

**SECONDARY SCHOOL GEOGRAPHY TEACHERS' PERCEPTIONS OF THE ROLE
-OF ENVIRONMENTAL EDUCATION IN GEOGRAPHY WITH PARTICULAR
REFERENCE TO NATAL EDUCATION DEPARTMENT TEACHERS.**

THESIS

**Submitted in partial fulfilment of the requirements of the
degree of MASTER OF EDUCATION of Rhodes University**

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

Environmental Education (EE) as a development cannot be ignored by Geography or Geographers particularly since South Africa, as the rest of the world, is confronted by a looming environmental crisis. Geography is an environmental science concerned primarily with man-environment relationships using an environmental approach to develop the skills, knowledge, values and attitudes necessary for sustainable living. Geography has a vital role to play in addressing environmental issues.

In formal education Geography teachers will be responsible for the implementation of such an approach. This study therefore investigates the perceptions of Natal Senior Secondary School Geography teachers regarding the role of EE in Geography. Questionnaires and semi-structured interviews were used to determine this.

The study revealed that although these teachers are well qualified and motivated they had a limited grasp of the theory underpinning current EE and Geographical thinking. Recommendations are made for the development of an environmental approach in the teaching of Geography.

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CHAPTER 1

BACKGROUND TO THE STUDY

1.1 INTRODUCTION

This study examines the perceptions of the role of EE in Geography as seen by Senior Secondary School Geography teachers employed by the Natal Education Department. The perceptions of these few selected teachers are used as a yardstick to gauge the attitudes towards EE in Geography in general and to note the major factors influencing those perceptions.

1.2 THE CONTEXT OF THE RESEARCH

South Africa is facing an potential environmental crisis. If the current environmental trends continue, South Africa will, among other problems, be subjected to increased pollution, overcrowding and depletion of natural resources. This will create an ecologically vulnerable society (Hugo and Viljoen, 1986). The process of achieving a sustainable lifestyle from such an inheritance will not be easy. Most solutions to the environmental crisis are complex and long-term, however; more immediate action is needed. Geography within formal education could play such an immediate role.

The concept of environment is central to Geography, since Geography has always been concerned with the complex

relationship between man and the environment. There is thus a strong link between contemporary EE and Geography which was identified as early as 1973 by Wise (see 2.6). Geography includes knowledge, skills, values and processes about the environment and could be used to promote the principles of EE. For this reason Du Toit (1990) suggests that Geography is an ideal vehicle for implementing EE principles in the formal curriculum. The importance of environmentalism in Geography is further emphasized by current Geographical paradigms (Preston - Whyte, 1982; Hall, 1984), while Huckle (1994) has suggested that in future curricula Geographical Education should be located within the notion of sustainable development.

Geography therefore has an important role to play in educating students about the environment and environmental problems and solutions (Hurry, 1987). A key contribution of Geography is to promote the principles of EE through Geographical Education in order to encourage learners to lead environmentally responsible lives. Skills and knowledge thus acquired will enable pupils to contribute to the quality of the environment (Gough, 1987).

To achieve this, the challenge to and responsibility of Geography teachers is to present their subject in such a way that pupils are aware of the environmental crisis and begin to see it in a broader perspective. This would probably require rethinking about teaching strategies and currently held attitudes and views.

1.3 THE AIM OF THE RESEARCH

The aim of this research is to investigate Secondary School Geography teachers' perceptions of the role of EE in Geography. This study will focus specifically on teachers employed by the NED. These teachers are all white and relatively well qualified. (See 4.2.1 for the composition of the sample size).

The theory underpinning the current South African Geography curriculum is that of the ecological paradigm, however, the practice of Geography is located in positivism (Preston-Whyte, 1982). For the greater majority of our teachers and learners this has resulted in a subject which emphasises factual recall at the expense of conceptual development and the development of skills and values (Preston-Whyte, 1982). Geography teaching is therefore largely characterised by teacher-tell and rote learning. A feature of considerable concern to many Geography educators is the perception existing among teachers and learners of the existing syllabus as 'Eurocentric' and therefore largely irrelevant (Nightingale, 1992). Current trends in Geography indicate that an environmental approach to the teaching of the subject enhances the learners sense of ownership of the place in which Geography is situated (Unwin, 1992; Huckle, 1994). Future school curricula will need to consider ways in which to increase relevance through both the content and teaching approaches. If, however, an environmental approach is to be a focus of future curricula it is

necessary to understand teachers perception about the role of EE in Geography Education.

1.4 ORGANIZATION OF STUDY

This study has been organised into six chapters.

The first chapter serves to clarify the context of the research and research goal.

Chapter two evaluates the available literature dealing with the research topic.

The methodology chapter, chapter three, serves to clarify the concept of perception, indicates and evaluates the research methods used and explains the research design.

Chapter four reflects on the questionnaire results, the major tool for collecting data. The fifth chapter consists of the results of the semi-structured interviews undertaken to clarify the results of the questionnaires.

The concluding chapter provides a summary of the findings, illuminates the limitations of the study and contains some recommendations followed by a conclusion on the study as a whole.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

Placing an environmental focus on the teaching of Geography in this final decade of the 20th century is appropriate. The content of Geography as an environmental science has traditionally focussed on the study of place but, because of positivism, the emphasis shifted, forcing Geography to greatly become fragmented and to lose its environmental component and holistic view (Preston-Whyte, 1982). It is therefore necessary to revisit Geography from an environmental approach which emphasizes the study of the total environment.

This chapter identifies the relationship between Geography and EE through an explanation of:

- i) The concept environment.
- ii) What is Geography?
- iii) The relationship between Geography and the concept of environment.
- iv) The point and nature of Geographical Education.
- v) The concept of EE.
- vi) The relationship between Geographical Education and EE.

2.2 THE CONCEPT ENVIRONMENT

According to Jordaan and Jórdaan (1990: 706) the term 'environment' literally means "...that with which we are surrounded". A more comprehensive definition of the concept 'environment' is presented by Monkhouse in the Standard Dictionary of Geography (1983: 116). He defines environment as follows: "The whole sum of the surrounding external conditions within which an organism, a community or an object exists". Such external conditions could be, biotic (living) such as plants, food or animals or abiotic (non-living) such as temperature, soil, water, buildings or even the universe. Both the biotic and abiotic environments interact to make up the total environment of living and non-living things. Definitions such as these would seem to indicate that two entities exist separately and independently of one another, namely, man and his environment, whether, man-made or natural.

The traditional concepts of the environment as embodied in the abovementioned definitions are seldom satisfactory as they mask certain realities and tend to ignore certain relevant factors, such as the following:

The first of these stem from the fact that man has become the ecologically dominant force in determining the tempo and direction of environmental change (Hugo and Viljoen,

1986).

The second stems from the extent to which man has modified the environment. The categories 'natural' or 'biophysical' environment and 'man-made' or 'human' environment are therefore extremely arbitrary and can only be justified if they are seen as part of a continuum on a number of dimensions (Jordaan and Jordaan, 1990). The most telling dimension is the relative contribution of man in a specific physical setting.

The third is that physical surroundings are only part of the total environment that includes social and economic factors, cultural traditions and reciprocal influences between societies and their environment (The New Encyclopedia Britannica, 1979). The links between these elements are as important as the elements themselves, since the environment consists of a system of interacting components. Changing one component will bring about changes in the entire system (Fuggle, 1980).

