was realised that they were not value-free techniques (Cohen and Manion, 1989). Given their informal structure and the fact that they were used in a social setting where both parties' interests come into play, this was especially pertinent with regard to what was said and remains unsaid.

The next section of this chapter outlines the techniques and how they were used.

The following techniques were used:

3.3.1 The researcher, participants and techniques used

3.3.2 Triangulation

3.3.3 Interviews

3.3.4 Workshop with participant observers

3.3.5 Evaluation

3.3.1 The researcher, the participants and techniques used

Within this research the researcher regarded herself as an instrument (Leedy, 1993:141). When she interacted with the participants during the research process she came to a clearer understanding of their perspectives. As her perspectives emerged they informed the research question.

The participants may also be seen in this way as they too were making sense of their course context through the interactive process of the research. They made sense of the interactions and thus helped shape their experiences and perspectives. Hence, both parties consciously and unconsciously perceived, gave meaning and interpreted the significance of the research process and the experiences they had been part of during their course (Leedy, 1993).

The subjectivity of the researcher acting as an instrument within the research process cannot be denied. It has been claimed by Guba and Lincoln (1985) that, despite this drawback, the inherent human ability to adapt to the changing needs of interpretative research outweighs any criticisms of subjectivity.

The potential of a researcher to minimise the effects of subjectivity hinges on her experience in case study research, but also depends on the type and form of the techniques chosen for the research. The choice and complementary nature of the other techniques may function as a means of gaining validity within the data collected and analyzed.

Triangulation was identified as an important technique which would facilitate the attainment of valid analysis of data.

3.3.2 Triangulation

According to Cohen and Manion (1989:296) triangulation may be seen

... as the use of two or more methods of data collection in the study of some aspect of human behaviour.

[In which you attempt to] map out, or explain more fully, the richness and complexity of human behaviour by studying it from more than one standpoint ...

Cohen and Manion (1989:275) noted this method is most appropriate in educational research, given the complexity of the teaching-learning process.

Triangulation (Douglas, 1985; Huysamen, 1994) was used in this case study with the aim of minimising the subjectiveness inherent within the research techniques used for the research. It was understood by the researcher that qualitative techniques should never be viewed as neutral but that "they act as filters through which the environment is selectively experienced" (Smith, 1975:273).

Triangulation in this case study was based on the insights gained from the three interviews with the participants, their written assignment, the workshop and the observations of the participant observers. This served to help corroborate the insights gained from each technique.

3.3.3 Interviews

The interviews were used to form an ongoing dialogue between the researcher and the participants throughout the research process.

Cohen and Manion (1989:271) cite the following from Cannell and Kahn (1968) in order to explain the characteristics of an interview as:

... a two-person conversation initiated by the interviewer for the specific purpose of obtaining research-relevant information, and focused by him on content specified by research objectives of systematic description, prediction, or explanation.

Interviews can range from being very structured formal techniques with a high degree of control being wielded by the researcher, thereby eliciting quantifiable information according to a set schedule. Interviews may also be completely informal where there is no set questionnaire and the interview takes the form of a conversation. Beyond this is the non-directive interview in which the role of the interviewer is subordinate (Cohen and Manion, 1989:271).

From this range two types of interviews were identified as most appropriate for this research. This will be further discussed and reflected upon at a later stage.

The need for full and detailed explanations called for the questions to be mostly open-ended thereby enabling the respondents to qualify their responses and be able to begin to unravel their perspectives for themselves. The individuality of the respondent was allowed to be evident which was important in the development of an understanding of the respondents perspectives (Bailey, 1978).

Some closed-ended questions were used when the questions needed to function as a fact gathering technique or when quantifiable information was needed (Bailey, 1978).

Firstly, the individual informal interview in which the interviewer "simply suggests the general theme of discussion and poses further questions as these come up in the spontaneous development of the interaction between interviewer and the research

participant" (Huysamen, 1994:174).

Secondly, the individual semi-structured interview in which predetermined questions are posed but latitude is given for the exploration of ideas and/or additional ideas to be introduced during the intervention.

The interview technique (Behr, 1983; Sanders and Pinhey, 1983; Cohen and Manion, 1989; Fraenkel and Wallen, 1993) was employed as it lends itself to less prescriptive, more open-ended exploration of the ideas and beliefs of the participants.

An interview guide was used during the interviews.

Interviews with the students

Initially this study involved the use of individual informal interviews (Cohen and Manion, 1989; Cates, 1985; Allan and Skinner (Eds.), 1991) the purpose of which was to explore each participant's understanding of the nature and point of Environmental Education in relation to Geography, at the outset of their course.

Within the **first interview** (Table 3.1) this technique was used firstly to explore each participant's view of the environment from a personal perspective by relating an environmental experience to the researcher which they felt was of the most significance to them.

Secondly, this technique enabled the researcher to tease out and clarify the beliefs and meanings the students (Behr, 1983; Fraenkel and Wallen, 1993) had with regard to the research question. The process enabled the students to construct their own meanings of the areas under discussion. Their opinions, insights and depth of knowledge of Environmental Education, geographical education and the incorporation of an environmental approach into their Geography teaching were explored.

Table 3.1 Initial interview

Main areas to be covered: 1. Can the student identify an environmental experience which stands out the most clearly in his/her mind? - Describe it. - Why was it important? 2. How is the environment conceptualised - personally and as a geographer? - Why do I think the way I do? - Why do I think like this? - What may have influenced my thinking? - Are there any differences? - If so, why? 3. What does the student consider to be the main purpose of education? - Why do you think these aims are important? - How do you think you can convert these aims into skills? 4. What does the student see as the main aims/purpose of geographical education? - Why do you say that? - Why would you teach it? - Why do you say that - where do your ideas come from? 5. What does Environmental Education mean to the student? 6. What then does the student see as the main aims/purpose of Environmental Education?

Individual semi-structured interviews were conducted after the participants attended an Environmental Education programme at Thomas Baines Nature Reserve together with the rest of the HDE class. The purpose of these interviews was to explore their perspectives of Environmental and Geographical Education after this experience (Table 3.2).

Within the second interview the same areas were explored as described in the second aim of the first interview.

Table 3.2 Second interview

Section one:

1. What is your definition of the 'environment'?
2. What is the purpose/point of Environmental Education?
3. What do you see as the nature of Environmental Education?
(What content would you teach?)
4. What do you understand by an environmental approach?

Section two:

1. Where do you see the links between Geography and Environmental Education?
2. Where do you see the links between the aims of Geography and Environmental Education?
3. Where do you see the links between the nature of Geography and Environmental Education?
4. Tell me what you understand by using an environmental approach in Geography teaching.
5. Which areas in Geography do you think best suit the incorporation of Environmental Education?

Section three:

1. What value do you see in an environmental approach?
2. Do you think it is necessary to incorporate an Environmental Education approach into Geography teaching?
3. Do you feel you have basic understanding of what constitutes Environmental Education - is it accessible?
4. Do you truly believe it is of worth in Geography teaching?
5. Would you apply it to your teaching in the future?
6. Why would you apply it to your teaching in the future?

A further aim of this interview was to discover whether their opinions had changed in the areas previously discussed. This was especially important as they had experienced the environmental lecture phase of their course and part of their Geography method course.

Ideas or themes that had been identified by the researcher from the first interview were further explored. Areas from the first interview which needed to be clarified by the researcher were also considered.

The students also had the opportunity to crystallise their ideas as the structure of the interviews afforded them the space to explore and make meanings for themselves through the verbalisation and exploration of the areas with the researcher.

The first two interviews served as a means of comparison between the participants' initial and later perspectives on the research area. They enabled the researcher to begin to form some understanding of the participants' beliefs and understandings with regard to Environmental Education, geographical education and the use of an environmental approach in Geographical Education, and the value they placed on each aspect was important.

The **third individual semi-structured interview** served as a tool for the students to reflect on the course interventions and to explore how they thought and how their thinking had been influenced during the course. During this interview the Environmental Education and Geography method components were the focus. Cognisance was taken of the fact that other components of their HDE course could also have influenced their thinking. They were asked to evaluate the research process (Table 3.3).

Table 3.3 Third interview

Discussion areas:
1. How have the following course interventions influenced your educational thinking, especially with regard to environmental geographical education?
EE lectures
Hobbiton-on-Hogsback Excursion
Thomas Baines Excursion
Geography method
2. Do you have any recommendations for the structure of future interventions?
3. How has your thinking about your future practice been influenced?
4. Let us explore what you have previously said about the nature and purpose of environmental and geographical education.
5. What do you think about the idea of Geography as a means of promoting Environmental Education?
6. Do you think an environmental approach to the teaching of Geography is viable? Any hindrances or promoting factors - possible or real?
7. Could you please indicate what you thought about the manner in which this research was conducted?
Areas to be looked at are the interviews, workshop and the assignment.
Would you have done it differently?
How?
Why?
8. Are there any other areas beyond the classroom where you would use or develop what you have learnt about Environmental Education?

Interviews with the lecturers

A similar type of semi-structured interview format was used with the participants on this occasion (Tables 3.4 & 3.5). The formats of Tables 3.4 and 3.5 are different because after the semi-structured interview with the Geography method lecturer the schedule was changed in order to incorporate new areas which needed to be included which had arisen as a result of the interview with the Geography method lecturer. The lecturers were given

their particular interview schedule before the interview commenced so that they knew what was being highlighted. Therefore, although the schedules appear to be very structured, the interviews took on more of a conversational character.

The lecturers' perspectives on Environmental Education and what constitutes an environmental approach were explored. Their perspectives of their contribution towards the participants' Environmental Education was discussed. The role of these interviews was to enrich the researcher's understanding of the data gained from the participants' interviews, the workshop and their written work.

Table 3.4 Interview with the Geography method lecturer

Broad areas to be covered:

1. What were the aims of your course? What were you hoping to achieve?

This would include the exploration of their vision of teacher education.

2. How did you visualise achieving these aims? The tools or methods used, i.e. how did you go about it?

3. Do you think you were successful in achieving these aims? Explore.

4. Focus was also on the individual's -

Definition of Environmental Education.

What they saw as an environmental approach.

Why introduce an environmental approach to teaching?

Table 3.5 Interview with the Environmental Education lecturer

Broad areas to be covered:

1. How do you see Environmental Education?
2. What were the aims of the Environmental Education component?
3. What type of Environmental Education did you stress in your lectures?
4. What methods did you use in your lectures?
5. Do you think you made EE accessible in your lectures?
6. What was the focus of your lectures?
7. The idea of EE as an approach to teaching - was this covered?
8. Did you emphasise the theoretical and/or practical components of EE?
9. Did you relate the ideas you explored to specific subject areas?
10. Reflections on the excursions.
11. How do you think the students viewed EE?
12. Do you think they valued it as an approach?
13. Do you think they now have the ability to introduce an environmental approach to their teaching subjects?
14. What skills do you think they have acquired?
15. Any further areas you would like to mention with regard to your contribution?
Insights?

The process from data collection to analysis

1. Transcripts were made of the tape-recorded interviews.
2. The data was repeatedly read in order to gain a clearer sense of what was meant by the participants' verbal responses.
3. This enabled themes within the various areas of the research to be identified and organised into a more accessible form.
4. Links between the themes were highlighted and both the participants and the researcher's insights were highlighted.
5. Reflections and conclusions found in the analysis are based on careful interpretation of what the respondents meant or inferred in the information and comments they presented.

The researcher was always aware that this type of qualitative analysis is open to excessive subjectivity (Sanders and Pinhey, 1983) and thus it was undertaken with care.

Reflections on the interview technique

Through explaining the purpose of the interviews it was believed it would facilitate a responsive and richer interaction between the researcher and the participants. The participants needed to feel comfortable enough to express themselves in an uninhibited manner.

Douglas (1985:25) provided insights which helped guide the researcher in this respect:

... (an interview) involves the use of many strategies and tactics of interaction, largely based on an understanding of friendly feelings and intimacy to optimise cooperative, mutual disclosure and a creative search for mutual understanding.

However, interviews are -

... aimed in the long run at maximising cooperation even when some short-run tactical methods, such as confrontations are used (Douglas, 1985:25).

The researcher became increasingly aware that the types, form and content of the questions which were asked were value-laden. She became more aware of this as she conducted further interviews. This was also recognised during the processing of the data.

There was an ongoing tension between control of the research process and the need for flexibility within the process.

In keeping with the type of qualitative data required a verbal face-to-face technique (Behr,

1983) such as an interview was seen as appropriate. It allowed for the unravelling of complex ideas, thereby enabling full and detailed explanations to be obtained.

With regard to the participants' responses they commented they had gained insight into the research area as a direct result of being involved in the interview process. They also said that they found it easier to verbally explain their ideas than to write their ideas down. This highlighted an advantage of this type of research technique. Through the development of trust and mutual respect growth was encouraged both in the participants and the researchers' theoretical thinking and how to apply these ideas in practice.

Emily's initial reaction to the experience of the first interview was one of discomfort as it made her realise that although she had, albeit passionately, taken on the idea of Environmental Education she had not yet critically looked at her ideas about the environment and what the concept of Environmental Education meant to her:

Emily: Sure I know about the environment. I can teach about it. But, why?
(EI3)

The interviews presented a frustrating context for her as she was confronted with her inability to express her ideas. This was especially so as she had believed them to be well-formulated.

Zuki was surprisingly open in her responses:

Zuki : Whatever you are asking me in the interview I'll say whatever I am
thinking and the way I feel. (ZI3)

She viewed the interviews as appropriate methods as they enabled her to freely voice her views on the course she was currently experiencing.

Guy saw the interviews as personally fulfilling exercises as they asked him to try and distinguish between the various components of Environmental and Geography Education. This was something he had not done before.

To facilitate exploration in this type of instance the structure of the interview schedule, questions could be reworked and added to by the interviewer as ideas were presented by the interviewees (Fraenkel and Wallen, 1993). Flexibility was seen as important.

However, this flexibility did present some problems for the researcher. Side-tracking of the researcher occurred when the participants introduced areas of discussion which the researcher felt were not of specific relevance to the research question. This occurred due to the relatively unstructured form of the interviews. If the researcher had had more experience with this type of technique it might have been less of a problem. There were times when the researcher might have been more effective if she had more readily identified areas that needed to be explored in depth as the opportunities were presented during the interview processes.