The definition of the environment as merely "that which surrounds man" is therefore unacceptable since such a description does not express the interdependence between man and his environment. Man's experience of his environment influences the way in which he acts within his environment, and actions he carries out influence his experience of the environment (Jordaan and Jordaan, 1990). This leads to active mutual influencing and interaction

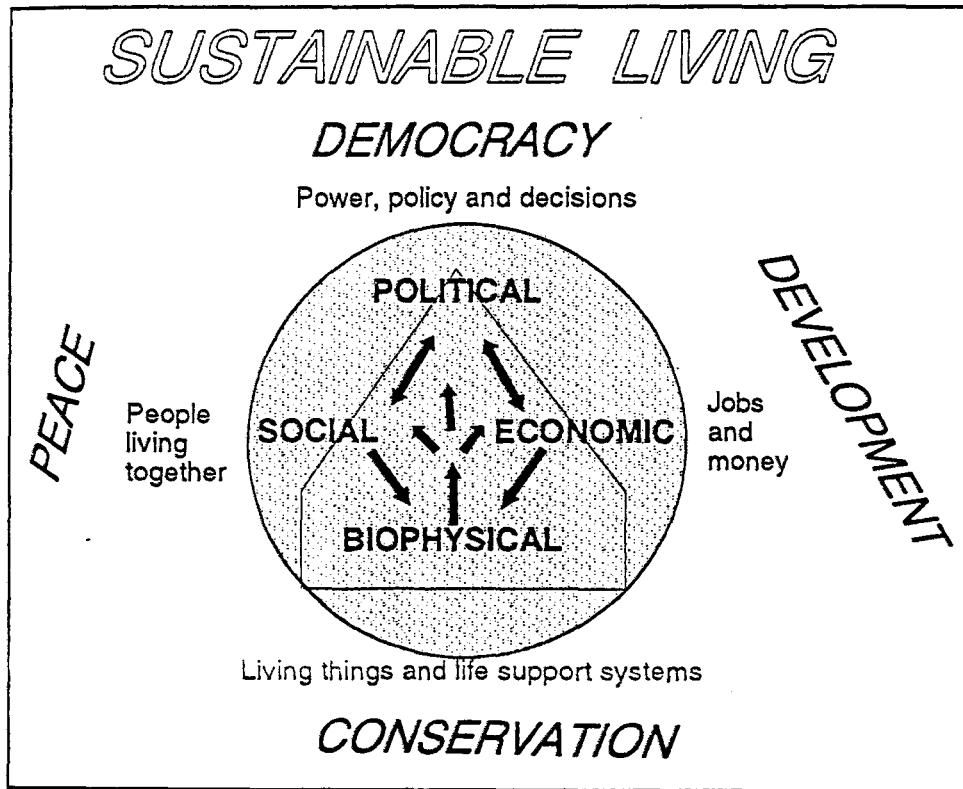
between man and his environment. Such interaction forms part of a process which does not only involve man but is also greatly maintained by him (Fuggle, 1980). To regard the environment as something static without considering this interaction is too simplistic.

A more acceptable working description rather than a definition of the environment which includes the above-mentioned factors could be: The environment is that which consists of the whole interrelated system of physical, biological, social, cultural and economic facets and institutions which influence and are influenced by the lives and activities of people (Cowen, 1980). These aspects function in their entirety as a system of interacting components (Fuggle, 1980).

Work currently in progress by EEPI (1994) identifies the environment as "... interactions among the socio-cultural milieu, living things and life support systems (people and history in nature), all of which have brought about the modern world we experience and the issues it presents us (socio-ecological problems)". The environment is therefore not just plants, animals and the physical world but also people and social structures (See figure 2.1). These aspects as can be gathered from figure 2.1 are interwoven, interdependant and linked by a continuous process of interactive flow. For the purpose of this study the above mentioned would serve as a working definition.

FIGURE 2.1

THE ENVIRONMENT
People and other living things
within life-support systems and processes



EEPI. (1994).

2.3 WHAT IS GEOGRAPHY?

One needs to clarify the nature of Geography in order to determine how it could act as a vehicle to promote environmental principles.

In Ancient Greece, Geography literally meant "to write about the world" (Gopsill, 1962). However no concept or term stays the same and in time it was modified or elaborated. Currently Geography encompasses much more than it did in Ancient Greece, and it could rightly be said to have a multitude of differing definitions, concepts and aims.

Because of the variety of ideas regarding the nature of Geography, there is no clear-cut definition that satisfies all. Du Toit (1990: 80) quotes Unesco that: "It is easier to define a Geographer, or the Geographical spirit, than to define Geography itself which is a task many Geographers will not even attempt". Although some Geographers try to define Geography it is generally more apt to describe Geography as a synthesis (Johnston, 1985) or a body of knowledge (Long, 1970; Graves, 1972) and (Webster, 1979).

According to Johnston (1985), Geography as a synthesis perceives, as far as knowledge is concerned, the whole to be greater than the sum of the parts. Geography is the bridge between the arts, natural sciences and the social

sciences. This position allows Geography to draw on a variety of forms of knowledge in order to study the relationship between man and his environment (Webster, 1979). This compendium of knowledge about the world consists of facts about size, location, boundaries and economics of a country. Geography furthermore bridges the gap between physical and human phenomena by describing place, space and makable phenomena (Graves, 1972).

Although Geography benefits from its abovementioned position, there is certain knowledge that can be regarded as unique to Geography. According to the International Geographical Union (IGU), "Geography is the science which seeks to explain the character of places and the distribution of people, features and events as they occur and develop over the surface of the earth. Geography is concerned with human-environment interactions in the context of specific places and locations" (IGU, 1992: 4). To pursue this knowledge Geographical studies investigate the following concepts:

- i) Location and distribution;
- ii) Place;
- iii) Man-Environment relationships;
- iv) Spatial Interaction;
- v) Region.

2.3.1 Location and distribution

Geography concerns itself with the study of the different absolute and relative locations of people and places on earth (Long, 1970). These locations are linked by flows of people, information, ideas and goods. This helps to explain the distribution patterns on earth. According to the IGU, knowledge of the location of people and places is a precondition for understanding local, regional, national and global interdependence (IGU, 1992).

2.3.2 Place

Places differ according to natural and human characteristics. Natural characteristics include climate, landforms, soils, vegetation, water and animal and human life (Pemberton, 1989). This is studied to determine how man arranges his life around the environment (Unesco, 1969). Human characteristics include the development of culture, settlements, socio-economic systems and lifestyles according to the beliefs and philosophies of different people (IGU, 1992). It is essential to study the abovementioned as this forms the base of understanding the interrelations between people and places.

2.3.3 Man-Environment relationships

People use the environment in a number of ways. Geography studies the effect of man on the environment, how he modifies it, and how the environment affects man (Pemberton, 1989). Man transforms the environment into

landscapes of harmony and conflict (Getis and Getis, 1982). On the other hand, man is influenced by the physical setting of the environment. Understanding the interaction between man and the environment is important as it provides the basis for environmental protection, planning and management (IGU, 1992).

2.3.4 Spatial Interaction

The spatial perspective involves the interaction between man and the space in which he lives (Du Toit, 1990). This perspective includes spatial concerns with the locational analysis of phenomena such as urban settlement, industry, transport and the uneven distribution of resources across the earth (Pemberton, 1989). Because of such uneven distribution, no country is self-sufficient and therefore countries are all linked by communication and transport to exchange resources and information. The study of spatial interaction brings understanding of the co-operation between people through the exchange of goods and information and by migration (IGU, 1992).

2.3.5 Region

Geography concerns itself with the study of the understanding of the uniqueness of place or region (Long, 1970). A region is an area characterised by selected criteria. Political criteria define states and countries; physical criteria define climatic and vegetation zones and

socio-economic criteria define developed and developing countries (IGU, 1992). According to Pemberton (1989) Geography should examine and understand a region as a whole. This implies bringing all physical and human aspects in a region together at different scales, covering from local to national to continental to global. The understanding of the processes and structures of different regions within the global system forms the basis for the regional and national identity of people (IGU, 1992). Having stated briefly what Geography is about, one could move on to discussing the relationship between the concept environment and the discipline of Geography.