Another possible problematic area was the relationship between the researcher and the participants. The data may have been influenced by the relative position of authority of the researcher with regard to her level of education, age, sex, race, ethnicity, and personal ability and need for both parties to relate to one another (Bailey, 1978). Similar points may be made about the effects of the respondents on the researcher. The responses therefore need to be interpreted within the context in which they were made (Bailey, 1978).

However, it is not believed that the above points had any significant influence on the research results as the researcher took part in the activities during the excursions to Hobbiton-on-Hogsback and Thomas Baines Nature Reserves with the participants. This helped to establish a more relaxed relationship between the researcher and the participants.

The interviewer gave the questions and the theme guide to the participants during the second and third interviews and it appeared to help them to focus more closely on the area being explored.

A tape-recorder helped to minimise the unconscious selection of data that was presented. This would effect the validity and the analysis of the data. Permission was obtained from the participants to use a tape-recorder.

Transcriptions were made of the interviews and then analysis was done according to pre-identified areas of interest. These areas were not rigid as on occasions new areas impinging on the research area were identified during the interview.

They were each given a draft copy of the initial analysis of the first interview. They were asked to provide comments and insights. This was beneficial as it gave them reassurance of the form the research would take. It also enabled the researcher to gauge if the insights she was presenting carried validity as far as the participants' perspectives were concerned. Positive and constructive comments were received and noted from the participants.

3.3.4 A workshop and participant observation

These two techniques acted as a means of validating the data analysis from the interviews. Thus, this formed an important part of triangulation (Chapter 3.3.2) and also supplement the insights gained from the interviews (Chapter 3.3.3).

The workshop technique according to Paxton (1994:19) provided "the opportunity for the interactive sharing of ideas and the development of strategies".

The sharing of ideas by the participants functioned to build up the individuals' understanding of Environmental and Geographical Education. It also helped them to come to a more critical understanding of the ideas presented during the workshop.

Hence according to Yin (1989:92) participant observation is -

... a special mode of observation in which the investigator is not merely a passive observer. Instead, the investigator may take a variety of roles within a case study situation and may actually participate in the events being studied.

There is therefore a sharing "of the social and cultural worlds of those subjects or social group which he seeks to understand". (Ball, 1983:35 in Barrow, 1990:40)

This "observational evidence" is often useful in providing additional information about the topic being studied (Yin, 1989:91).

The workshop and participant observers

After the second interview, each participant prepared and presented a Geography teaching unit, the purpose of which was to explore how each student might connect understanding of the nature and aims of Environmental Education to the teaching of Geography (Table 3.6). Their presentations formed part of a workshop.

Attending the workshop were the student research participants, the Geography method lecturer, another lecturer from the education department and the researcher. All acted as participant observers in the interests of triangulation.

The workshop was undertaken in an informal manner. The students presented their units of teaching in which they located their unit in a section of the Geography secondary school syllabus they had chosen, and they then proceeded to explain how they would teach this section using an environmental approach to Geography. It was also required of them to explicitly reveal their thinking and reasoning behind their ideas pertaining to the unit.

Once this was done a general discussion ensued centring around the ideas presented by the students. During this time ideas were exchanged, further clarification of the ideas presented was done and constructive comments were made.

Table 3.6 Assignment**GEOGRAPHY METHOD****TOPIC:**

Environmental Education in Geography teaching.

INTRODUCTION:

This assignment requires the exploration and a practical illustration of how you would incorporate Environmental Education into your Geography teaching. You may choose an area that is of particular interest to you.

GUIDELINES:**A. WRITTEN WORK**

1. The aims and objectives must be clearly stated and explained.
2. An exploration of your vision i.e. your thinking and the ideas behind your thoughts must be clearly shown.
3. Include all stimulus material that you would use. Please provide an explanation of how and why you would use the material.
4. Include all worksheets and activities that would be used.
5. Indicate the target group.
6. Give an indication of the time allocation.
7. Originality is always important!

B. VERBAL PRESENTATION

1. A ten-minute individual presentation of your ideas is needed within a workshop situation.

C. ALLOCATION OF MARKS

Is to be done according to:

1. Insight.
2. Interpretation of what and how an environmental approach could be used in Geography teaching.
3. The verbal presentation of ideas.
4. The stimulus material and worksheets.

All participants who took part in the workshop were briefed about the purpose of the workshop and who would be attending (Fraenkel and Wallen, 1993:390). This enabled the participant observers, both the students and the lecturers, to have an understanding of what aspects needed to be highlighted during the workshop. The use of participant observers was done in order to "increase the reliability of observational evidence."
(Yin, 1989:92)

A flaw of using participant observation was noted by Yin (1989:93-94):

...the participant role may simply require too much attention relative to the observer role. Thus, the participant-observer may not have sufficient time to take notes or to raise questions about events from different perspectives, as a good observer might.

This was overcome in this research by audio taping the presentations. Hence the participant observers took notes during the presentation and the discussion.

Permission (Huysamen, 1994:70) was gained from the students for the two lecturers to attend as participant observers. This was granted.

Process from data collection to analysis

1. Transcriptions were made of the audio-tapes from the workshops.
2. The observational notes from all who attended were gathered.
3. The data was analysed in the same manner as the interview data (Chapter 3.3.3).

Reflections on the workshop and participant observation technique

Due to the taping of the workshop the participant observers did not have to write long quotes or descriptions of what was

done but could just refer to a particular instance and then write down their observations. This enabled them to focus on the purpose of the workshop and not get held back by unnecessary detail.

An advantage of using participant observers was they could explore questions which arose and needed to be clarified (Huysamen, 1994; Yin, 1989).

Other advantages were noted by the participants. Zuki saw value in the opportunity of being able to see "other people's ideas". (ZI3)

When asked about the workshop Tom commented:

The presentations, now that was good. It's always good to hear other people's views. It was good that the [lecturer] sat in and gave her views. (TI3)

3.3.5 Evaluation

The aim of this case study was **not** to do a summative or pre-ordinate evaluation. However, as the research emerged a form of formative or informal evaluation evolved.

As the participants - the students, lecturers and the researcher - explored and tried to make sense of their perspectives it was inevitable they reflected on what had influenced their thinking. Thus, elements of a spontaneous informal and reflective evaluation emerged.

It was inevitable for this evaluative component to emerge if one considers the interpretative paradigm in which the research is couched and the constructivist theory underpinning this research. Both aspects of the research sought to understand 'how' people understand the situation and 'what' they understand. This exploration of the perspectives of the participants and the type and form of techniques used encouraged critical reflection by the participants. This inevitably gave rise to the question 'why' as

they explored their perspectives.

3.4 LIMITATIONS OF THE RESEARCH

Considering the character of this research and the need for progressive clarification to occur a large amount of time was needed in order to do justice to the research question.

Available time was limited, however, due to the case study group attending their course for only one year. Thus, the time available to plan and conduct the research was limited. The lack of time, on the other hand, had a beneficial side to it as it forced the researcher to plan the research so that the research was not allowed to 'run away with itself'.

The research grew a lot bigger than was initially intended due to increasing recognition of the need of triangulation for validity. The research also grew as the researcher had to take cognisance of emerging conceptual factors. This led to large amounts of data having to be transcribed and analyzed. It also resulted in the continuing tension between the need to control the research and the flexibility needed in order to explore the data as it was presented. The researcher questions if all this time-consuming activity was done as efficiently as possible. If it was not, much can be attributed to the researcher's lack of experience in research matters.

It may also be asked to what degree the flexibility of the research technique retarded or enabled the researcher to answer the questions posed by the research. If the research is to be criticised for too much time spent on exploring ideas it must be pointed out that during this time both the researcher and the participants had time to reflect on the theory and the practice of Geographical and Environmental Education. The insights and views shared and developed were extremely beneficial to the growth of all concerned.

Some of the participants did not attend both of the excursions and this resulted in some of the areas of the research not being able to be carried out in as much depth as the

researcher would have liked. This factor was out of the control of the researcher.

3.5 SUMMARY

Arising out of the need to explore the student-teachers' perspectives with regard to Environmental Education in Geography, it was found the Interpretative Paradigm was the most appropriate paradigm in which to situate this research.

This paradigm allowed for the use of qualitative research techniques. This enabled the researcher to adapt these 'less rigid' techniques to changing needs of the research.

A social constructivist approach to the research could also be accommodated, hence this research methodology and the identified techniques were seen as suitable for the hearing and understanding of the student-teachers' voices.

CHAPTER 4 : LOCATION, CONTEXT AND REFLECTIONS OF THE STUDENTS ON THEIR HIGHER DIPLOMA IN EDUCATION (HDE) COURSE

4.1 INTRODUCTION

This chapter presents the reader with a sense of the course experienced by the research participants in this teacher education programme, thereby contextualising the research.

Given the importance of context within constructivist thinking, this chapter forms a basis from which the participants' perspectives may be understood as the data was interpreted (Chapters 5 and 6).

The context serves to provide a focal point and acts as a means of providing the reader with a sense of why a particular methodology and techniques were chosen (Chapter 3).

Thus, this context chapter acts as a means of providing the reader with a sense of the course experienced by the participants, a reference point for the researcher to draw from and help to validate the analysis of the data, and as a means of helping to justify the methodology selected.

It is in this light that the following aspects of the HDE programme are presented:

4.2 Location

4.3 General overview of the philosophy underpinning the HDE programme

4.4 Environmental Education component:

4.4.1 Environmental Education lectures

4.4.2 Hobbiton-on-Hogsback Nature Reserve excursion

4.4.3 Thomas Baines Nature Reserve excursion

4.5 Geography method

4.6 Analysis and evaluation

4.2 LOCATION

The participants were the Geography method students studying towards their Higher Diploma in Education (HDE) at Rhodes University in South Africa.

The theoretical part of the HDE course was seventeen weeks in length and consisted of a combination of formal theory lectures and seminars. The components were Educational Studies and two chosen method courses. Eight main aspects made up the Educational Studies component (Rhodes University Education Department, 1994:11):

- * The Adolescent - Development and Learning.
- * Multicultural and Multilingual Issues.
- * Teaching and Learning Strategies; the art of questioning; and Interaction Analysis.
- * Critical Tools; factors that impact on Curriculum; Curriculum Models.
- * Schools and Society.
- * The Pastoral component of school organisation.
- * Environmental Education: Three days at Thomas Baines.
- * AIDS education.

Eleven weeks were spent on gaining practical teaching experience within the school context. The practical aspect of the course took place during the entire third school term.

4.3 GENERAL OVERVIEW OF THE PHILOSOPHY UNDERPINNING THE HDE PROGRAMME

The students attending the HDE course were given a course booklet (Rhodes University Education Department, 1994) which contained information relevant to the course. The booklet acted as a guide for the students as they interacted with their course and gave them an initial insight into the philosophical base from which the course was presented.

The department's 1994 booklet revealed the intention of the department as being the professional development of the students through encouraging them to take part in "open debate and in-depth critical thinking" experiences (Rhodes University Education Department, 1994:2-3).

The Environmental Education lecturer viewed the HDE course as a reflection of the lecturers "becoming more reflective about what we are teaching. In a way putting into practice what we preach" (BI) the course having changed from a liberalist-humanist orientation in 1993 course to one which had a critical orientation. (BI) This shift reflected the Education Department's recognition of the need for future teachers to be "receptive to change" and the need for them to be able to implement any identified changes needed (Rhodes University Education Department, 1994:2).

The need to "empower teachers" was mentioned as an underlying notion within the programme. This included the development of the students' ability to become innovative and "active participants" within the political and theoretical arenas of teaching (Rhodes University Education Department, 1994:2-3).

The development of the students was envisaged as being achieved through the "spirit of reflection" and "self-assessment" during the course (Rhodes University Education Department, 1994:3). Hence, the students were encouraged to develop the skills of critical reflection and to challenge that which would be presented to them in the course (See

Teacher Education in Chapter 2).

This was illustrated in the following extract of the primary aims of the HDE course which intended to help students through:

1. analyzing appropriate approaches to teaching which are based on sound theoretical perspectives on the role of the teacher in the modern classroom;
2. teaching and practising a variety of teaching skills, strategies and techniques which are at the disposal of the modern teacher;
3. examining wider perspectives on the role of the teacher as a member of a team of professionals working in a school, who should be able to contribute to professional decisions;
4. encouraging an informed appreciation of the relationship between school and society in southern Africa so that they can contribute usefully to the changing forms of society and education;
5. helping students to develop a blend of personal confidence in their dealings with learners and teachers which will provide the springboard for continued personal and professional growth throughout their teaching careers (Rhodes University Education Department, 1994:6-7).

The students' Educational Studies component aimed to provide both a framework for understanding the field and a way of critically reflecting upon the dynamics therein.

Further, the development of the students' critical skills was seen as crucial so that the students might -

1. be in a better position to respond to what they learnt in Educational Studies;
2. see the possible pertinence of what they learnt in terms of the context in which they find themselves in South Africa at that time;
3. try to make links between topics in Educational Studies and what they learnt in their method sessions.

Hence, the following quote from the booklet sums up the general thinking behind this programme:

A kind of pragmatic scepticism should be the ethos of the course - an anti-positivistic refusal to accept that there is a clear-cut distinction between facts and interpretation or evaluation. No theory is the truth, but is rather a provisional answer to a question. All practices on the other hand, presuppose theories. It is our task to expose these theories and examine them critically.

This was partly facilitated through the writing of a personal journal on a regular basis. The lecturers read the journals and gave a written response to the entries. In this way the students entered into a professional dialogue with the lecturers.

It may be argued that the aim of the HDE course focused on the empowerment of teachers through the development of their critical awareness skills. Especially through the facilitation of reflection and self-assessment. Emphasis was not solely on content but on process. Links with wider social needs were seen as important. The course was seen as a means of critically exploring the various options open to the students, given the context of

their future practice (See Teacher Education Chapter 2).

4.4 THE ENVIRONMENTAL EDUCATION COMPONENT

This was presented within the framework of the HDE programme. It consisted of three lectures (three ninety-minute lectures), an excursion to the Outward Bound Centre at Hobbiton-on-Hogsback, and an excursion to the Thomas Baines Nature Reserve just outside Grahamstown. Given the important links between this component of the HDE and the research, some details are included below.