2.4 THE RELATIONSHIP BETWEEN GEOGRAPHY AND THE CONCEPT OF ENVIRONMENT

The above discussion reveals that Geography is essentially about the environment. Therefore any definition of the environment must of necessity be central to Geography (Mottershead, 1987; Hurry, 1991). To Geographers 'environment' includes the 'natural' environment, which is rare because of man's ability to modify global environment; humanly modified environments, which include large areas of the world's surface, for example natural vegetation supplanted by agriculture; and artificial environments exemplified by large scale urban areas (Mottershead, 1987).

Geography, as an environmental science at the interface of the natural and social sciences (Webster, 1979), studies

the environment in a holistic manner by placing the world of human endeavour within its ecological context (Hurry, 1994). This holistic approach focuses on three broad fields of study. The first field relates to the biophysical environment which includes aspects such as plant life, animal life, climatology and geomorphology (Strahler, 1975). The second field relates to human activities such as settlements, population and the economy (Hugo and Viljoen, 1986). The third field relates to the statistical methods of presenting Geographical facts, including maps (Hurry, 1991).

The study of these broad fields places the world of human endeavour into context by developing an understanding of the interrelationship between people and the environment. Geographers look for patterns which link places, people and processes and which locates environmental concerns in distinctive settings. Geography furthermore explores the man-environment relationship including that which affect the changes in the interrelationship and how this is visibly expressed in the landscape, in spatial patterns, issues, ideas and actions (Nicholson, 1993). Such an approach could be achieved by Geographical Education about, from and for the environment (Huckle, 1981).

2.5 THE POINT AND NATURE OF GEOGRAPHICAL EDUCATION

Catlings claim (1989) that all pupils are Geographers by dint of their interaction in and with their environment

lays the foundation for a Geographical Education that are relevant to the pupils world and will serve the interest of Geography as a subject. For Catling the purpose of Geographical Education in formal schooling is to ensure that pupils "... become more effective perceivers, users, appreciators, evaluators and developers of places".

This creates a focus for Geography curriculum that emphasizes the learner as an active participator in the construction of its world. Equally the teachers role is no longer that of a transmitter of facts but of a co-learner, facilitator and scaffolder. Teachers and children together develop the knowledge, skills, expertise and the values necessary for responsible action.

The problem however remains how to implement Catlings ideas. A suggested course of study was put forward by the Geography Working Group's Intermin Report as quoted by Unwin (1992) namely:

- a. Geography explores the relationship between the earth and its peoples through the study of place, space and environment. Geographers ask the questions where and what; also how and why.
- b. The study of place seeks to describe and understand not only the location of the physical and human features of the Earth, but also the processes, systems, and interrelationships that create or

influence these features.

- c. The study of space seeks to explore the relationship between places and patterns of activity arising from the use people make of the physical settings where they live and work.
- d. The study of the environment embraces both its physical and human dimensions. Thus it addresses the resources, sometimes scarce and fragile, that the Earth provides and on which all life depends; the impact on those resources of human activities; and the wider social, economic, political and cultural consequences of the interrelationship between the two". (Department of Education and Science, the Welsh office, 1990:6 as quoted by Unwin, 1992: 13-14).

This forms a useful starting point as to consider for the teaching of Geography in South African Secondary Schools as it incorporates the traditions of Geography as explained in 2.3.

These guidelines are criticized by Unwin (1992, 15) as being 'technicist' and counter to "... much of the most exciting Geographical research that has been undertaken". Other negative aspects are that Geography is still compartmentalized with place, space and environment being treated as separate entities. Man is still viewed as the dominant feature. It also tends to reduce the nature of

the learner's experience and that Geography is alive and exciting.

Nevertheless these guidelines clearly emphasize the domain within which Geography resides and provides the knowledge from where we come from. The problem is how to interpret and present these guidelines so that it creates a experience of, amongst others, knowledge, skills and values.

In the implementing of it we need to think about the development of concepts and the traditions that are unique to Geography (see 2.3). This could be achieved by focusing on:

- i) The development of skills especially the skill of graphicacy, unique to Geography, whereby spatial information are understood and conveyed by means of maps. General skills (see table 2.1) such as practical, personal and social and intellectual ones and its various sub-skills should also be used to enhance Geographical Education.
- ii) Knowledge so as to find and understand places and people need to be developed. This in turn could lead to general ideas and development of concepts associated with phenomena in space and place and the relationship between people and their environment (Boardman, 1986).

table 2.1

Skills Building and Investigations

Practical	Personal and Social	Intellectual
collating data	communicating	analysing
collecting data	contributing	assessing
designing	co-operating	clarifying
drawing	co-ordinating	classifying
estimating	coping	comparing
extracting	discussing	decision making
mapping	empathising	detecting bias
locating sources of information	forming opinions	discriminating
measuring	hearing	distinguishing fact/fiction
observing	initiating	drawing conclusions
presenting data	listening	explaining
recording	organising	evaluating
referencing	sharing	focusing thoughts
retrieving	sustaining dialogue	formulating
testing	talking	hypothesising
writing	team building	interpreting
		predicting
		prioritising
		processing
		questioning
		recalling
		reporting
		selecting
		sequencing
		sorting
		summarising
		translating
		transferring
		visualising

DAUGHERTY, R. (ed.) (1989)

iii) Geography is never taught value free. Teachers should create opportunities for pupils to investigate and develop their own value system so that it could find expression in behaviour.

In conclusion, Geography has the inherent capacity to provide learners with the necessary knowledge, values and skills which would help them to navigate and understand and work for a better world. To achieve this, attention should be paid to how Geography is currently taught in our schools and how it ought to be taught if it is to be true to the nature and the position of the subject explained.

2.6 THE CONCEPT OF EE

EE as currently understood has evolved during the recent decades from a nature conservation concept relating to an improvement in quality of life to a sophisticated concept encapsulating aspects such as ecological knowledge and understanding, total people-environment relationships, ethics, politics, sociobiology and the participation of the public in the process of decision making (Irwin, 1989).

Internationally, great efforts have been made during the past decades to clarify both the concept of EE and to identify guidelines for the implementation of EE for example, the Tblisi Declaration of 1977 (see appendix F) which listed 12 directive principles for EE. Notwithstanding these efforts, the term 'EE' still holds

different meanings for different people and organizations. The fact that it covers a multitude of meanings and intentions, makes a definition of the term very difficult. According to Cowie (1987) "EE is difficult to define because of the variable uses of the term. The objectives of EE, furthermore, vary according to the values and attitudes of the people involved.

Another factor that hampers a definition of EE is that both the status and function of EE in formal education are still unclear. To this end many definitions of EE has been put forward. To critically assess what EE has to offer, one must pay attention to the value and worth of its existing definitions.

A definition of EE which attempts to accommodate the views of different people and organizations was drawn up by the International Union for the Conservation of Nature and Natural Resources (IUCN) in 1971. This definition states that: "Environmental education is the process of recognising values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among man, his culture and his bio-physical surroundings. Environmental education also entails practice in decision-making as self-formulation of a code of behaviour about issues concerning environmental quality" (Carson, 1987: 8).

According to Irwin (1989) this definition embraces what

most environmental educators regard as the essential elements of EE namely:

- i) the interrelatedness of people, their culture and bio-physical surroundings;
- ii) that people hold values and attitudes which inter alia relate to the environment and to behaviour towards the environment and
- iii) that 'skills', including decision making and the formulation of norms, are an integral aspect.

To others this is essentially a conservationists definition with the emphasis on conservation education (Martin, 1975). Too much emphasis was also placed on the bio-physical and rural areas of the environment, while a lack of emphasis was placed on social issues and the built environment (Ward and Fyson, 1972).

A definition of EE which addresses these shortcomings by including the human habitat and human environment is contained in the U.S. Environmental Education Act of 1970. This definition has it that: "Environmental education is an integrated process which deals with man's interrelationships with his natural and man-made surroundings, including the relation of population growth, pollution, resource allocation and depletion, conservation, technology, urban and rural planning, to the total human

environment".