4.4.1 Environmental Education lectures

The lecturer drew on Fien's (1993a) typology of education **about, in and for** the environment. She stressed the latter as an example of a critical approach to education. She stressed the need to question peoples' lifestyles and how context is an influencing factor. (B11) The lecturer presented Environmental Education as having an emancipatory function. The following quote gives some valuable insights with regard to her views of Environmental Education and teacher education:

How do I see EE?

It is something that helps us to focus on existing education, critique it, look at it reflectively and saying: What is there in our existing way of teaching, in our existing view of knowledge and in our curriculum that helps to perpetuate those values that cause the environmental crisis?

In other words it helps us to question existing education and then to move from there and to say: OK, how am I going to do it differently? So it is left much more up to the student, who then becomes the teacher to work out ways in which she is going to address the existing problems in education or to overcome them ... it [EE] sensitises you to the problems in

existing education ... so that is the stance that I took. (BI1)

She viewed Environmental Education not as an add-on but as an approach which had ideological relevance rather than content relevance to education.

One wonders if this was presented explicitly as she noted:

They might not have necessarily picked it up like that ... (BI1)

The various teaching strategies which are available in Environmental Education were explored. Again the lecturer expressed concern over time constraints as she believed this hindered her ability to grasp the students' understanding and thinking in this area. This she felt affected the quality of her responses negatively. (BI1)

When the lecturer was asked if she had openly presented her aims to the students the lecturer answered in the positive. However, she had not critically looked at them during the lectures. The lecturer noted this was due to time constraints. Guy, a participant, commented he was not sure from the start of the lectures exactly what was expected of him. He believed this hindered his development. (GI3)

The lecturer said at times her lecturing was slightly inaccessible to the students as she was often trying to accomplish too much in the limited time afforded to her.

Emily, another participant, echoed her concern and suggested the lectures needed to be related to the students' own experiences. (EI3)

Another negative factor identified by the lecturer was that she believed the Education Department did not view Environmental Education as a "status subject". (BI1) The lecturer said this was borne out by the small number of lectures devoted to Environmental Education. She called for them to be increased. Zuki, a participant, agreed and said she was under the impression that they were "isolated". Zuki believed this led to many of her

fellow students "not even thinking about it [EE] except for the Geography people". (ZI3) In this respect, Guy praised the lectures, especially with regard to the use of Fien's typology (Fien, 1993a), mentioned earlier, for helping him "create a structure in his mind by which [he could] teach". (TI3) Tom echoed these thoughts. Guy, however, called for the need to link the philosophy with the rest of Environmental Education:

It's all very well knowing philosophy but, how does it fit in? It should be linked.

Zuki found value in the lectures as she believed they "... put into words something that [she] had just been aware of". (ZI3)

On the other hand both Lara and Emily (participants) had reservations about the academic manner in which the lectures were presented:

If you are trying to get someone to implement something practical like EE you have to do it on a more practical basis ... Basically you have to grab their interest with something and then try and expand on it. Then bring in the theory ... (LI3)

It may be suggested that Lara was trying to verbalise her belief in the need to place Environmental Education concepts and ideas into an applicable context, and while doing this educate the students about the approach. Hence, you would be enabling the students to learn through application.

The lecturer also noted the constraint of the students being at different levels of understanding about what is contained within the concept of Environmental Education. She believed many of the students saw the value of using an environmental approach in their teaching. She expressed concern over whether they would be able to use it in the school situation. In this regard she questioned whether many school environments were

receptive to the ideas of socially critical environmental education. (BI)

The lecturer believed she had presented Environmental Education as sensitising construct. Ideally she would want the students to be able to do Environmental Education in the class and use it as a means of questioning whether they are contributing to the environmental crisis and if they are solutions to it. (BI1)

The Environmental Education course also consisted of a more practical and experiential learning component which was in the form of two excursions.

4.4.2 Hobbiton-on-Hogsback Nature Reserve excursion

The form of the Hobbiton excursion will be presented and comments by the students about the excursion have been included.

The excursion involved four days at an Outward Bound centre where the students were involved in various activities of an experiential nature including a hike and camping overnight in a forest. Other activities were designed to build up group cohesion and the overcoming of challenges through partaking in an abseiling exercise and completing an obstacle course. As described in the HDE booklet, one of the aims was to establish "the foundation for the close working and social relationships which characterise the Rhodes HDE" (Rhodes University Education Department, 1994:13).

The students were expected to reflect on their experiences and then complete an assignment in which they were asked to present an argument as to how they thought the activities could be related to the ideas contained within Fien's typology of Environmental Education (Fien, 1993a).

The Environmental Education lecturer viewed this experience as a "sensitiser" through which it was hoped the students would concretise the ideas contained within their first

lecture and then to see if they could apply these ideas. (BI1) The excursion formed a reference base from which the lecturer could later draw.

The participants made a variety of comments with regard to this excursion.

Lara commented one of the leaders at the centre made an impression on her when he told the students to remember they are teaching a person and not a subject.

The weekend was a self-searching time for Lara. The experience was heightened through her experiences within the natural environment. (LI3) Emily agreed with Lara.

Both Lara and Zuki were critical of the environment being used for the development of personal and group skills, while nothing was mentioned about their impact on the environment. Zuki had quite a strong view that the experience was "self-centred and a whole waste for EE". (ZI3) This may be linked to Zuki's focus on the social aspects of the environment.

For Guy the value of this excursion lay in his coming to the realisation that "learning through experience is the way to teach ... what it does mean to me is that you design class activities which include all the pupils to make them become active participants. To make them interact with one another, asking questions". (TI3)

Further into the HDE course the students attended an excursion at a local game reserve.

4.4.3 Thomas Baines Nature Reserve excursion

The form of the Thomas Baines Nature Reserve excursion will be presented, and comments made by the students about the excursion have been included.

The following activities were experienced at Thomas Baines Nature Reserve:

- * a discussion on the principles of ecology;
- * the presentation of the various groups' assignments;
- * videos were shown depicting examples of Environmental Education;
- * a demonstration of how to use a water testing kit;
- * the students broke up into their various method groups and were asked to consider how they would teach it using Environmental Education. (BI1)

In light of the above the observation of the students will now be presented.

Zuki found value in the discussions about incorporating Environmental Education into her teaching methods, and the videos made her realise that "somewhere out there people are actually doing it [EE]. It's not all theory". (ZI3) Lara echoed her thoughts and believed the excursion was also a success because of the one-to-one interaction which occurred in an informal manner between her and the Environmental Education officer.

Guy again noted the importance of experiential learning which he said was illustrated through the role-play his group facilitated. He had the following to say:

... what you are trying to do is trying to get social interaction, trying to make everything come alive. Even if it is not very pleasant. That's what learning experiences are all about. (GI3)

Tom was also part of this group and he too found value in exploring peoples' "empathy and attitudes" and with regard to "how people feel and why they do the things they do". This enabled him to "get practice of his knowledge". (TI3)

Brief comment

Environmental Education was primarily presented as an approach to teaching. The students were exposed to the ideas underlying Fien's typology of **in**, **about** and **for** the environment.

There were many elements of socially critical Environmental Education although these were not presented in a consciously ideological manner.

4.5 GEOGRAPHY METHOD

The key features which emerged will now be explored. This will include insights from the Geography method lecturer and the participants.

One aim of this course was to "make a case for Geography". (W11) Some key questions and areas that were considered here were:

... to justify why we should have Geography and possibly try and justify why it should be a core key subject ...

... how is knowledge perceived by Geography ...

... how does this inter-relate with the whole of the environmental paradigm because Geography at schools at present is definitely rooted in the environmental paradigm. (W11)

Another key aim was to explore how to "make it [Geography] a vehicle for EE?". (W11) While probing the lecturer's understanding of the New Environmental Paradigm (Chapter 2) it was apparent she was equating it with the Ecological Paradigm of early terminology (Chapter 2). Hence, even though she was using the appropriate terminology of the New

Environmental Paradigm, her underlying thoughts differed from the openly ideological and socially critical orientation of the New Environmental Paradigm (Fien, 1993a in Chapter 2). The lecturer in fact was still caught within the framework of modernity. This will be evident later in this section.

The idea of social change was explored when the students looked at different models of curriculum-design in schools and how these models could facilitate change.

There was also a focus on the teaching of skills, values and attitudes. It was recognised that schools have children with different perspectives and "that no one value system is necessarily correct ... and that we need to tolerate one another ... [especially] as a lot of the topics are very controversial ones". (W11) There was a conscious effort to move beyond the given and to explore people's underlying assumptions through debate.

Emily enthused about this component of her HDE course and noted that they had not concentrated on content but on application and this was "the only place that I have really learnt to teach ...". (E13) Tom was, however, concerned at the lack of content knowledge - a mind-set that prevailed through much of thinking:

There definitely needs to be a bit more stuff on how we are damaging the rain forests, the ozone. We are Geography teachers and we know nothing. This is the time to tell us how to teach children. (T13)

Tom appeared to be caught in the trap of equating education with the transmission of facts.

When content was discussed in this method course the emphasis was on integration of the different aspects of Geography.

Different paradigmatic views of knowledge were explored. This was then linked to how

remnants of positivism still exist in the syllabus, but also how the emphasis has shifted towards those of the ecological paradigm. It was noted the students did not enjoy this section as it was very foreign to them. (WI1) The lecturer also voiced the belief that many of the physical Geography courses the students had experienced at Rhodes University were still heavily immersed within positivism. This was evident in many of the students wanting to test a hypothesis when doing fieldwork. (WI1)

A strong emphasis was made for Geography to be seen as part of "the real world and about real issues" and to move away from the "sterile approach" of textbook-based teaching. (WI1) This included a visit to a local farm.

Zuki believed as a result of this method course her creativity increased and her dependence on textbooks which had previously given her a sense of safety was diminished, and as a result "there is a whole new world". (ZI3)

The importance of theory was acknowledged, but what hindered the lecturer from doing more was time and a strong belief in the practical aspect. The following illustrates this:

... I can give them the theory of games and simulations and role-play, but unless they actually do a thing and experiment with it and then evaluate it, it becomes fairly meaningless. (WI1)

One-third of the method was spent on theory at the beginning of the year. This was seen as imperative and it acted as a reference point throughout the year.

This method course noted she had emphasised the importance of pupils actively participating in their learning and the teacher acting as a facilitator. (WI1)

As previously mentioned, the lecturer acknowledged the strong environmental emphasis underlying the Geography syllabus and saw Environmental Education as valuable.

However, she noted:

... I have not actually sat down and planned my Geography course as going hand-in-hand with an EE course. I try to bring in EE, but Geography is still my focus. I wouldn't like to lose that. (W11)

And:

... it is an approach to how you teach your subject.

I don't see it as a separate subject. I see Geography as a vehicle for EE.

... I see it as equipping children with knowledge about the environment, giving them skills to do certain things, and for them to develop attitudes that we would consider environmentally sound and environmentally based. Also equipping them to take part in the environment and to be capable of some form of action ... that is going to improve the environment and sustain development and make the world a better place ... so it is experience, its exposure, its knowledge, its skills, plus its attitudes and feelings.

... the hands-on in the environment.

... also to have critical thinking skills, to evaluate what has been done, to make decisions ... because if you can't get to that last stage of being able to be capable of action, to be capable of making decisions, to be capable of making judgements, assessing, then I don't think you have actually achieved anything. (W11)

The lecturer believed her component was to an extent successful in enabling the students to internalise these ideas as had been illustrated during the students' teaching practice.

Zuki noted that this is "where it really all jelled for Environmental Education". (Z13)

Guy believed he had been given ideas of how to put EE into action:

... I've seen it myself and [she] has shown us that it is all up to us to make it come alive. And this is what I think EE is - a way of making it come alive. By bringing in those values, by encouraging the social interaction amongst children, by creating activities by a little thought beforehand. (GI3)

The lecturer's enthusiasm and the perceived importance of Environmental Education was another factor which encouraged the students to embrace Environmental Education. This sense of being excited about your subject was also mentioned by Lara.

The types of resources needed in order to implement this type of approach were explored - such as games and simulations.

The application of theory and the practical development of knowledge was valuable for Emily. (EI3)

Tom agreed and said he was more confident in discussing EE as a result of his Geography method. He and Lara said this was mainly possible as their Geography lecturer had acted as their "vehicle in Geography in order to incorporate EE". (TI3)

Guy summed up this component in the following manner:

She has definitely encouraged us to become teachers in our own sense. She hasn't moulded us. She has been a source of inspiration to each subject.
(GI3)

Comment

Geography was presented as a vehicle for Environmental Education. Links were made between the two with regard to the development of values, attitudes, skills development and linking learning with the real world. Environmental Education was seen as a means of facilitating action on the part of pupils who were studying Geography.

4.6 ANALYSIS AND EVALUATION

This short Environmental Education course exposed the student participants to both the theoretical and practical components of Environmental Education.

The theoretical component was achieved through the exploration of the ideas contained in education **in, about and for** the environment (Chapter 1 and 2). The focus was on critical thinking underpinning education **for** the environment. The lecturer viewed this approach as a means of critically reflecting on existing education. It was viewed as a sensitising construct which was openly ideological.

The practical aspects were approached through two excursions to two 'natural' environmental settings. Students found value in their being exposed to the need to develop empathy for others and the environment, the value of experiential learning and its practical application.

A value judgement was unconsciously expressed to the students through the choice of two 'natural' environments as the 'practical' sites for the Environmental Education component. Namely, that environmental education primarily occurs or is relevant to the environment 'out there' when in fact a more local, relevant and personal environment of the students may have been chosen. This is especially true if one looks at the strong social, political and economic factors at work in the city of Grahamstown or more relevant on the university campus where the students lived. Surely this would have been a more effective

place to explore the students' understanding and praxis of the ideas contained within education **for** the environment (Chapter 2).

It may be questioned whether, despite the purported openly ideological stance taken by the lecturer, if this was recognised by the students as such and also if the students had the ability to be critically engaged in discussions about this aspect. This raises questions whether enough time was allocated and if cognisance was taken of the inability of students to take aboard such an approach. Did they have the skills to deal with it?

If not, this would have profound effects on the students accepting, believing and formulating a sound theoretical understanding of socially critical Environmental Education. It may be questioned whether the environmental course had any real value for them and if they would be able to succeed in meaningful praxis. Further, if this is the case, it is questionable whether the students would be able to facilitate real and relevant socially critical action - a major component of education **for** the environment. The critical skills associated with socially critical Environmental Education (Chapter 2) are the types of skills which need to be honed from an early age and need to be practised. There was little evidence of the participants' having well-developed skills such as critical thinking skills. These skills needed to be practised throughout their undergraduate years. A one-year course is not sufficient time to understand, develop and ensure the successful educational praxis within an Environmental Education approach to teaching.

There appeared to be little conscious communication and linking of ideas between the different components and method courses in the HDE course. This had a limiting affect on the use of the ideas of Environmental Education and it being viewed as having relevance to all education. The old problem of compartmentalisation of knowledge and teaching was perpetuated. (BI)

The Geography method course was perhaps the exception to the above point in that Environmental Education was an important part of the course.

A sense of excitement about environmental concerns and a commitment to exploring environmental issues was evident in the interviews with the students when they referred to their Geography method.

This was to large extent encouraged by the workshop approach often used by the Geography lecturer. The workshops were done within a positive, critical and constructive atmosphere. However, again this needs time to be successful.

The students were encouraged to be openly critical as they addressed aspects of geographical education such as the curriculum, the development of skills, values and attitudes (Chapter 2). Through debate they explored each other's assumptions and beliefs. These are all important aspects of both Geographical and Environmental Education.

Much of this course was based within the Ecological Paradigm of Geography (Chapter 2.11) together with traces of socially critical thinking as advocated by Unwin (1992) and Huckle (1994). As previously noted the method lecturer was working within the assumption that the ideas of the Ecological Paradigm are the same as those advocated by the New Environmental Paradigm. This led to an unconscious presentation of a watered-down version of the socially critical aspects of the New Environmental Paradigm. The correct terminology was used, but in the light of the above it may be questioned if they were understood and presented in a similar vein as espoused and presented by Fien (1993a) in Chapter 2.

With regards to teacher education the students were exposed to a course which has largely broken away from the ideals espoused by Fundamental Pedagogics (Chapter 2). There was conscious intention on the part of the course presenters to empower and equip the students to become critical and reflective practitioners. Links were made between theory and practice. However, given the constraints identified above there was little room given for the students to carry out their own theorising (Barrow, 1990 in Chapter 2) which is vital if the students are to understand the concept of education and make connections

between theory and learning and to further their practice. Zeichner (1993 in Chapter 2) viewed this as important in order for the students to break away from education being viewed as a technical procedure towards seeing theory as "knowledge in action" (Zeichner, 1993 in Chapter 2).

Various forms of knowledge were sought by different aspects of this course, especially in these components which used teaching methods such as workshops and seminars. This gave the students the space to explore within a group different types of knowledge. Contextual and personal knowledge was not given prominence (Zeichner, 1993 in Chapter 2). These types of knowledge are often not recognised or are foreign to lecturers and students alike and as a result are not emphasized or seen as valuable. This may be attributed to the legacy of Fundamental Pedagogics in which students were not called upon to use their knowledge in a flexible manner. If students are to become critical and reflective educators as called for by socially critical environmental education (Chapter 2) this should form an important aspect of their course.

The course aimed to develop the students' awareness of the broader societal needs and democratic forces. Teacher education must therefore not be an end in itself (Zeichner, 1993 in Chapter 2) as this is important if the teachers are to be able to provide opportunities for themselves and others to empower themselves in the future.

It is with the above in mind and the theoretical discussion found in Chapter 2 that a cameo and significant environmental experience of each participant is presented.

CHAPTER 5 : PARTICIPANTS' EMERGING PERSPECTIVES OF THE ENVIRONMENT

5.1 INTRODUCTION

This initial chapter on the analysis of the participants' perspectives is centred around the need to gain a sense of the participants' world views and life experiences. This has been done through the presentation of a cameo of each participant and their account of a significant environmental event.

This was viewed as important by the researcher in order to obtain a clearer understanding of the students and of their perspectives with regards to the goal of the research which was -

To explore student-teachers' perspectives of the role of and value of Environmental Education in secondary school Geography.

This chapter's presentation, and to an extent its analysis, was guided by the doctoral thesis of Robertson (1994) entitled "Student-teachers' conceptualisations of environment and human-nature relationships". In the last chapter of his thesis he summarised part of his work in the following manner:

This study has indicated that approaches to human-nature relationships discussed in the literature enhance one's understanding of the assumptions embedded within the conceptions of environmental education as well as to inform the perspectives of environmental educators. It makes the case for incorporating students personal perspectives on human-nature relationships in teacher education programs which promote environmental education and its outcome suggests that approaches in the literature

complement these perspectives.

Consequently, encouraging students to consider these approaches in the light of their own beliefs may increase their commitment to promoting environmental perspectives in schools (Robertson, 1994:227).

Links may be drawn between the above research and this research. Both pieces of research explore student-teachers' perspectives of man-nature relationships. Commonalities are also found in the constructivist framework used and the fact they are both case studies situated in the same educational institution. However, the focus of this study was not an in-depth study of human-nature relationships *per se* but an exploration of how teachers, given their pre-instructional knowledge and the context in which they find themselves, verbalise their theoretical understanding of environmental and geographical education. Further, it explores how they would convert this understanding into practice. This research was carried out within the above framework and was driven by the question: Why?

The presentation will take the following form:

- 5.2 Cameos of the students and the presentation of a significant environmental experience as portrayed by each participant
- 5.2 Analysis and an evaluation of the participants' perspectives of the environment

The participants' accounts have been presented in a largely narrative form. The researcher felt that this would be the most beneficial approach to use in order to gain a rich foundation from which to proceed in the next analysis chapter (Chapter 6).

It should also enable the reader to begin to identify with the students' various characters, their initial views of the environment, their perceived roles within society and how this

might inform their future educational practice.

The above will be concluded with an analysis and evaluation with special reference to the work of Robertson (1994).

5.2 CAMEOS OF THE PARTICIPANTS AND THE PRESENTATION OF A SIGNIFICANT ENVIRONMENTAL EXPERIENCE AS PORTRAYED BY EACH PARTICIPANT

Emily

Emily was born and completed her schooling in Zimbabwe. She attended Rhodes University during her undergraduate years. She attained a Bachelor of Arts degree and majored in Geography and English. Her HDE method courses were Geography and English. Emily intends to return to Zimbabwe and begin her educational career there.

Emily recounted her school experiences in Zimbabwe through which she came to see the environment as an integral part of her education. During her senior years at school she took part in a teaching programme for junior school pupils, which involved a three-day camp in a nature reserve in which the pupils explored "how man's impact on the environment is quite a detrimental one". (EI1) Through these experiences she came to identify the concept of the environment largely with the 'outdoors' and 'nature'. She expressed a sense of wonderment for the outdoors and saw it as a source of knowledge waiting to be discovered.

Linked to her view of the environment as being the 'outdoors' was the idea of conservation and its value when teaching about the environment, especially with regard to the conservation of water and paper.

Emily did not see any difference between her personal and her geographical perspective of

the environment. There appeared to be a strong link between how she was taught Geography at school and her personal view of the environment.

Zuki

Zuki is also a Zimbabwean who attended English medium schools. Her native tongue is not English, but she has quite a high proficiency in English and she saw no reason that she should struggle expressing herself during this research. Zuki attained a Bachelor of Arts degree at Rhodes University, majoring in Geography and French. She has an honours degree in Geography. Her method courses were Geography and French.

Similarly to Emily, Zuki referred to her school experience as one of the major contributing factors towards her perception of the environment. Her school excursions to an outdoor centre situated near the Zambezi river enabled her to interact and observe nature, and through this she developed a sense of "consideration of things around" (ZI1) her and that "human beings don't have to go and mess [nature] around". (ZI1)

Zuki's personal conceptualisation of the environment was focused on her immediate environment which she saw as "part of everyday life". (ZI1) And -

... whatever's around me. While I'm here my environment would be the students, the buildings and that's part of my environment. (ZI1)

Even though her conceptualisation at the outset appeared to be centred around herself, Zuki placed emphasis on the social and political forces within that environment. Her view appeared to be a socially centred one. The social aspects included social "interactions and the influences that other people have on others, just the way you behave. Maybe it is a cultural thing". (ZI1)

A further influence had been her involvement with AIESEC (Association for Students with an Interest in Economic and Business Management Processes) where the emphasis was largely on interaction, cultural tolerance and politics:

The way that people think, certain attitudes and certain views that they have about situations [which] are also politically determined. (ZI1)

Zuki also referred to her father's strong awareness of the importance of social responsibility.

Zuki insisted that her geographical view of the environment was not very different from her personal one as she had "always preferred the human side of Geography and so I'd probably concentrate on politics, society and things like population". (ZI1)

When asked to try and make sense of why she held her particular view of the environment she cited the influence of her contact with the environment through school Geography excursions to the outdoor centres where she came to appreciate trees and animal life. Despite these experiences Zuki expressed that she had some difficulty in placing a more ecological and nature-orientated emphasis on her idea of the environment. This she explained was partly due to the time when she was growing up on a farm:

... we lived on a farm and I just didn't think about the environment. Trees and things, I took for granted. (ZI1)

Guy

Guy is a South African who grew up in the city of East London and completed his schooling there. He graduated from Rhodes University with a Bachelor of Arts (Human Movement Sciences) degree. He majored in Human Movement Studies and Industrial

Psychology. Guy elected to do Geography as one of his method courses together with Physical Education.

The experience which made the most impression on Guy was the HDE excursion to Hobbiton. To him it was an enriching experience. He expressed his admiration for the beauty of the setting. He voiced the belief that through "doing things outdoors and in nature makes it that much more meaningful to the person". (GI1) Guy commented further that his values were developed by the experience as there was a "deepening of [his] appreciation". (GI1)

Guy viewed man-environment relationships as very important and that people need to make the best use of resources.

When asked to explore what he thought should be incorporated into the idea of the environment he suggested it is everything around him; what you live in and something that needs to be looked after. A custodian view of the environment was evident in his call for people to develop a "sense of duty" (GI1) towards the environment linked to the need for this relationship to be mutually beneficial. A sense of resources being used sustainably was evident:

So we've got to take from the environment, but also give back to the environment. And think about things before we do anything. (GI1)

Closely linked to his understanding of the environment having both social and natural dimensions were the interests of people. These interests he identified as being broadly the political dimension of the environment. Consider the reasons he gave for his view:

Because the environment is what concerns you, what's around you. So you've got to live with other people. Doesn't matter

if they are from different backgrounds. You've got to understand where they are coming from. And their attitude towards the environment is the most important thing because if you are doing one thing and another person is doing another thing the environment is going to suffer. And in the end everybody is going to suffer. That's why you have got to include them. (GI1)

Guy believed that a people must be responsible for their actions and he grew perturbed when he thought of how people pollute the environment.

Guy maintained that through his interaction with the environment during his time spearfishing he developed certain values about the importance of the environment. He saw his values, viewpoints and his appreciation of the environment having developed and deepened "without [his] having to be told". (GI1)

Lara

Lara is also a South African and she hails from Johannesburg. She graduated from Rhodes University with a Bachelor of Social Science degree, majoring in Geography and Psychology. Her method courses were Geography and Guidance.

The Hobbiton excursion was also highlighted by Lara. It was not the first time she had taken part in a hike, but this encounter with nature was an emotional and unsettling one for her. Expanding on her experience -

I think the Hobbiton journey was the first time I've really been aware of the environment ... And also being immersed in the middle of it. Just thrown into the deep end. (LI1)

It appeared that Lara had a type of 'spiritual' experience in which she no longer saw the environment as an object, but as a mystical, living entity. A sense of awe was expressed together with a sense of her being insignificant within that environment. She conjured up the following images of the environment while relating her experience:

I see the environment as a very strong being. (LI1)

I see it as very powerful, you know, just the thing about it.

You go in there and you're nothing in it. (LI1)

Lara suggested that much of the importance of the experience was linked to the "fairy tale" (LI1) beauty of the area.

In trying to understand this experience she drew attention to previous encounters with the environment. She referred to the fact that she had always been conscious of the environment in terms of picking up papers and not throwing them on the floor. However, this was done in a detached manner as if it was something that was expected and what a 'good person' did.

However, through the Hobbiton experience she came to realise that the environment is not just something that she lives in and from which she gains food. The environment in her eyes had changed from being outside of her personal being to something that had meaning and relevance to her inner self.

Thoughts about the need to preserve and conserve the Hobbiton area were prevalent in her account. Reasons cited for these were the area's aesthetic beauty that should be preserved for future generations to enjoy and utilise in order to survive. These views could be linked to an egocentric view of the environment where there is little or no cognisance of the intrinsic rights of the environment and its inhabitants:

People need to go out and see things like that. If you go

ahead and destroy it our children will never see things like that. (LI1)

Initially, when invited to make explicit her personal concept of the environment, Lara encountered difficulty and asked if she might rather define it from a geographical perspective. This difficulty may be linked to her newly emerging personal idea of the environment. At the time of the interview she had not yet concretised her new 'inner' knowledge. She therefore fell back on her concrete academic geographic 'outside' definition which was based on a utilitarian outlook:

The environment is basically the area that people live in, where they feed off ... (LI1)

After further discussion Lara was able to contribute a more personal view of the environment. She began to divide the environment into areas. For her the nature part of the environment "was out there" (LI1) while the other parts of the "extended environment" (LI1) included the town or where she lives. Lara later explained her personal understanding of the environment in the following manner:

No, I mean, no the Hobbiton [environment] I see as the main environment and our town environment within the environment. Nature is basically all around us and the town is just emerged, that is how I see it. (LI1)

Lara noted that her personal view and her geographical view of the environment were different. Her personal perspective included the context in which she lived, while her geographical one was the natural environment around her personal environment.