Environmental education is a study of the factors influencing ecosystems, mental and physical health, living and working conditions, decaying cities and population pressures. Environmental education is intended to promote an awareness and understanding of the environment, our relationship to it, and the concern and responsible action necessary to assure our survival and to improve the quality of life" (Aldrich and Blackburn, 1975: 170).

Linke (1976) describes this as perhaps the most authoritative and comprehensive definition of EE since it encapsulates the notion of EE:

An analysis of the given definitions contains three common elements essential to EE (Linke, 1976). The first of these is to deepen people's understanding of the oneness of man and his environment. This is needed since it is becoming increasingly apparent that the biosphere of people's inheritance and the technosphere of people's creation are in conflict with one another (Hugo and Viljoen, 1986). In order to address this, education should play a vital role in confronting mankind with the real problems facing the globe and their implications. The study of such environmental issues requires a co-operative, interdisciplinary (see Tblisi principles appendix F) and integrated approach about (this concerns knowledge), for (referring to values, attitudes and action) and in (as a

resource) both the natural, built and social environments (Chambers, 1991). Environmental issues dealing with the oneness of man and his environment would therefore be confronted in a more holistic manner (Blignaut et al, 1991) across the formal, informal and non-formal curriculum.

The second and third elements (Linke, 1976) deal with the promotion of a feeling of concern for quality of life and environmental conservation. Linke elaborates on this by stressing the application of knowledge of several disciplines, as that the knowledge itself distinguishes EE from other disciplines. Such an emotive response and concern for quality of life must start in the home environment, and then progressively move on to the global environment. The application of knowledge to this concern in a holistic manner would serve to underpin the notion of the earth as a total organism.

Although the above mentioned is still very applicable it is difficult to form a rigid definition for such a dynamic concept as EE, which is under continuous scrutiny and subjected to constant modification and change as new needs or emphases arise. The concept of EE is furthermore subjected to diverse interpretations because of numerous social, historical and cultural factors which influence our perception of the use of our environment. This has resulted in a movement away from trying to find a universally acceptable definition of EE in recent years towards a broad delineation of what the concept is about and to include

within it new or specific ideas as they evolve (Irwin, 1989).

The most relevant modifications or emphasis shifts in EE relate to resources scarcities, environmental destruction, poverty and social hardship because of economic growth in a wasteful and inegalitarian way (O' Riordan, 1981).

Viewpoints such as these led to an emphasis on education to ensure sustainable living. The Environmental Education Policy Initiative (EEPI 1994: 6)

defines 'sustainable living' as: "Living so as not to restrict the freedom of present and future generations by harming the environment in which we must live and develop".

Fien (1993) suggested that views like this placed a broader and more integrative view on EE. It is elaborated on by Fien (1993) when he points out that sustainable living is in an interlocking position between economic, social and ecological goals. This interlocking position is underpinned by ethical values that map out the relationship between people and nature for ecological sustainability, such as biodiversity, living lightly on the earth, interspecies equity and people for social justice such as basic human needs, human rights, intergenerational equity and participation in decision making.

Such participation in decision making will probably result in a change from a top-down approach to participatory action by people working together as a community of teachers and students, in order to do something about

environmental issues within a democratic context such as a classroom or a community forum (EEPI 1994). EE would therefore empower people to develop their human potential not only in order to operate in a truly democratic society but also to use this empowerment to act in the interests of the life supporting biophysical environment (Blignaut et al, 1991). This can be achieved only if people are educated to change the human environment for the better by understanding the political process by which participating citizens can achieve. To reach this knowledge of the environment, value judgments relating to the human and natural aspects of our surroundings must be made (Martin, 1975). Environmental reform is thus political and people must therefore develop - through EE - a knowledge of political processes and decision making to allow them to justify their strategies for environmental action (Stevenson, 1987).

During recent years EE has changed its approach from education in and for the environment (Huckle, 1981) to action learning. The early experimental immersion approaches both of nature experiences and of values education have been complemented by allowing people to understand and to take part actively in their world through a wide range of learning situations. These action research approaches to EE have enhanced classroom practice and are synonymous with better education (EEPI, 1994). To allow for a process whereby participants can acquire knowledge,

skills and values, teaching and learning must take place in a co-operative manner, involving real environmental issues. Such an inquiry process should allow students to engage actively in critical and complex thinking, thereby preparing them for inquiry and action (Stevenson, 1987) during formal, non-formal and informal education. (Council for the Environment, 1984).

According to Okot-Uma and Wereko-Brobby (1985), as quoted by Irwin (1990), EE "implies an integrated course cutting across traditional subject areas, including both the pure sciences and the social sciences. A basic objective of such a course aims to enhance in the learner an awareness, understanding and concern for the environment and its associated problems through dissemination of knowledge, development of skills and attitudes, and inculcation of motivation and commitments pertinent to aspects of the environment in relation to human activities".

In an effort to achieve this, EE has been guided by, amongst others, the Belgrade Charter (1975), the Tbilisi Principles (1977), the Moscow Conference (1987) and the Rio de Janeiro Conference (1992) (EEPI, 1994). In a South African context these developments were reinforced by, amongst others, The White Paper on EE (Dept of Environment Affairs, 1989), a document on a core syllabus for EE in South Africa by the Council for the Environment (1993), and the EEPI Working Document of Sources for Policy and Curriculum Initiatives in Formal Education (EEPI, 1994).

In view of the above EE embraces a range of features. These include a concern for feelings, values and attitudes that influence human behaviour (O'Donoghue, 1987). EE is also concerned with the provision of knowledge, skills and insight require to analyse and synthesise local, national and international environmental problems from a holistic perspective by inter-disciplinary enquiry. EE considers all aspects of natural and human-made environments such as the politics, ecology, economics, technical developments, the society, culture, legislation, and spiritual and aesthetic aspects. EE should also provide people with specific professional and occupational insights and skills to enable them to solve problems and to use their environment harmoniously, wherever they may live and whatever their livelihood may be (Martin, 1993).

2.7 THE RELATIONSHIP BETWEEN GEOGRAPHICAL EDUCATION AND EE

Geography as a discipline is mostly concerned with studying the man-environment relationship, regions, spatial interaction, location and distribution and place. This is done in a holistic, integrative manner by bringing together and organizing the above aspects. EE is learning, about, from and for the environment in a holistic, inter- and multi-disciplinary manner. It is therefore important to realise that EE is not sub-standard Geography (Hopkinson, 1987) and that Geography is not a synonym for EE (Shortle, 1973).

EE is an educational development which subject disciplines cannot afford to ignore. As such, Geography is just one of many disciplines which could contribute to EE. Geography must, along with other subjects, appreciate this mutual contribution to EE and should communicate with other subject disciplines (Cribb, 1980; Kelly, 1984). This is necessary since most environmental questions or topics require a broad interdisciplinary approach for thorough analyses (Cribb, 1980). The relationship between Geography and EE should be encouraged as long as Geography maintains its distinctiveness.

It has been argued that because of this distinctiveness Geography needs to identify the knowledge, skills, principles and abilities it can best develop to promote environmental principles, either as a separate subject or within integrated schemes (Baines, 1981). Furthermore Hopkinson (1978) has suggested that in this identification process certain areas of Geography such as stratigraphy or geomorphology are likely to remain outside the wider boundaries of EE.

Contemporary Geography contributes to the scope of EE since it can only gain if EE investigates certain topics that are dealt with in Geography, such as population, settlement and planning (Hopkinson, 1978). EE is furthermore perceived to promote the aims and objectives of Geography by employing techniques such as fieldwork, cartography and graphicacy when studying the environment (Kelly, 1984). It

is also considered as beneficial to Geography if it is seen and interpreted as a member of a team in a complex series of investigations (Baines, 1981). Cribb (1980) has argued that EE offers Geography the strongly developed enquiry skill.