When asked to try and make sense of who or what had influenced the way she perceived the environment, she mentioned the influence of her parents. She described her parents as

not having "strong thoughts" (LI1) about the environment and as a result it was never seen as a real issue or of concern for her or her family: other things were more important.

Further reminiscences in this regard included:

We never went on picnics when I was a kid, we never went to the zoo. I never did those type of things with my parents. So I've never really been exposed to something different.
(LI1)

You go shopping, you don't go picnicking. That's just done! So I think basically your social context you grow up in has got a lot to do to affect it. (LI1)

My father will not go anywhere which is not civilised in his terms. You know, he'd never go to Hobbiton, that's just not civilised. If you go anywhere you stay in a hotel. Caravans, that's even worse! That's how I was brought up. (LI1)

Tom

Tom grew up in the province of Kwa-Zulu/Natal in South Africa. He comes from a largely rural background. He attended Eshowe High School, after which he attained a Bachelor of Arts degree (Human Movement Science) degree at Rhodes University. His majors were Geography and Physical Movements. Tom's method courses were Geography and Physical Education.

Tom recounted a school excursion to Richards Bay Minerals at St. Lucia where he witnessed how the company extracts titanium from the sand dunes and then rehabilitates the dunes. He revealed that he was impressed with the way that this company managed the operation and the scientific approach and technical solutions that they used:

[They] gave us a whole census on a whole study on what plants were there before and what plants were there after. And some of the stuff was already better. OK, some of the plants don't become extinct, but they're not in that area any more. But it just shows how man can manipulate the environment, but can use it to his benefit without harming it.

(T11)

Tom included in his concept of the environment the idea of 'sustainable development' for which he gave his own definition of the concept :

... the ability to use the environment to its maximum for ourselves and so that future generations can get the same benefit out of it. (T11)

When the idea of the intrinsic value of the environment was posed, Tom responded that he had heard of the idea, but he expressed difficulty in combining it with his understanding of sustainable development:

The environment does have rights. I don't know how, I don't know exactly what that means. We can't just, it does have rights, but I'm ... we can't just destroy it. We can use it to its benefit. That would mean without destroying it totally. I don't know, it's a bit of a confusing issue I think ... environmental rights? (T11)

Tom's views in this respect may be linked to his school years. His school was situated in the middle of an indigenous forest in Zululand:

... we had a strange relationship with the environment, we

never had Environmental Education as such, but we were very aware of what was there. What it was composed of.

(T11)

Interestingly, this awareness did not lead to an overall 'positive' use of the forest:

We used to go into the forest and make a braai and basically destroy it, whatever. The main thing that we appreciated what was there. (T11)

The apparent ambiguity/contradiction was unsettling for the researcher and the interviewee. Here was something to be "appreciated" in the form of an indigenous forest, but still he destroyed part of it. This ambiguity was further apparent for the researcher in the following statement by Tom:

Well, appreciate, what we, we didn't take it for granted. Hey. its just a natural piece of forest, it was there. It looked very nice. It was ... we appreciated the fact that it was being conserved. (T11)

When trying to marry his ideas on conserving and aesthetic value with those on the development at St. Lucia, Tom responded that -

Ja, well, in some instances you've got to say this is for development and that's for ... you don't have to, I don't know its um ... (T11)

He relied on justifying the destruction done by the mining on the fact that "it doesn't look like a barren wasteland". (T11)

He felt other criteria would impinge on whether an area would be developed or not:

What resources [are] in that immediate area, the availability, what they are. The importance they have to our society, the surrounding socio-economic status ... and whether the people want it or not in that area. (T11)

Tom revealed that he felt that he was caught between what society wants and what he feels is important when considering environmental rights and economic development. He had resigned himself that -

Deep down I probably would [protect it], but I'm a realist you know. That's what people want. I don't see how you can put the environment before people. Its not how I think. That's how it is. (T11)

When asked to elaborate on his personal perception of the environment, Tom proposed that it was what he lived in. He differentiated between the natural environment and the man-made environment. When asked if any other components should be included -

Some people would put their family in the environment and that would be a part of the environment. No, I wouldn't consider that. I'd consider the natural environment. Natural ecosystems whereas man-made environment would be our cities and our dams, just you know, that's it. (T11)

Tom commented that his last year of Geography study had influenced his thinking about the concept of the environment. His emphasis was on "biotic diversity and sustainable development". (T11)

Tom maintained that his personal and his geographical perception of the environment were the same.

5.3 AN ANALYSIS AND EVALUATION OF THE PARTICIPANTS' PERSPECTIVES OF THE ENVIRONMENT

Emily presented a rather 'naive' view of the environment in which she placed emphasis on the outdoors. In most instances she equated the environment with nature. She did, however, acknowledge the man-made aspects of the environment. Her school experiences of the Zimbabwean bush seemed to largely inform her view in this regard. She expressed a sense of wonderment over nature and viewed it as containing a wealth of information waiting to be discovered. On various occasions Emily voiced her concern for the environment and drew a strong link between this concern and the idea of conservation as a means of ensuring that nature was protected and preserved. This may be linked to a custodian view of the environment.

She also viewed the environment as a resource for the enhancement of her Geography teaching because of its perceived experiential value and also as source of knowledge.

Building on the notion of her 'naive' perception of the environment, Emily often expressed the notion that nature existed 'out there'.

Emily's view of the environment as being largely equated with 'nature' and 'conservation' influenced her perception of the role of Environmental Education. She saw Environmental Education as learning about the facts of nature in order to facilitate the appropriate choice of strategies for the conservation of nature. She was not really conscious of the political and economic forces that might impinge on it.

Zuki revealed a leaning towards an anthropocentric view of the environment with a strong

social awareness component. She was aware of the natural environment, but she saw the focus on the immediate man-made urban environment as being more beneficial and relevant. The reason she gave for this was that people could identify with it more readily and therefore it would be a more meaningful and beneficial experience for the individual.

The environment, for Zuki, was part of her everyday life and its main focus would be determined according to her location at a particular time. Hence, her emphasis of the environment at a particular time could change if her immediate environment were to alter.

Further emphases were the social and political forces that she saw acting within the environment and their effects on people and the environment. She saw these factors as interconnected and influencing each other. Her strong emphasis on the social aspects of the environment could be traced to her father's strong social consciousness and her involvement in AIESEC.

Similarly to Zuki, Guy held a strong socially orientated view of the environment. While Zuki's emphasis was on the overall forces within society, Guy stressed the individual's responsibility towards the environment and to others. He maintained that it was a person's duty to look after the environment. His idea of the environment was similar to Emily's custodian orientation. His view was not as 'naive' as hers was as he saw his ability to look after the environment as linked to his understanding of the way people perceive the environment. He said that this would influence how they would look after it. He highlighted the point that people needed to develop common values and take responsibility for their actions with regards to the environment.

His concern for environmental matters stemmed from his recognition for the need to conserve the environment. This concern seemed to stem largely from the perspective of the interests of people who could then enjoy and utilise the environment's resources. It did not appear to be grounded in a strong belief of the intrinsic good or value of the

environment. Hence, although he espoused very noble principles, values and views about the environment, they could largely be seen to be arising out of an egocentric and anthropocentric orientation.

Lara's perception of the environment was an emergent one as she appeared to construct new meanings for herself during the interview. The reason for this might have been that through the Hobbiton excursion she came to 'discover' a new awareness of the environment.

Initially she saw the environment as a separate resource to be studied from a narrow geographic and biophysical perspective. She then modified her view to include a sense of awe and reverence for the environment, something to be revered. This gave rise to an expressed need to protect and conserve the natural environment.

The Hobbiton experience enabled Lara to personalise her concept of the environment. It was no longer a cold academic entity. It had become 'living' and had a growing sense of worth and reality for her.

Tom presented a strongly utilitarian and technicist view of the environment. Technology was presented as having the answers to how to best to exploit and manage the environment. Technology was seen as having the means to effectively correct any impact made on the environment during exploitation. Tom primarily viewed the environment as a resource to be utilised in order to meet the growing demands of people and capital. His exploitative perspective of the environment was encapsulated in his view that the environment should be used to its maximum for people. Granted he did consider the need for future generations to benefit from the environment.

This was not the only view held by Tom as he often referred to the fact that the above perspective was not what he truly believed in, but that it was what was expected of him by society.

His other view placed greater value on nature and he voiced an appreciation for the environment. He seemed to be constantly grappling to reconcile these two views. He tried to resolve this conflict by dealing with the two views separately and judging the natural environment and the man-made environment according to different criteria. Tom came to the realisation that his perception of the environment had been largely shaped by his physical Geography background, which was to a great extent shaped by the traditional scientific discourse that he had been exposed to at university.

What has been most vividly illustrated in this initial presentation of the participants' perspectives is the diversity of perceptions. As asserted by Robertson (1994) lecturers cannot assume ignorance on the part of participants. Each participant brings with them their own unique perceptions which, as illustrated by Robertson (1994), will influence their acceptance and belief in the views being proposed by the lecturer. Ultimately it will influence their practice.

Following on from this idea Robertson (1994) pointed out that lecturers should not assume that they have a common understanding of concepts with their students. Hence, lecturers should spend a large amount of time clarifying key concepts such as that of 'environment' in their courses.

Another important facet which needs to be explored, which is an extension of their concept of the environment, is that of human-nature relationships (Robertson, 1994). It is believed that this could be best achieved through students engaging in eco-philosophical arguments. This, Robertson (1994) argues, could lead the students to critically exploring why they would want to adapt and promote the ideas of Environmental Education. It may also lead them to question what type of Environmental Education they would want to embrace.

Further facets which need to be highlighted are the possible links between the views held by the students with regard to the environment and their openness and ability to see the value and relevance of socially critical Environmental Education.

If a person has strong custodian views of the environment or if such a person has a strong bias towards the rights of people over the natural environment, then the type of approach an educator must use in order to facilitate their acceptance of the theory and practice should be able to cater for these differences. The learner needs to understand personal beliefs through unpacking them and critically exploring them.

Cognisance must also be made of the probability that the ideas presented to students in their course will be coloured by their existing perspectives. It cannot be assumed that everyone starts from a given point or that they will be able to adjust to views which often question the learner's basic assumptions with regard to relationships with the environment.

Beliefs, attitudes and skills are not something which can be simply taught. They can be truly changed only through experiences in which learners are confronted with questions which are relevant to their lifestyles. They also have to have the skills and the will to change. All of this takes time and a skilled facilitator.

With the above in mind, the theoretical underpinnings of socially critical Environmental and Geographical Education and the identified needs in teacher education (Chapter 2) the next chapter will explore the perspective of the participants with regard to the role and value of Environmental Education in secondary school Geography.

CHAPTER 6 : THE PARTICIPANTS' EMERGING PERSPECTIVES OF GEOGRAPHICAL AND ENVIRONMENTAL EDUCATION

6.1 INTRODUCTION

The participants' emerging perspectives of Geography and Environmental Education have been gained from three successive periods. Initially, from the time they had been exposed to the introductory lectures on Environmental Education and the excursion to Hobbiton-on-Hogsback Nature Reserve (the first interview); to their having experienced the excursion to Thomas Baines Nature Reserve and Geography method workshops and Environmental Education lectures (the second interview and workshop) and finally the third interview (Chapters 3 and 4).

Initially, in this chapter, a general overview of the participants' perspectives on Geography and Environmental education will be presented.

Then the emerging perspectives of the participants of the role of Environmental Education will be presented.

Emerging from this was the need to critically reflect on the participants' course with regard to its impact on their practice. Embedded in these reflections are suggestions for future teacher education programmes.

Thus, this chapter will explore the following aspects as presented by the participants:

6.2 Overview of the participants' perspectives on Geographical Education

6.3 Overview of the participants' perspectives on Environmental Education

6.4 Links between Geographical and Environmental Education

6.4.1 The incorporation of Environmental Education into Geographical

Education

6.4.2 Methods and resources

6.4.3 Skills, values and attitudes

6.5 An analysis and evaluation the participants' overall vision

6.2 OVERVIEW OF PARTICIPANTS' PERSPECTIVES ON GEOGRAPHICAL EDUCATION

In the participants' presentation of their perspectives of Geographical Education a strong emphasis was on facilitating understanding between people. It was seen as a means of finding commonalities among people and importantly as a subject area which lent itself to the understanding of human-environment relationships. This was viewed as important as it would facilitate the understanding of local and global problems. Linked to this was the encouraging acknowledgement that Geographical Education could help the students develop an understanding of different issues which may be used to inform future decisions. The development of the skills needed to do this and other activities showed a shift in emphasis in Geographical Education. There was evidence of Geographical Education shifting from content-based to skills-based learning. Emphasis was on students being able to make sense of their learning situation for themselves through the guidance of the teacher. A strong social bias was evident linked to environmental issues.

6.3 OVERVIEW OF THE PARTICIPANTS' PERSPECTIVES ON ENVIRONMENTAL EDUCATION

Initially, much confusion was evident about what Environmental Education incorporates. Some of the participants equated it with Geographical Education. This was especially so when they viewed Environmental Education as a nature-based subject which was primarily concerned with a superficial look at the causes of environmental problems and their effects. They linked it to an education which sought to change people's attitudes and values through their exposure to the effects of people's actions. Environmental Education

was seen to be based on information-giving. Some of the participants' perspectives remained at this stage.

Others came to the understanding that the social dimensions of the environment needed to be critically investigated. This was to be done through the development of critical skills which would enable the students to critically assess environmental issues by looking at them from different perspectives. This led some of them to begin to question different 'authorities' and the views they presented, albeit superficially.

Encouragingly, some of the students shifted further in their understanding to the point where they began to explore and see the links between Environmental Education and subject areas such as English and Guidance where they could not use it from a purely nature-based perspective. They began to realise the concept of environment encompassed political and economic aspects which needed to be critically investigated.

Evidence of Environmental Education as being a socially critical form of education was also found in their thinking. The idea of empowering the pupils to make decisions was evident; however, the need for fundamental restructuring of society was not well developed in their understanding of the potential of Environmental Education.

Similarly to Geographical Education it was viewed by some of the participants as primarily skills based.

6.4 LINKS BETWEEN GEOGRAPHICAL AND ENVIRONMENTAL EDUCATION

In this section the general overview of the links between Geographical and Environmental Education are presented (Chapter 6.4.1). These emerging perspectives have been presented individually in this section. This has been done as it gives a far better idea of how the participants' perspectives emerged and changed. It also helps the reader to identify the links they made between Geographical and Environmental Education.

A composite overview of the methods and resources identified as relevant by the participants is presented in chapter 6.4.2.

Lastly the skills, values and attitudes the participants identified as important are presented in chapter 6.4.3.

6.4.1 The incorporation of Environmental Education into Geographical Education

Emily

At the outset Emily noted that since Geography was primarily about the environment it would naturally incorporate Environmental Education. She saw Environmental Education as bringing the emphasis of man's impact on the environment. (EI1)

Emily experienced difficulty in deciding whether Geography and Environmental Education were separate or not and whether Environmental Education could be seen as an approach. This was largely due to her having experienced Environmental Education in her Geography lessons within the approaches of **in** and **about** the environment. Her confusion can be clearly noted in the following excerpt:

E: I think they are separate in the way that EE is specifically environmental whereas Geography you can teach somebody about farming and then you bring in the environment. Do you see what I mean? That they are different, they have got different bases ... probably not (EI1)

In trying to gain a further insight into Emily's perspective on the above area she was asked to provide an example of how she would teach when combining Geography and an environmental approach. What was evident in her example was that she largely equated Environmental Education with nature. This may be connected with her earlier idea of the

environment being largely composed of 'nature' and the 'bush' (Chapter 5). She saw her lesson as "practically applying nature" and "using nature to educate someone". (EI1)

One value of this interview for Emily was that she began to question her fundamental assumptions and beliefs about why she was going to teach and how she was going to include Environmental Education:

E: How or what is the point of teaching it? Now this is what I'm curious about. But I still think that it is absolutely imperative to teach it. You have to ... but why is it right? First of all in terms of knowledge they're going to learn about the environment. They must know about resources. About things like that.

J: Does the fact that you know about a factory next to a river which is pumping out effluent, polluting the river - does that enable you to do anything about it?

E: I don't know ... and try and understand what EE means for me and how I can bring it into my Geography classroom.
(EI1)

She had become aware that she had not completely internalised her ideas about the nature of Geography and Environmental Education as she really struggled to verbalise them.

For her assignment Emily selected problems encountered in urban settlements. Emily began her assignment by noting -

Geography is a subject that is happening around us constantly ... its importance is seen via five central concepts: location, place, people-

environment relations, spatial interaction, and regions. (EA)

Emily continued in this section:

EE definitely comes into it because there's an impact on the physical environment and on the social environment as well. (EA)

... it is an excellent opportunity to reintroduce the concept so that the students can actually see for themselves ... then kids can actually see a squatter settlement, the squalor, water problems ... (ED)

She saw this aspect of Geography as a "good opportunity to make those links and to apply it practically to their own environment". (ED)

Emily appeared to view Environmental Education as something that must be introduced, a separate part of Geographical Education (WN), albeit an important one. Lara felt uncertain of how Emily saw the links between Environmental Education and Geography. (LN) There was recognition of physical and social components of urban problems but there was no real evidence of seeing the causal links and interrelationship between them. Emily acknowledged, however, that these components do change in nature. However, these changes were presented in a matter-of-fact manner without any real indication of recognising the intricacies. The relationships between different aspects were presented in a simplistic, compartmentalised manner. (EA)

Admittedly she did recognise that if one considers urban growth you cannot teach it without looking at the problems associated with it. (EA) However, she does not try to critically unpack the reasons for the identified problem except at a superficial level.

Much of the knowledge that she looked for and was seen as important in her lesson was found in books or from herself. The pupils' knowledge and experiences were not given

high priority. Concern was voiced during the workshop that Emily tended to concentrate on the problems and not giving enough emphasis to finding solutions.

Tom felt Emily was largely presenting Environmental Education as additional information being placed in the syllabus instead of it being viewed as an approach to teaching. (TN) This was especially true if an examination is made of her assignment in the light of the socially critical ideas contained in education **for** the environment (Chapter 2).

Zuki

Zuki considered it easy to link these two areas as she saw them as both encompassing the social and the natural aspects of the environment. She felt they both bridged the natural and the social sciences. She noted that once you were doing Geography you were also doing Environmental Education.

This she justified by noting that the skills, attitudes and knowledge nurtured by Geography were the same as those of Environmental Education. However, later she realised she had made a sweeping statement and she actually could not find any common skills between the two areas:

I'm trying to think how actually how ... if skills does come into EE ... and where it would. (Z11)

When asked if it was necessary to incorporate Environmental Education into Geography teaching she did not think it was necessary as she already saw it as a part of Environmental Education. Despite this she did concede that some teachers might not use an environmental approach in their teaching.

Zuki indicated that she saw Environmental Education as an approach and its role in Geographical Education was to enhance it. Zuki's understanding of this approach

encompassed a view of the teacher as having to constantly be aware of the environment and ensuring that the students are also aware of it. She mentioned that the students should also be able to appreciate the relevance of the environment within each topic being covered. Zuki saw this approach as "underlying the teaching" and acting as a "guidance" within teaching activities and to make students "understand that they are part of an environment". (ZI2)

Zuki voiced her concern that teachers might emphasise only the 'nature' component of the environment and how it is being damaged and "neglect the side of a person's own environment".

In this regard she emphasised the need for all involved to have a common understanding of what is meant by the concept of the environment. This she believed would decrease the chance of misunderstandings developing between the individuals. (ZI2)

In order to successfully embrace an environmental approach in teaching, Zuki thought that it was necessary for the teacher to have her own awareness of environmental issues and that this must be visible in her classroom too, and therefore associated with her. She believed that this would enable the teacher to be more successful in bringing in an environmental approach to her teaching, especially with regard to ethics.

Zuki's area of focus was settlement, which she approached by including different aspects of Geography. Her assignment aimed -

... to make links between the various factors that effect settlement patterns and that effects your environment as well. Such as historical, cultural and other economic and social factors. Both the settlement patterns and problems are caused by the existence of such patterns and also the way the factors influence the environment. (ZP)

And also:

In terms of acquiring skills, knowledge and helping pupils to create attitudes of some sort. In terms of their views on EE and how it affects their environment. (ZP)

Zuki choose this section of Geography as she felt it helped focus on the 'action' component of her educational approach:

I chose fieldwork because I saw it as a means of being able to emphasise all theory and practice. And coming together. Because I felt that EE a lot of the time is just based on attitudes with people just discussing and nobody actually doing and it is supposed to be an action-orientated sort of approach, but a lot of the time there isn't much action. I felt that in using a field trip the pupils could see that there is actually action as well in EE. (ZP)

Hence it was "a means of synthesizing knowledge acquired during theory-based lessons together with the presentation of Geography in the real world". (ZA)

Guy

Guy saw a natural link between Geography and Environmental Education through Geography's spatial perspective:

... how we make use of the land and everything that is available to us. So you teach why people live where they do on the earth's surface and how it has affected the environment. That's a link. (GI2)

Geography for him would provide the basis by which students would be environmentally educated.

Guy saw the aims of the two areas of education as being very similar, but he saw

Geography as primarily providing the tools to understand, and working with the environment and Environmental Education as going further in trying to change the students' values. (GI2)

Guy said he saw Geography as the best subject for the incorporation of an environmental approach. He saw them as complementing each other very well in that Geography content can provide the basis through which a pupil can become environmentally educated. He noted Environmental Education was best taught through active participation on the part of the pupils. He noted -

Geography provides the necessary skills which man uses during his interaction with his environment. An environmentally educated person will be able to make the right decisions and have the right ability to interact with his environment. Because after all it is not just learning about learning about the environment; its about living in it as well. (GI2)

When asked if he viewed Environmental Education as a subject or as an approach, he expressed confusion as to the meaning of the idea. Once it was explained as being a way of teaching from an environmental perspective he said that he saw it as an approach. He saw Environmental Education as being strongly underlain by "an ecological mode of thought" which he saw as "an attitude with EE as the base". (GI1)

Guy also perceived this approach to teaching as a way in which the teacher could meaningfully convey environmental awareness while teaching a specific subject's content. This, he saw, could be done by using examples from recent newspaper cuttings on debates that are directly related to the subject, the aim of which would be "to create an awareness and why we need to care". (GI2) He summarised his view in the following manner:

Bringing concerns into your subject and showing their relevance to the

subject. (GI2)

Guy saw the advantage of combining subjects when using an environmental approach. His example was of using art in Geography as a means of creating "a visual image in the child's brain" of an environmental problem such as garbage. This he saw as beneficial in realising some of the aims of Environmental Education. (GI2)

The value of this approach for Guy was that he saw it as a means of changing values. He believed this could be most effectively transferred through him being seen as a role model for the students.

Maybe you can transfer those values across because you can't teach values, but they can be transferred in that way. (GI2)

He regarded this approach as being part of the process of lesson preparation. He viewed it as an integral part of teaching and not "something that you were packing on the end". (GI2)

Guy did not believe that "it is a difficult thing to do, if you can convey your attitude and think about what your lesson is teaching and how you can bring it in before hand, in other words lesson planning, then it shouldn't be a problem". (GI2)

He sees an environmental approach to geography as "a way of bringing geography alive and relevant ...". (GP)

Lara

Lara believed the two education areas have the same principles and the same goals of giving across knowledge and teaching skills and of helping to evoke attitudes and values. Lara made links between the two through sections of the Geography syllabus where she

identified political Geography as an aspect of Environmental Education. And the aspects of ecology in Geography in which you teach aspects of geomorphology and climatology. She believed you can use Environmental Education in your explanations.

On a very superficial level she saw Geography education as giving people the knowledge of Geography and Environmental Education as a means of helping them to explore that knowledge. Lara further stated that she did not see how Environmental Education can be taught as a separate subject as she sees Environmental Education as part of all subjects.

She viewed geographical knowledge as being inactive. She believed that Environmental Education enables the pupil to activate that knowledge and use it during some process of action. Lara therefore experienced difficulty in finding links between the content of Environmental Education and Geography as she saw Geography as being more factually based while Environmental Education as more of a means of achieving action. She held the view that you could bring Environmental Education into any aspect of Geography because it acted as a mobilising mechanism of the knowledge.

Lara therefore maintained that it is vital to incorporate Environmental Education into Geography as it will give skills, knowledge and all the rest, but it will make children think how they would go about being very active in their lives and in their subject.

Lara was unsure of what is meant by an environmental approach:

An environmental approach is just looking at the environment, looking at its problems, how to solve it ... that's how I see an environmental approach.

(LI2)

I think that it can be interpreted by every person differently. (LI2)

An example of how she would include an environmental perspective with a political slant

in Geography was:

One very good example is our political environment which places people in a particular geographic area like locations and things which has an effect on the environment. (LI1)

Within this idea she revealed an awareness of power affecting people which would in turn affect the environment. She also saw a necessity to show people that they do not have to agree with everything that is done and that they must think for themselves. A sense of empowering people through Environmental Education was evident in her thinking although the concept had not been fully developed. Continuing with the example of being forced to live in locations:

And because they have the power that is what happens. It's wrong and you have got to show people that they can't just follow it. They've got to think for themselves. Is that right? How would you go about it? What would you do? Would you stand up for yourself? You've got to make people aware of EE and aware of all the different aspects of it. I think that the most important thing is that we teach them to think for themselves. (LI1)

Lara expressed ownership of the ideas that she has presented: this reveals that she has grappled with her thoughts, and the mere fact that she is willing to explore them further reveals an openness to others looking at them too. A good start. A process has happened and she has recognised that. Through this Lara has acted as her own teacher and this is what she has tried to facilitate through her teaching. She presents the view of geography fitting into the bigger picture of environmental education through a number of links.

She used her initiative and used one sentence in the textbook, which states fishing is a primary activity, into a lesson which looks at the whole idea of fishing in Japan in a critical manner.

Tom

When considering the idea of combining Environmental Education and Geography education Tom responded that he saw them as the same thing and did not believe a subject called Environmental Education exists. However, he did point out that some possible differences between them lay in the emphasis on awareness, the focus on the future with regard to sustainable living. He saw processes being totally in the realm of Geography. (TI1)

He drew attention to the idea that by including Environmental Education in Geography it would be enhanced and have a greater sense of purpose and direction. Environmental Education would enable the learner to see how ecological processes learnt in Geography fit into a bigger framework of the environment.

Tom saw Geography as acting to help develop the "correct" attitudes towards the environment and the ability to plan and make "proper" (TI1) decisions with regard to the environment. Environmental Education would help develop the student's awareness through the exploration of feelings and the exploration of the effects of people on the environment.

During the first interview Tom viewed Environmental Education as an approach and that "as a subject it was far too static. I mean to achieve anything". (TI1) When asked to explain what he understood by the idea of an approach he still had difficulty in differentiating it from being a subject. He commented that he saw Environmental Education as being something that was added to a subject and that it would become a burden for a teacher. (TI1)

He was unsure of an example of how he would include an environmental approach in his Geography teaching. He turned the question back to the researcher:

How would you do it? Can you give me an example of how you would explore it? I can't imagine not doing it. (TI1)

The last statement could actually be interpreted as: I cannot imagine how I would do it.

Later, Tom attempted to provide an example through the use of fishing in Japan. He suggested that he would evoke the students' feelings for dolphins which are caught in the gill nets and then he would provide facts about the impacts of that kind of fishing. He saw that an important point would be the management of fishing as a sustainable resource.

During the second interview Tom had developed his understanding of the relationship between Geographical and Environmental Education. He now regarded Geography as the "vehicle for the facts" and Environmental Education as "being the approach" and "the mode of thought" and the "way the problem is tackled using those facts that Geography has". (TI2)

He noted they both look to understanding the relationship between man and his environment. Geography is concerned with the establishing of an understanding of this relationship while Environmental Education shows how a "positive relationship can be maintained". (TI2)

The value of this approach for him was that he regarded it as a "means of directing you towards a certain way of thinking about the environment. Towards a positive way". (TI2) He believed this might lead to a greater awareness amongst the students. He saw this as helping to achieve greater understanding of the environment. Tom viewed the use of an environmental approach as a way to enable the students to believe they can make a positive contribution towards achieving a sustainable way of living.