Geographers are aware of the benefits it can obtain from EE and of its obligation to it. In this regard the Geographical Association of Britain has published two reports investigating the relationship between Geography and EE. These reports have grown from the first, which merely emphasized the spatial contribution which Geography made, to the second which added ecological analyse, behavioural studies, decision making, co-operation with environmental professions and controversial issues (Huckle, 1981).

In this regard Geography could contribute to EE as it has always been concerned with the complex relationship and interaction between man and his environment, especially the processes which shape environments and influence human responses to environmental conditions (Kelly, 1984) and in the way it finds visible expression in the landscape as well as in issues, ideas, interpretation and action for, about and from the environment (Nicholson, 1993). Because Geography educates about the man- environment relationship, its content, nature and approaches serve to promote environmental principles.

As Geography is concerned with the location and distribution of the man-environment relationship activities it provides a spatial perspective of the resulting patterns on the earth's surface (Kelly, 1984). Geographers therefore explore the question of "why there?" (Cribb, 1980) which is essential to environmental understanding as it emphasises the setting within which environmental issues arise as well as the culminating factors which contribute to the distinctiveness of places (Kelly, 1984). This understanding is enhanced by establishing sensible regional boundaries which would be useful in investigating the control, planning and development of the earth's surface (Baines, 1981). To fully contribute to EE Geography should examine environmental problems in a spatial framework by applying Geographical criteria such as maps, and also by using distinctive Geographical methods such as fieldwork. By doing this Geography will create in pupils an understanding of the way man has changed his spatial environment and will develop and maintain in pupils an awareness of the need to maintain and improve the quality of the human spatial environment (Shortle, 1973).

Environmental issues range along a large scale from the immediate neighbourhood to the global (Kelly, 1984). Geography is equipped to clarify the significance of such issues as it focuses on a variety of scales using a particular set of skills and techniques such as graphicacy, cartography and photo interpretation (Cribb, 1980) to emphasise wider perspectives than just the local.

Geography could contribute to recent developments in EE, such as development education, by placing the world of human endeavour within its ecological context and thereby encouraging students to ponder the issues of development and environmental sustainability. Geography could also enhance the notion of sustainable living as it facilitates the acquisition of knowledge and insights into environmental issues (Hurry, 1993). Recent developments in the field of Geography, i.e. such as decision making, values education and welfare, are specifically concerned with the quality of the environment (Kelly, 1984). As Geography cannot be taught value free, (Ballantyne and Attwell, 1985) controversial issues pertaining to the above must be raised. By confronting such issues pupils become aware of differing viewpoints towards any environmental issues (Ballantyne and Attwell, 1985). According to Kelly (1984) the creation of environmental awareness and the ability to participate in the solving of such issues will be hindered if they are not raised. This viewpoint is supported by Ballantyne and Attwell (1985) who state that such issues should not be taught in a passive manner, but that pupils should be involved in order to become environmentally literate. These authors believe that Geographical Education will fall short of its goals if pupils do not develop respect for the environment and are not involved in issues, conflicts and decision making in and about the environment.

Geography should provide students with a deeper

understanding of environmental issues and a more responsible and caring attitude towards the environment. This should ideally be reflected in their behaviour (Cribb, 1980). Geography could contribute to this through fieldwork (direct observation) or secondary sources (indirect observation) thereby fostering positive attitudes with a view to environmental quality rather than merely communicating knowledge (Graves, 1980).

The abovementioned contributions of Geography to EE could be achieved, since teaching methods in Geography are particularly suited to EE. According to Kelly (1984) methods such as case studies and games and simulations are ideally suited to bridging the gap between Geographical ideology and the real world. The most important Geographical method that could contribute to environmental understanding is fieldwork. Geographical fieldwork should provide active learning experiences for students on local issues. During fieldwork students should be allowed to investigate, look, feel, observe, record, question and interview and by so doing gather information on the environment. Firsthand knowledge is acquired in this way, skills are developed and the theory is measured against the practice (Webster, 1979) from, for and about the environment.

Not all Geographers share the same enthusiasm concerning EE and some reacted anxiously to the future of Geography in the face of EE. According to Huckle (1981) Geographers

need not harbour such fears and should not be so cautious about EE since Geography is nothing without the environment and EE would be so much poorer if Geographers do not participate fully in achieving the aims of EE (Kelly, 1984).

2.8 CONCLUSION

Geography and EE share skills and areas of knowledge. Despite this it would be wrong to make one the complete vehicle for the other as this would greatly decrease the important contribution they could both make to education.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

The purpose of this study was to determine the perceptions of Secondary School Geography teachers of the role of EE in Geography with particular reference to Natal Education Department teachers. In order to achieve this goal, the following procedures were employed:

- i) Postal questionnaires consisting of open-ended and closed questions were sent to Geography teachers employed by the Natal Education Department.
- ii) A pilot study of the questionnaire was undertaken, using 10 % of the total sample.
- iii) Semi-structured interviews were conducted with a 10 % convenience sample of survey respondents as a follow-up to the questionnaire.
- iv) The data was analysed using standard qualitative and quantitative methods.

Before considering the methodology used in this study, it is necessary to present a working definition of the concept of perception since the notion of perception has been

defined in various ways according to the nature and point of the study to which it has been applied.

3.2 TOWARDS A WORKING DEFINITION OF PERCEPTION

According to Fien (1985) both individuals and groups of people have their own perceptions of the environment, time, place, space, knowledge, feelings, attitudes and values as well as predispositions to act in and towards the environment in different ways. These perceptions are brought about and controlled by physical and cultural factors such as age, sex, past environmental experiences, societal expectations and teaching, memory, moods and imagination. The notion of perception is thus related to our construction of reality. Such a construction of reality through perceptions will vary from person to person and group to group.

The following two definitions of perceptions were chosen because it was felt that they suited the purpose of this study best.

- i) "Perception is the name given to the human ability to process, interpret and attribute meaning to the information received via the sensory systems" (Jordaan and Jordaan, 1990:329).

- ii) "Perception is the way in which individual human beings or groups of human beings view the world around them" (Cole, 1973:239).

These notions of perception are not without problems, because what a person perceives is not a mirror image of reality. People reconstruct reality by adding, leaving out, misrepresenting and interpreting the environment around them. This could lead to the problem of there being as many realities as there are people. Perceptions, furthermore, cannot be measured; one can only identify trends, patterns and general similarities related to peoples' thinking regarding specific matters.

Despite these inherent problems, perceptions are explored in this study because people, and in this case Geography teachers, do not exist in isolation. Interaction and communication take place with one another and with pupils. Geography teachers, are also identifiable as an occupational community through their shared knowledge, experience, their teaching and societal expectations. Within such an occupational community the rules of perception are learned and a corresponding reconstruction of reality takes place (Jordaan and Jordaan, 1990). This construction of reality by Geography teachers of the role of EE in Geography was identified by a questionnaire and semi-structured interviews.

3.3 THE ORGANISATION OF THE QUESTIONNAIRES

According to Sanders and Pinhey (1983:91), a questionnaire is "... a form or document that contains a set of questions, the answers to which are to be provided personally by respondents". Such a questionnaire can either be posted to the respondents to be completed or is completed under the supervision of the researcher (Dane, 1990).

Questionnaires are widely used in research as they have certain advantages namely:

- i) Large quantities of information can be assembled in a short space of time;
- ii) Questionnaires are easily administered;
- iii) Questionnaires provide a fair overall reliability.

Questionnaires are, however, not without problems. These have been identified by Dane (1990) and Cohen and Manion (1990) among others as relating to both the structuring and the organisation of the questionnaire and include aspects such as:

- i) The time-consuming aspect of development of the questionnaire;

- ii) Problems relating to the development of categories, items and recording and coding systems used in the questionnaire;

- iii) The lack of motivation and commitment to the questions on the part of the respondents.