Tom maintained that he would use an environmental approach in his future teaching; however, he did envisage some pitfalls:

It'll take remembering because you get so involved in facts that you just forget.

It's just that I know what EE consists of and now I must structure my lessons within those parameters. (TI2)

Tom viewed the main aim of linking Geography and Environmental Education was to create an environmental approach. He saw this as informing the development of planning strategies for rural areas: the section he chose to focus on in his presentation. He believed that if this approach was adopted "any study of settlement will be done within the environmental parameter". (TP)

He believed that pupils need to be -

... made aware of the environmental impacts which result and subsequently realise that successful urban planning can only take place within an environmental approach. (TP)

He saw links between the content of the two, in terms of the common environmental issues; but similarly to Lara he saw Geography as more content-laden and Environmental Education as a way of showing "how positive action can be done". (TI2) He believed all aspects of Geography are amenable to the incorporation of Environmental Education.

Tom revealed the following about his understanding of the practice of Environmental Education:

It's a whole way of thinking. It's a whole concept involved. It's not just a supplementary thing. People think that EE is a separate entity that you stick in. It's not like that. It's a way that you structure your content. Your content now is structured towards EE. It's not anything extra to put in, it's

a way of thinking. (TI2)

Tom's answer here can be easily linked to his ideas about what an environmental approach to education involves: it is how he envisages the practice of Environmental Education. (TI2)

Tom ultimately saw the value of incorporating Environmental Education into Geography as a means of mobilising Geography into taking action.

In the first interview the concept of 'empowerment' had been introduced by the researcher as she tried to clarify his ideas about his perspectives concerning the environment. It had been simply explained as "giving power". (TI1) It was interesting to note how Tom used this idea in his explanation of what he saw as an environmental approach to Geography. When asked if he would move beyond the development of values, attitudes and awareness in his students, he said that if they were a mature group he would -

... go onto some empowerment. Let them feel a sense of responsibility for any action they do or read about. And feel responsible for what other pupils are doing that they are reading about. Ja, I would take it further, its crucial to think contemporary. (TI1)

Here Tom had broadly equated the concept of empowerment with responsibility for one's actions and for other people's actions. He also made the assumption that this responsibility could be dealt with only by mature students and not the younger ones. Lastly, he loosely connected 'empowerment' as a means of ensuring that teaching was more relevant.

Tom commented he viewed sustainable development as an important concept to be developed when using Environmental Education in a Geography lesson. He viewed it as the only way of ensuring that everyone gets an equal portion of resources without

destroying everything.

Interestingly, he inferred in the first interview that he sees sustainable development as something to be done in the future and that it is done 'out there', not starting with his every-day life. There appears to be a separation of Environmental Education theory he has learnt, and his everyday life.

He also highlighted that he believed Environmental Education is embodied in a "positive attitude" and that it is "a new way of looking at decision-making or problems based on this awareness that you have for the environment". (TI2) This he viewed as beneficial for Geographical Education.

6.4.2 Methods and resources

Emily made use of photographs to illustrate points and to stimulate discussion about water pollution in disadvantaged communities. The types of question she posed included:

... what effect would this dumping have on the water and the settlements gathered there?

Imagine you're a person living there how would you get your water, where would you get it from? Would you use this water, why? (EP)

Her questioning of the issue of water pollution was restricted to identifying the problems and impacts. There did not appear to be any critical questioning of Why? The importance of unpacking the problems related to access to and the distribution of power amongst different social groups. There was a noticeable lack of 'action' in her lesson (Chapter 2). Emily relied largely on trying to develop empathy through her questions.

Her reasons for using photographs was they "give the students a concrete idea of what

they are learning". (EA) She did, however, rely on pictures from foreign lands instead of using local examples or taking her own slides of local problems. (WN)

Referring to the use of the video, Emily believed it could function to evoke emotion. She noted this would help develop the students' morals with regard to the water pollution crisis.

Again she did not look at this issue from a socially critical view. She focused on the effects and solutions to prevailing problems. There was no real sense of exploring proactive solutions to possible future problems. There was a lack of investigation into the broader issues impinging on it. It may be questioned whether she problematised givens.

Emily also used the project method. Admittedly, a framework is sometimes needed by the students; however, no choice is indicated that they would be allowed to approach the project in an individual manner.

She chose the problem of the project and therefore made the assumption she knew which problem was relevant for the students and what would interest them. Instead she might have let them identify a problem and included a form of negotiation within the lesson - an important social skill they need to learn.

The need to 'manage' the lesson crept into Emily's ideas which tended to mould the form the methods took.

The Geography lecturer intimated Emily's project idea was too far removed from reality. Pupils need to be involved in their own area, "a project based on what they know - not of some isolated case somewhere that has little relevance to them". (WN) The Geography lecturer was also uneasy with the fact that Emily did not make it explicit that the students would be able to choose a problem they identified or that they would, after they had suggested solutions, concretise those solutions into possible actions.

Problems of a focus on factual information was noted:

S: I'm still a little worried about your project and I think that this is for future reference. I think you need to give a lot more thought exactly what is the purpose [of the project]? ... Do you want them to have information to pass the exam or do you want them to actually to have a problem that they've solved, an issue they've addressed? (SD)

This is in sharp contrast to Zuki's project for which she suggested she might give the pupil a title or she can "get them to brainwash [brainstorm] the title that they will be investigating into. So then they'd do their own research before and after the field trip. They'd know what to observe. They'll know what kind of thing that will be of interest to them when they do their project". (ZP)

She did not determine how they should approach the project, thereby enabling them to choose the area which was of interest to them and also how they would carry out the research. She suggested approaches such as:

They can choose one of the areas or they can choose two and do a comparison or choose different aspects of the areas. Or choose maybe a factor, economic factor, and use it to cover all the three and all the time it is important to keep on emphasising the influence, the kind of settlement that you're looking at has had on the surrounding environment. How the environment also affects the way that people build their houses and the kind of settlement patterns that come up. (ZP)

Zuki used the field-work method which she noted would be "interesting and enjoyable". (ZA) The purpose of this was for the pupils, through exploration, to develop an "interest and new perspectives - in order to allow them to write/create projects". (ZA)

Zuki saw the field-trip's value in it would make the topic of settlement "real" and would

"stimulate a greater interest". (ZP) This she claimed would be facilitated through her emphasis on the local environment and what is known about it. Zuki revealed that she saw the whole effort as a sequence of events, processes and experiences. She linked the field-work to a related project the students would undertake:

And to use the field trip to give the pupils the tools, interests and new perspectives in helping them with the aims of the project and the whole thing at the end of the fieldwork. (ZP)

And:

... a lot of emphasis on research and using their maps as well. Just incorporating all aspects of geography learning and teaching into one field trip ... (ZD)

Hence, by linking the field-work and the project she aimed to concretise the experiences and emerging ideas; thereby, enabling them to order their thoughts and facilitate a greater impact of the experience. A strong complementary link was evident between Zuki's methodology and her theoretical focus.

Zuki presented the idea of visiting five different settlements together with the history class, an example of a interdisciplinary approach (WN). Zuki noted:

The differences in the time period and how all these factors - social, economic, the cultural, everything that has an effect on the settlement patterns and on the environment and how the environment turns out. (ZP)

The variety of settlement types she selected was noted by the Geography lecturer as an effective means of broadening the experience of settlement. She thought it was more relevant as Zuki had chosen areas in which the students reside. (WN)

She linked rural and urban and then saw Rini, a settlement which has a mixture of formal and informal 'black' housing. Similarly to Emily she saw this experience enabling the pupils to -

... actually see for themselves how all the theory becomes real and then [be able to] apply it. (ZP)

Zuki believed that it was important for the students to see the effects of their actions or demands on the environment. (ZA) This may be extended to the idea of the individual learning to 'own' their negative and positive effects on the environment which result from their actions.

Zuki suggested that a work-sheet could be used during the field-work as a means of stimulating their thoughts and bringing their ideas together for their project. It would act as a guide, a means of identifying things observed, and develop a sense of the relevance of the field trip experience to them. There was the sense that they will be required to interact with the experience and not just observe. This she saw would be facilitated through the use of maps before and during the field trip.

Finally, Zuki found value in a general panel discussion between the students and the teacher before the students started their project:

... just so that they can bounce their ideas off their fellow pupils and off you so that it increases their horizons. They might just be seeing it as very narrow. (ZP)

Continuing, she noted that once people of different backgrounds and experiences come together in South Africa they can move to a wider vision. (ZP)

She intimated that with a variety of backgrounds, life experiences and thinking skills of the students the solutions that would be presented would be varied, leading to there really

being no set right or wrong that can be predetermined. (ZP)

Even though Zuki appeared to have a greater social slant to her approach to Environmental Education than Emily she did not clearly distinguish other important skills identified by Emily. She also did not really focus on problem solving. Lara thought this was a notable omission on Zuki's part. (ZD)

Guy noted that there are many ways of incorporating Environmental Education into Geography - such as project work and field-work - but he believed the most important thing was -

... to realise that the aim of incorporating EE into geography and bringing in the values side of things is to make children active in whatever you do.

Allowing them to socially interact with one another. And another important things is the attitude of the teacher. The way he teaches, the effort that he puts into things. (GP)

He said that the best way of using Environmental Education in Geography teaching was by field-work and participatory learning experiences. Pupils need to think about what they are and then form their own values. (GP) Hence he saw a lot of learning being done through self-learning and interaction with other pupils and the teacher being there to guide that process.

Guy noted that through group-work the teacher can facilitate pupils' development of dispositions such as co-operation and sharing. He emphasised that "the teacher becomes a very important part of the whole process". (GP)

In approaching this section of how people can influence the environment Guy noted that these effects could be positive or negative. Pupils need to understand that the cost of developing a resource "includes the materials, wages, advertising, environmental standards

and the working conditions, how decision-making affects ecology and the fact that decision making always involves one's feelings, attitudes and values". (GP)

The game he chose he felt achieved the above. The following were the objectives of the game:

... to recognise the essential issues of a problem, to define a problem, break down problems into their components. Prepare accurate information from the material collected and to be able to think critically. And to suggest alternative solutions and when I talk about the alternative solutions I'm not talking about the idea that for every problem there is a solution, but that these solutions must be critically analyzed and talked about amongst the children. Also children may have different backgrounds and then if we can get them to relate to their life experiences that's what makes it alive and relevant to them. (GP)

He believed the "micro-scale" is important in order "to make it relevant to the children by asking them how they experience their local community ..." and on a "macro-scale ... learning about the world". (GP)

Guy emphasised the value of pupils learning from each other:

They are from different backgrounds, how they overcome their problems. What they experience and hopefully that'll develop a little compassion, understanding. Also learning from the mistakes and how others may have managed to overcome their problems. And these problems are both geography type problems and environmental type problems. (GP)

Guy revealed a sound understanding or vision of what he wanted to achieve through his lesson by linking ideas which could lead to growth in many aspects of the pupil.

The following part of his presentation reveals the purposive thought pattern that he went through as he presented his lesson idea:

In the first question you can expand on the word 'planning' and tell the children how one needs to plan ones use of resources. That you can't just use them all up at one go and that the children of today are of the generations to come. So in a sense you are teaching someone who has more claim to the world than you do and the people after them as well. (GP)

The action component in Lara's presentation came in the form of the idea of pupils looking for dolphin-friendly products. This she saw as relevant as many dolphins are known to be killed when tuna fishing occurs and they get caught in the nets. She suggested using a tin of tuna which has a "dolphin friendly" stamp on it. She saw this as one way of making the pupils aware of efforts being made to lessen the danger to dolphins. Lara also suggested the pupils could make people aware through campaigns such as letters to the press and petitions. She noted that the tin of tuna was a tangible example of people's effort to make a difference, hence it is possible to make a difference.

Lara also emphasised the importance of questions. She consciously separated geographical from environmental questions. Her geographical question she saw as "provoking knowledge" : Name two types of fishing. The environmental question would take the following form: What would be the dangers of using trawlers - which she thought would enable the pupils to start thinking critically about the different methods. Hence she viewed questioning as an important "verbal stimulus". (LP)

Assignments would play the role of "provoking attitudes and to try and make them [the pupils' to] take some step towards action". (LP) She saw this working through the pupils being divided into "groups, to discuss and design a campaign poster to make people aware of the consequences of gill fishing".

It was observed that the assignment was designed to provoke action and develop action, especially through the poster to be exhibited in the school.

Lara also toyed with the idea of collaboration between the various disciplines when designing the posters. This could be extended beyond the school through devising a petition, gathering signatures and then lastly sending it to the government. She saw this as a relevant issue to raise as South Africa has many trawlers fishing along her coast. Also some of the pupils might have had local experience of the trawlers from which she could draw. She noted even though the section was a study of Japan it would be of more relevance to focus on it here as "it is happening around them [the students] as well". (LP)

She saw class activities being both on a group and also on an individual basis. The last would be achieved through a letter to the press, "making them aware of the destructiveness of gill fishing. Trying to get it printed in a newspaper where they are actually reaching people all around". (LP) In her lesson Lara therefore illustrated the links between different areas of the world through a common issue. She also facilitated the development of strategies which could be implemented and action which could be undertaken by the students. (WN)

Lara focused on the geographical aspects of her lesson with graphicacy and locational skills being highlighted linked to the effects that they have on human activities, distribution, access to food and the influence on ocean currents. She highlighted that atlases need not be used just for finding the location of places, but also as a way of highlighting environmental problems.

Through the aid of work sheets Tom believed the pupils could -

... identify key environmental impacts for various settlements and create an approach to make action environmentally beneficial. (TP)

Tom had problems with the concept of action in the classroom situation. He posed the following questions in this regard:

- ... is there time for action at school level?
- ... but what type of action do you want
- ... how relevant is action at school level? Is it?

6.4.3 Skills, values and attitudes

In the analysis of the aims presented by the participants a wide variety of aims were identified. They reflected a diversity of ideas and perspectives of both geographical and environmental education.