According to Cohen and Manion (1990) a more pressing problem is the lack of validity and reliability. Validity refers to the extent to which an instrument and in this case a questionnaire, measures what it is supposed to measure (Sanders and Pinhey, 1983). To be sound a questionnaire should when executed with the proper formalities confirm that the body of knowledge is true. Reliability refers to the achievement of consistent results each time the instrument is administered (Owen, 1981).

In an attempt to reduce the problems of validity and reliability, the procedures mentioned below were followed:

- i) A pilot survey was conducted prior to the main survey using 10 % of the sample population.

- ii) Semi-structured interviews were conducted after the processing of the questionnaire using a 10 % sample of the survey population.

For the purpose of this study a postal questionnaire was

used. A postal survey (Dane, 1990) is a self-administered survey in which respondents have to complete the instrument without the intervention of the researcher, thus creating greater anonymity. Postal questionnaires are generally less time-consuming (Wiersma, 1986) for the researcher and are often the only viable way of carrying out research, especially when the research relies on a large survey population.

The most problematic aspect of postal questionnaires is the generally low rate of return. General problems such as untruthful answers, the misinterpretation of questions and the incomplete response to questions are also exacerbated by postal questionnaires as the researcher has no opportunity to provide guidance (Dane, 1990).

In order to reduce the problems associated with postal surveys the procedures below were followed:

- i) In designing the questionnaire attempts were made to achieve absolute clarity in terms of what was expected from the respondents. To this end the questionnaires for this study consisted of five sections each with its own heading; the stems used in the questions were phrased in such a way that the language was clear and concise. Care was taken to arrange the questionnaire in such a way as to maximise co-operation (Cohen and Manion, 1990).

- ii) A self-addressed stamped envelope with a pre-printed identification code was included to increase the response rate.
- iii) The questionnaire was accompanied by a covering letter which attempted to encourage response. Follow-up letters were posted to respondents.
- iv) Problems that arose from the questionnaire were addressed by semi-structured interviews (Wiersma, 1986; Dane, 1990).

Questionnaires may consist of structured (closed) or unstructured (open-ended) questions, or both. Structured questions have the advantages of straight-forward data tabulation and since this is not time-consuming, it is easy to code or answer (Wiersma, 1986). The main disadvantage of the structured question is that it limits the response and does not allow the researcher to probe attitudes, values and opinions (Cohen and Manion, 1990).

The main advantage of unstructured questions is that they allow the respondent the freedom to reply in a personal manner. Therefore a truer reflection of the respondents perceptions may be obtained. Unstructured questions pose problems for analysis as responses may vary in length and can be difficult to tabulate and synthesize (Wiersma, 1986). To gain maximum benefit from the questionnaire the researcher employed both structured and unstructured

questions in the questionnaire.

3.4 THE CONSTRUCTION OF THE QUESTIONNAIRE

The questionnaire was compiled under the following five headings which reflect the major research areas:

- i) The characteristics of the survey population.
- ii) The perceived nature and importance of EE and how EE should be approached through Geography.
- iii) The perceived relationship between EE and Geography.
- iv) The extent to which the existing Geography syllabus is perceived to facilitate the teaching of environmental principles.
- v) Possible problems that could be encountered when environmental principles are taught in Geography.

Sections ii - v included both closed and open-ended questions. Statements in these questions were based on the Tblisi principles, the white paper on EE, Geography syllabuses and numerous other publications such as Teaching Geography, Southern African Journal of EE and Conserva. Respondents were required to answer each item in these sections by using a 3 or 5 point Likert scale in order to

obtain a reliable picture of teachers' perceptions.

A Likert scale ranging from 1 (no importance or strongly agree), 2 (little importance or agree), 3 (some importance or undecided), 4 (great importance or disagree), 5 (extreme importance or strongly disagree), was used to indicate the degree to which the claims expressed the perceptions of the respondents. In section iv, however, a three point Likert scale ranging from 1 (little potential), 2 (some potential), 3 (great potential) was used. The last section required respondents to indicate what problems they envisaged when teaching EE in Geography and whether these were perceived to be of major, minor or no consequence. The justification for using a Likert scale is that it provides the respondents with opportunities to express their opinions more fully thereby allowing the expression of a wide range of opinions.

3.5 THE ADMINISTRATION OF THE QUESTIONNAIRE

The research was conducted among Secondary School Geography teachers employed by the Natal Education Department. The population for the research comprised 83 high schools in Natal and included both private and public schools.

The implementation of the questionnaire was preceded by a pilot survey involving ten Geography teachers (10 % of the survey population) from the Durban area. For the purpose

of the pilot survey convenience sampling was used, which meant choosing the nearest individuals to serve as respondents (Cohen and Manion, 1990).

The final questionnaire was administered by the researcher by means of a postal survey for reasons indicated earlier. Before mailing the questionnaires the researcher had to seek permission from the Natal Education Department; subsequently, 180 questionnaires were mailed to 83 high schools.

A problem which was encountered at this stage was the inability of the Natal Education Department to provide correct figures of the number of teachers teaching Geography. This meant that, in order to determine the response rate, the number of schools was used rather than the number of individual responses.

By the cut-off date 101 responses from 62 schools had been returned for analysis. This was a response rate of 74,6 % which correlates well with the 70 % which Wiersma (1986) considers the minimum rate when surveying a professional population. After the cut-off date a further 16 responses from 7 schools were received. The 8,4 % late returns were compared with the rest of the survey population and no significant differences were found. These responses came from a convenient sample of teachers employed by the Ned and are all white and relatively well qualified.

The high response rate by Geography teachers in Natal could be attributed to certain factors namely:

- i) The researcher knows a large number of respondents personally. This was brought about by regular attendance of in-service training courses, the external moderation of Std 10 Senior Certificate examinations (practical paper) and the rotation system used for marking Natal Senior Certificate examinations.
- ii) The Journal of the Natal Geographical Association keeps all Geography teachers in Natal informed and involved.

The only problem revealed whilst administering the questionnaires was that certain open-ended sections received very little response.

3.6 THE INTERVIEW

According to Cohen and Manion (1990) a research interview is a two-person conversation initiated by the interviewer for the specific purpose of obtaining research-relevant information, and focuses on content specified by the research objectives of systematic description, prediction or explanation. The interview also involves the gathering of data through direct verbal interaction between individuals. Dane (1990:4) claims that "if we are

interested in perceptions, interviews may be just the method to use". For the purpose of this research both the above mentioned definitions are used.

In terms of design, interviews may either be structured, semi-structured or unstructured. Structured interviews consist of set questions and the answers are recorded on a standardised schedule. The most important advantages of a structured interview are its uniformity, which leads to greater reliability and makes the responses more easily coded for analysis. The most important disadvantage is the restrictive nature of the interview.

In semi-structured interviews the interviewer poses predetermined questions, but can be flexible in asking follow-up questions. The most important advantages of the semi-structured interview is that greater freedom is allowed; it is less formal and the interviewer can also probe for more specific answers. The semi-structured interview has to be "carefully planned" (Cohen and Manion, 1990:309) to allow the content, sequence and wording to be correct. The most important disadvantage of the semi-structured interview is its flexibility, because not all respondents are asked the same questions. This reduces validity (Dane, 1990).

In unstructured interviews, the interviewer encourages the respondent to discuss a topic without providing guidance. Very few direct questions are asked. The most important

advantage is that the respondent is given freedom to respond and the interviewer can probe a particular response (Dane, 1990).

Generally all interview methods are expensive, time-consuming and involve small samples. However, although interviews do have high reliability, their validity is lower than that of the questionnaire (Dane, 1990). Despite these limitations the researcher decided, for the purpose of this study to use semi-structured interviews. The semi-structured interview format was chosen, because a degree of structuring was needed to maintain reliability and validity. Furthermore, it served to validate and confirm the results of the questionnaires.

The interview sample consisted of 10 % of the survey population. The interview sample was a convenience sample (Cohen and Manion, 1990) and, apart from one interviewee, all the respondents in the sample were from the greater Durban area. The most important factors considered when choosing this sample was time and the accessibility of the respondents to the researcher as he resides in the Durban area. The interviewees were identified by using the pre-printed identification code printed on the envelope. To keep the convenience sample as representative of the survey population as possible (See 4.2.1) the following were chosen: seven males and three females, of whom three were Afrikaans and seven English. Of this sample five interviewees hold honours degrees and five hold first

degrees, five teach at co-ed schools, three at boys' schools and 2 at girls' schools.

The researcher telephoned the interviewees for appointments. A convenient time was then arranged for the interviews. The interviews took place at the homes of the interviewees. Questions were asked using the semi-structured interview schedule (See Appendix G). These interviews were recorded with the permission of the interviewees. Research notes were taken throughout. The interviews were then transcribed and analyzed.

3.7 DATA ANALYSIS

The survey was analysed as follows:

The structured questions of the questionnaire were analysed by means of computation. The resulting information was presented in the form of percentages, ranked according to the arithmetic mean and the use of chi-square testing. The data was further analysed by means of tables.

Percentages were calculated for all questions which used the Likert scale. This was done to reveal trends such as similarities and differences between the sub-sets. Percentages are suitable for this as they supply a frame of reference for reporting research results by standardising raw data. Percentages are also easier to read and comprehend than frequencies as they make comparisons

between sub-sets easier by effectively eliminating differences in size (Healy, 1990). As little difference was found between the concepts of great and extreme importance on the Likert scale, they were collapsed into a single percentage.

Responses were further quantified by noting their rank with regard to the target dimension (Howard, 1985). This ranking was done by the use of the arithmetic mean or average. The arithmetic mean or average is obtained by adding all scores and dividing it by the number of scores (Healy, 1990).

The chi-square test was used to determine whether there were statistically significant discrepancies between the actual distribution of responses among sub-sets and the theoretical distribution which chance might produce (Healy, 1990). The chi-square test assisted the researcher in analysing the survey by determining statistically significant differences when comparing the sub-sets. For this study a probability level of 0.5 was used.

The sample size used in this study was such that the above statistical analysis was judged to be appropriate (Radloff, Pers Com; 1993).

The open-ended questions of the questionnaire, as well as the interviews, were transcribed and analysed. The open-ended questions were summarised and grouped into the five

different research areas of the questionnaire. Under the five different areas the open-ended questions were grouped and described. The interviews were also grouped and described under the five different research areas. The interview data was compared to the questionnaire data to determine both differences and similarities.

3.8 LIMITATIONS OF THE STUDY

A limitation which emerged was the narrowness of the study, which was conducted only amongst Geography teachers employed by the Natal Education Department and therefore did not include Geography teachers from other departments.

This was unavoidable both in terms of the requirements of the half thesis and the limitations placed on the study by time and costs.

The process of the research had various other limitations. It proved time consuming to develop the questionnaire and doing the pilot survey. Some respondents lacked motivation to respond and not even follow up letters could convince them to participate in the research. Semi-structured interviews were used after the processing of the questionnaire. Although all interviewees were keen to participate the use of a convenience sample could be viewed as a major limitation of the study.

3.9 SUMMARY

In this study questionnaires and interviews were used to determine the perceptions of teachers on the role of EE in Geography. These two instruments were employed to increase the validity and reliability of the research. The analysis of data collected by these research methods will be presented in chapters four and five.

CHAPTER 4RESULTS OF THE QUESTIONNAIRE4.1 INTRODUCTION

The data reflected in this chapter is that of the questionnaire. The questionnaire, the major tool for collecting data, was organised into five sections:

- i) The first section was designed to establish the composition of the survey group.
- ii) The second section attempted to identify the respondents' perceptions of EE. This section was designed to identify the importance respondents attached to EE and approaches they perceived as appropriate for using Geography as a vehicle to develop the principles which underpin EE were probed.
- iii) The third section attempted to establish teachers' perceptions of how EE and Geography could be complementary.
- iv) The fourth section tried to establish to what extent the current Geography syllabus facilitates the teaching of EE principles.

- v) The final section attempted to establish the possible problems Geography teachers expect to encounter in the teaching of EE principles in Geography.

The results gathered from the questionnaires are presented in this chapter in the order in which the questionnaire was arranged. The responses of the entire sample population are analysed according to the above-mentioned sections. The results are then compared within the various subsets into which the sample population has been grouped. The open-ended questions are analyzed at the end of each section.

4.2 RESULTS AND ANALYSIS OF THE QUESTIONNAIRE

4.2.1 The composition of the survey population

The questionnaire involved 82 Secondary Schools in Natal, both private and government schools offering Geography as a subject up to Std ten. The 101 returns obtained from the questionnaires represented a response of 74,6 %, or 62 schools, in relation to the schools surveyed. A total return of 83 % was received, which meant that 8,4 % of the questionnaires were received after the cutoffdate.

An analysis of these returns as summarised in Table 4.1 indicates differences such as the following between the respondents. Firstly it was revealed that the respondents included more males than females. This is in line with

TABLE 4.1

COMPOSITION OF GEOGRAPHY TEACHERS IN NATAL EDUCATION DEPARTMENT

(Expressed as raw scores)

(N = 101)

PERSONAL ITEM	RESPONDENTS ACCORDING TO CATEGORY					
Gender	Male 61	Female 40				
Highest Geography Qualification	College 2	Geog I 2	Geog II 9	Geog III 70	Hons 15	Mast 1
Last Geographic qualification when obtained	0-5 years 18	6-10 years 21	10+ years 60			
Teaching experience	0-5 years 20	6-10 years 25	10+ years 54			
Medium of instruction	English 65	Afrikaans 13	Both 23			
School post	HOD 53	Other post level 46				
Highest Geography standard taught	Std 6 65	Std 7 68	Std 8 67	Std 9 67	Std 10 94	
<u>Description of school:</u> a) according to gender	Co-ed 56	Boys only 24	Girls only 21			
<u>Description of school:</u> b) according to region	Rural 4	Mixed urban/rural 34	Small town 13	Metropolitan 50		
<u>Description of school:</u> c) according to community	Affluent 24	Middle-income 23	Mixed-income 46	Lower-income 7		

Ballantyne's (1986) research on Geography teachers employed by the Cape Education Department. The survey furthermore revealed that the majority of respondents were well qualified to teach Geography - as 85 % of teachers hold Geography III or higher qualifications. The majority (60 respondents) of these qualifications were obtained more than ten years ago. The advantage of this is that a body of very experienced Geography teachers exists in Natal. A negative aspect to this could be that since EE is a recent development, these teachers may not be familiar with the latest EE theory. An unfortunate result of this could be that EE would not be taught by these teachers if they do not know or understand it.

While 62,4 % of the respondents held Head of Department posts, they did not outnumber post level 1 Geography teachers by much. This is revealing since the researcher regards the questionnaire responses to be very representative. Almost all Geography teachers (93 %) teach up to Std ten level. This indicates a good spread and shows that most teachers' are not confined merely to the Junior Secondary or Senior Secondary phases.

The survey indicated that there are many single sex schools in Natal. This could be attributed to the strong influence of the British education system in Natal. These schools are not dominated by region or community but are evenly spread across these variables. The analysis of the survey population employed by the Natal Education Department

revealed that Geography teachers in Natal are generally experienced and well qualified and that most of them use English as a medium of instruction. The Geography teachers are also quite evenly distributed among co-ed and single-sex schools across the different communities in the province with regard to income and region.

4.2.2 Teachers' definitions of EE: An analysis of the open-ended question on what teachers perceive EE to be.

Before completing the closed section of the questionnaire, teachers' definitions of EE were elicited through an open-ended question which was answered by 88 % of the survey group. The response to this question reflected a wide range of perceptions of the nature of EE. These perceptions can broadly be divided between those teachers who saw EE as a means to create awareness and concern for the environment, conservation, the man-earth relationship, man's impact on the environment, problem solving in the environment, management of the environment, and other individual responses which could not be grouped.