Evident was the need to help students to develop a sense of place through recognising and understanding the relationship between people and the environment (GA) and how both are undergoing continual, and in some cases rapid, change (EA, LA). Hence the highlighting of spatial change not only within one place through time but also from one place to another (GA). This needed to be highlighted as it was believed people need to understand these changes and have sense that there are not many static absolutes in the world with regard to natural/human relationships and the interaction between different components (GA). It was believed that through this understanding pupils would be more able to adapt to change in these spheres and to understand how (LA) and why changes occur. Location was seen as very important in gaining a full understanding of the above.

The attainment of intellectual skills was one of the main aims identified and all the participants believed these skills needed to be viewed in the light of their facilitating on-going life-time education.

Knowledge was seen as having to be valuable for its use in the work place, where it should be seen as applicable from the perspective of its being useful in that context to

bring about positive environmental change. Instances must be created where synthesising of different types of knowledge needs to be done. The knowledge learnt within the classroom should be linked to the outside world through the use of field-work (ZA) where there is increasing awareness of environmental issues (EA). Students should also, through example, be able to understand how people have overcome obstacles (LA) and for them to develop skills to critically assess how it was done. This was of particular importance when the students entered the workplace (EA).

The need to understand the historical influence on patterns of development - social, cultural and economic - and their interaction was noted. Zuki viewed this as important when regarding the way the environment is used (ZA). Lara noted students needed to understand how development influenced the use of the environment by people and the consequences of that use (LA).

Thus the potential for people to destroy their environment was stressed as an area to be understood. There was the recognition that this influence could in some instances be positive. This was linked to the need to understand environmental decision-making processes and to the critical viewing of the use of technology (TA) at the interface between people and the environment.

The concept of development was also seen as an important part of the aim to view human activities in a critical manner. This included the understanding of the costs which need to be considered during decision-making in the spheres of political, economic and social decisions and their impact on ecosystems. It would be part of the considerations that would need to be made when looking at the costs of using a resource whether it be in relation to wages, technology used, advertising, working conditions, politics or social factors within the community (TA).

The fostering of an awareness of environmental issues and a focus on the developing of moral and emotional attributes in the students (EA) should be seen as important, as any

decision-making done within the sphere of a person's feelings, attitudes and values (GA).

The motivating and taking of action was also identified as a major aim (LA, TA). The fostering of skills which would enable the students to be able to make informed recommendations and offer solutions to issues as they arise (ZA). Notably, Emily did not include an action component in her presentation.

There was a call for integrating an environmental perspective by teachers which would enable and help students to plan as they investigate urban and rural areas (TA).

The understanding of geographical and environmental concepts was an important aim. This included the development of a sense of place and space, the exploration of community relationships, while concepts which were seen as important to develop included sustainable development, man-land relationships, regional and spatial concepts.

6.5 AN ANALYSIS AND EVALUATION OF THE PARTICIPANTS'

OVERALL VISION

It was encouraging to note that the participants, even though they were all products of an education system largely based on the principles of Fundamental Pedagogics (Chapter 2.2.), were open to new ideas. This was illustrated through the value they placed on learner-centred approaches which showed they had largely abandoned the more teacher-centred approaches they were used to. Remnants of Fundamental Pedagogics were evident in Emily's difficulty of lessening her control over the structure of her lesson and in her penchant for structuring and choosing the topics of her project. (EA)

Emily also tended hold a rationalistic view of knowledge as there was very little critical questioning of her ideas and those of others. Linked to this was her tendency to see an issue in a simplistic manner which is reminiscent of a reductionist perspective (Chapter 2.2).

Tom's perspectives were similar but not as easily detected. He showed a tendency to view technology and rationalistic (Chapter 2) answers to environmental problems in an uncritical manner (Chapter 5).

Guy, Zuki and Lara tended to be slightly more critical in their approach to education. They recognised the importance of the students' ideas and experiences in the learning process and in the development of their attitudes and decision-making skills (Chapter 6).

It was troubling to find many of the characteristics of the participants' thoughts and educational practice tended to be located in the Dominant Social Paradigm and only a few were to be found in the New Environmental Paradigm (Chapter 2.4).

In this regard a shift was discernible from a people-centred view of the environment to one which took cognisance of the natural environment. There certainly was not a large move to one where people and the environment are seen to be equal. This was evident in Tom's view of the environment (Chapter 5) which was technicist in character.

The other participants had a 'softer' view of the environment but much of this was related to an emotional attachment or utilitarian perspective rather than a shift in philosophical perspective.

This apparent positioning of the participants still within the Dominant Social Paradigm may be linked to the influence of Fundamental Pedagogics which did not encourage the development of socially critical skills and the questioning of authority.

This, it may be argued, has greatly hindered the questioning of the dominant forces of society in the political and economic realms. Thereby, inability to critically question and evaluate issues decreases the ability of the participants to adopt the ideas contained within the New Environmental Paradigm. Hence, even though their perspectives, especially those of Zuki, of the environment may take cognisance of social aspects, they are still within the

realms of an anthropocentric perspective.

To a greater or lesser degree all the participants displayed a form of socially critical questioning in their thinking and practice (Chapter 2.5). This was especially evident in the assignments of Lara, Zuki and Guy (Chapter 6).

Zuki, Guy and Lara revealed an understanding of the importance of local examples when using an environmental approach in their teaching. Lara even modified the existing syllabus about fishing in Japan. She problematised the issue of gill nets and brought the issue back to South African waters. This was evidence of her having looked critically at the existing syllabus and taking the initiative to change it. It became so much more relevant to the learner.

The methods the participants chose to use in their lessons reflected those which are learner-centred. Guy saw the role of the teacher as a facilitator and as a co-learner. He also viewed educational experiences as a time where the ideas and values of the teacher were not imposed on the students, but for them to be critically discussed through group work.

Teaching methods which incorporated a socially constructivist orientation to teaching were evident. Zuki, through her field-work (ZA), enabled the students to examine areas they knew and to develop their thoughts further through the experience. The fieldwork afforded them the opportunity of determining their own learning and meaning-making.

Related to this, Tom asked the students their opinions about a case study on pollution (TA) in such a way that they had to explore their own understanding of the situation and to provide their opinions with regard to the issue.

Lara was conscious of the need to empower the students through education. She tried to develop this aim through encouraging them to take action. Her students were able to take

action in order to try and solve a problem they had identified and explored (LA).

Much of what has been discussed so far with regard to New Environmental Paradigm, a socially critical orientation in education and social constructivism form important parts of the approach of education **for** the environment (Chapter 2). A further area which is related to this approach is the desired need to undertake a learning situation from an interdisciplinary perspective. This was evident in Lara's suggestion that other subject areas such as English could be incorporated into her Geography lesson when her class wrote their letter to the press or devised posters.

The development of political literacy as part of education **for** the environment was not evident. This lack was especially noticeable in the unpacking and understanding of the ideology underpinning the decisions made by stakeholders and by the students. The idea of the types of decisions made and who makes them was not linked to the distribution of power in society.

Following this it is the contention of the researcher that these areas of critical education include concepts and require skills which the participant may believe in. However, it is questioned if they have the theoretical understanding of the related ideology or the skills to critically unpack these aspects. It may therefore be argued that it is virtually impossible to expect the participants to be able to facilitate this in their lessons.

If this is true it may to a large extent explain the dichotomy between the participants' views about education and their practice, as was evident in their assignments (Chapter 6).

In light of this it may be helpful to refer to the context within which the participants developed their perspectives as it may shed light on further reasons for this dichotomy.

In order to do this it is necessary to look not only at the two methods in question. The course organisation and the implementation of the course as a whole also needs to be

reviewed.

The underlying philosophy of the HDE course was of a socially critical nature and the aims called for the lecturers to empower the teachers to become socially critical and reflective in their practice (Chapter 4.3). There was an identified need to prepare the participants to become innovative and constructive forces in a changing society. These views were reflected in the Environmental Education (Chapter 4.4) and the Geography Education (Chapter 4.5) components.

It may be accepted that the course facilitators believed that they were providing the participants with the opportunity to take aboard the philosophy and to understand theoretical underpinnings of a socially critical approach to education, and to be able to use a suitable environmental approach to their practice through attending the course.

What is evident, however, as was illustrated earlier in this chapter, was a relatively good level of understanding of the ideas presented. However, the transference of this to their practice was limited. Hence there was a dichotomy between what they have theoretically learnt and accepted and that which they are able to successfully put into practice. To a large extent, as has been illustrated in this chapter, they had to varying degrees accepted and owned the ideas presented them during their course. Their practice, however, revealed large gaps between their verbal intentions and their practice.

The researcher contends the fundamental problem lies not the course content of the teacher programme but in the structure, methods and approaches used by the lecturers. If one examines the literature on teacher education (Chapter 2.3) the answers to the following questions are crucial to an understanding of why a dichotomy exists between the participants' theory and practice:

1. Were the theories of practice presented to the students critically explored in the light of the participants' previous life experiences?

2. Were the students encouraged to do their own theorising? Was the theory 'out there' or to be found 'in' the students?
3. Was there an emphasis on the teachers developing their own practice through critical reflection and group work?
4. Hence, did they come to see educational theory and practice as not being cast in iron but changeable according to the needs of the learning situation?
(Surely if these are the skills you want them to use in their practice they must be able to use them and see their relevance and value to their own education?)
5. Were the students asked to unpack and critically reflect on their own ideology and related world views and those of others?
6. Were they asked how the above would impact on their practice and on the aims of what they would consider to be 'good education'?
7. Lastly, were the threads found in the above areas drawn together into a whole on to which they could then reflect when they were faced with the various components of their course? Was this type of unpacking, critical reflection and reformulation carried on through the various methods and course components?

In order to fully answer these questions an evaluation of the participants' course would need to be undertaken. Since this was not the goal of this research, but to explore the student teachers' perspectives of the role and value of Environmental Education in secondary school Geography, the above should be seen as pertinent questions which have arisen out of the research.

CHAPTER 7 : REFLECTIONS ON THE RESEARCH PROCESS

7.1 INTRODUCTION

It was the aim of this research to illuminate some of the problems faced by student-teachers as they grapple with the ideas and the practice of implementing a socially critical environmental approach to Geography education. Aspects which were of relevance were:

- * Do they understand what socially critical Environmental Education entails?
- * What was socially critical Environmental Education is trying to achieve?
- * Had they have accepted it as a relevant and worthwhile approach?
- * Were they were motivated to use it?
- * Did they have the ability to implement this type of education through the use of a variety of relevant teaching methodologies?

The following areas will be discussed in this chapter:

7.2 Research results

7.3 Tentative recommendations

7.4 Limitations of the study

7.5 Conclusions

7.2 RESEARCH RESULTS

The participants had gained a limited understanding of socially critical Environmental Education. This included the importance of viewing environmental issues from political, economic and social perspectives.

Often the use of appropriate terminology was apparent, such as the need to develop critical

thinking skills and the need to empower people. However, there appeared to be a gap between the rhetoric and the ability to put it into practice.

This cannot be seen as a result of the participants not believing in the worth of Environmental Education, but in their inability to transform their ideas and beliefs into practice. This inability may be linked to many factors such as their own life experiences in school, at university and other life experiences (This will be covered in Chapter 7.3).

The participants identified and used appropriate child-centred teaching methodologies. There was also some evidence of constructivist approaches to teaching.

It was, however, apparent they had not fully internalised all the ideas of socially critical Environmental Education. The participants tended to be superficial in their critical approach to environmental issues.

There appears to be a gap between the theory and the ability of student-teachers to practise Environmental Education.

Highlighted was the openness to taking on board the ideas of Environmental Education, but the lack of skills to do this.

7.3 TENTATIVE RECOMMENDATIONS

The following are some of the issues which arose out of the research. By considering them it may help resolve them:

1. Praxis lies at the crux of the problem. This may be largely facilitated by the various subject method tutors including this approach to education as the fundamental part of their course. Hence, Environmental Education needs to be seen as a necessity not only to the survival of the planet but as

an integral part of good education which aims to achieve a sustainable future for all in a truly democratic society.

2. This may be achieved only if all members of society have the skills and knowledge. Socially critical Environmental Education must be a conscious focal point of the whole course.
3. The ideas contained within socially critical Environmental Education need to be de-mystified and made accessible to lecturers and teachers through in-service courses. These would not only introduce the ideas of socially critical Environmental Education but also remove any misconception that might be present. These courses are also crucial to facilitate and maintain current students' belief in this approach to education.
4. The practicalities of using the appropriate methodologies in the school situation given time-tabling, money and time constraints and class sizes need to be explored.
5. Within teacher-education courses it must be remembered that much of what is expected in this approach to education is foreign to the past experiences of many of the students during their school experiences, and of teachers in current school situations. For it not only calls for them to break away from what they know worked relatively effectively for them in the past but also for them to learn about and practise new methods which are foreign to them. Linked to this is the change from school education largely, as in the past, being content-based to one which also has an emphasis on skills development and values and attitude exploration and change. The understanding, acceptance and praxis of this approach is often a foreign aspect of education. This needs to be thoroughly explored by teacher-educators with respect to how they are going to facilitate this.

7.4 LIMITATIONS

Initially the research question appeared to be a simple and narrow one but as the research unfolded its complexity became apparent. This was maybe even more so as the research was of a qualitative nature.

As this was a half-thesis it was extremely difficult to present the gathered data fairly..

The research data could also have been more complete if there had been enough time and space and if the practice of the participants could have been explored. This would have given further insight into their ability to incorporate a socially critical Environmental Education approach to the teaching of Geography.

See Chapter 3 for further discussion.

7.5 CONCLUSION

After gaining an understanding of the theoretical aspects of Environmental Education and subsequently teaching Geography at secondary school level and as a lecturer at a teacher 'training' college, the large chasm between theory and the practice of Environmental Education, as was illustrated in this research, became apparent.

Further, it has become apparent that much research is still desperately needed to bridge this gap. The transformation of theory into practice is wrought with many problems, as has been illustrated in this thesis. This needs immediate attention.

Teacher-educators need to look critically at their practice and evaluate whether it facilitates the acceptance and effective practice of socially critical Environmental Education.

This is especially important as teacher-educators and teachers have a role in helping to save the planet and in the development of a democratic society in South Africa, both of which are inextricably linked. In order to do this they need to take up the challenge to further develop their skills and knowledge. They have the position and the means to meet the challenge offered to them. They need to be active in finding ways to facilitate this.

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