The term 'awareness' was used by 39 % of the respondents in their definitions of EE. Of these respondents 11 % perceived EE to be solely about creating an awareness of the environment. This is highlighted by the following comments made by teachers: "...creating an awareness amongst pupils of the need for man to be in harmony with his surroundings" and "...making pupils aware of the world

in which they live and of their responsibilities". Some respondents claimed that awareness of the environment implied action and expressed it as that: "EE is about analysing the principles of greed, combined with problems such as over-population and about developing a sound awareness of these problems and installing a commitment to improving or preventing it" and "teaching a child awareness of his own surroundings, making him realise that man is responsible for its deterioration and indicating what should be done to prevent it". Awareness obviously implies different things to different teachers. To some it merely means informing the pupil about aspects of the environment, while to others it means active involvement in preventing and solving environmental problems.

This section revealed that 24 % of the respondents perceive EE to be about conservation. This is revealing as in question 14 the survey group rated the claim that EE is about conservation eleventh out of fifteen possibilities. Several respondents claimed that EE is simply about conservation and commented as follows: (a) "EE is about creating awareness of the environment and conserving the earth for future generations" and (b) "... creating enough of an awareness so that conservation becomes second nature" and (c) "... making pupils aware of their world around them in such a way that they will respect and appreciate and preserve the environment for the future". For other teachers conservation as such was not enough they perceive EE to cover a wider spectrum. They commented with that:

(a) "...teach pupils how to conserve their environment and to show pupils how man misuses his environment" and (b) "...making the child aware of the man/resource relationship and the need to conserve and maintain the environment to ensure the survival of all living species". The traditional view of EE as being merely restricted to conserving the environment thus has strong support amongst respondents, and highlights the need for teacher education regarding the holistic nature of EE.

Twelve percent of the teachers' answering this section perceive EE to be about the man-earth relationship. This corresponds positively with the claim about the man-earth relationship that received the second highest support in question 15. One respondent elaborated on the man-earth relationship by claiming that "it is the interactive study by both teachers and pupils concerning the relationship that exists between man and the environment". One teacher also pointed out that "it is important working with and not against his/her environment, therefore maintaining a balance is necessary for mans further existence".

Teachers' also perceived the man-earth relationship to be of importance on a global scale. This was highlighted by comments such as that: (a) "Pupils should be aware of the concept of spaceship earth with all interrelationships" and (b) "EE is about teaching pupils to understand the interrelationship with earth in its totality". Teachers also regarded the understanding of the man-earth

relationship as important and expressed themselves as that: "Understanding the total interaction between man and earth will create an awareness of the changes and consequences of the change" and "understanding our place in the environment will create the responsibilities that go with it".

Ten percent of the survey group defined EE as the understanding of man's impact on the environment. Most respondents in this group simply saw EE as "understanding the setting in which man lives and how he impacts on it", "the study of man's natural surroundings and his impact on them" and "the study of the environment and people and how they impact on the environment". Very few teachers attempted to explain man's impact on the environment in greater detail. One example of such an attempt is that: "EE is the study both of man's influence on the environment and of the solutions for problems created by man".

Views such as these contrasted to those of respondents who saw EE as the science of managing the environment. One teacher expressed it thus: "EE is about the proper management of our environment". This sentiment was echoed by a teacher who wrote: "EE is about how man can manage his environment to the benefit of both man and nature". A more specific idea about managing the environment described EE as "education that enables pupils to view and understand their environment as a complex system of interrelated and symbiotic elements which require judicious and timeous management strategies".

There were those respondents who perceived EE to be "learning about the environment and the problems and solutions to these problems" and "... looking after and being concerned about environmental damage and deciding what to do to improve/solve environmental issues".

The low status given to environmental problems is revealing if one takes into consideration that in question 14 (See 4.2.3) problem solving skills received considerable support.

A variety of other definitions of EE was put forward by various respondents. These definitions covered a wide spectrum. One teacher quoted from the White Paper on EE and defined EE as "...studying in, about and from the environment". Another respondent merely perceived EE to be about "communities", whilst to another EE was just "Ecology". More comprehensive definitions were also put forward by teachers such as: "EE is about developing in learners an awareness of the environment and its ecological sensitivity, the problem created by over-exploitation and developing solutions to the conflict between environmental preservation and the interests of the ecological dominant (man); developing attitudes to help learners to be more sensitive to environmental and social problems; developing skills to help learners to show others and themselves how to solve environmental problems; to encourage learners and the public to take active steps to help solve environmental problems. Life is about doing, not merely talking".

Apart from the above-mentioned comprehensive definition, teachers in general gave short definitions for EE. These short definitions reflect the areas of concern and interest of teachers and indicate their personal perception of EE. When these definitions are compared to the IUCN definition of 1971 it is revealed that as a group teachers generally embrace the essential elements of EE. The interrelatedness of people, their culture and their biophysical surroundings (Irwin, 1991) are covered by teachers' definitions about the man-earth relationship, man's impact on the environment and the management of the environment. Geography teachers' definitions about awareness and concern and conservation tie in with the IUCN definition, since these definitions touch on the correct values, attitudes and behaviour towards the environment as expressed in the IUCN definition. In their definitions teachers regarded skills and specifically problem-solving skills as an integral part of EE. This once again partly ties in with the IUCN definition. Geography teachers as a group showed a fairly broad understanding of the general principles which underpin the notion of EE; however, these results show that there are discrepancies amongst individual teachers' understanding of current notions of EE.

4.2.3 The perceptions of Geography teachers about the nature of EE

This question was included to determine Geography teachers' perceptions of EE. This question differs from the

TABLE 4.2

THE PERCEPTIONS OF GEOGRAPHY TEACHERS' ABOUT THE NATURE OF EE

COMPARISONS BETWEEN GROUP RESULTS

(Expressed as percentages)

(Ranked according to mean)

(N = 101)

RANK	MEAN	ITEM	TOTAL	MALE	FEMALE	ENGLISH	AFRIKAANS	BOTH - LANGUAGES	0-5 YEARS AGO QUALIFIED	6-10 YEARS AGO QUALIFIED	MORE THAN 10 YEARS QUALIFIED	0-5 YEARS EXPERIENCE	6-10 YEARS EXPERIENCE	MORE THAN 10 YEARS EXPERIENCE	HOD-YES	HOD-NO	AFRIKAANS-SCHOOL	ENGLISH-SCHOOL	DUAL MEDIUM	CO-EDUCATIONAL	BOYS ONLY	GIRLS ONLY	RURAL	URBAN (METROPOLITAN)	URBAN (SMALL TOWN)	MIXED	AFFLUENT	MIDDLE-INCOME	LOWER-INCOME	MIXED-INCOME
		N =	101	51	40	69	20	12	18	21	60	20	25	54	53	46	13	65	23	56	24	21	4	50	13	34	24	23	7	46
1	4.80	Understanding man's impact on the environment	99	98	100	95	100	100	100	100	98	100	96	100	100	98	100	100	96	98	100	100	100	100	100	97	100	100	100	98
2	4.46	Understanding local environmental issues	93	90	98	94	90	92	94	95	93	95	96	92	94	93	93	94	91	91	92	100	100	94	65	94	96	96	86	92
3	4.45	Learning from the environment	93	93	93	93	95	93	83	100	93	95	100	89	94	91	92	96	87	93	92	95	75	92	100	94	100	92	100	69
4	4.42	About managing the environment	90	90	88	92	80	92	83	100	88	95	100	83	89	91	69	93	91	84	96	95	100	86	100	88	100	87	85	85
5	4.25	Learning in the environment	82	85	78	87	75	67	83	81	82	95	80	78	83	81	69	88	74	79	88	66	78	80	100	79	88	92	72	76
6	4.25	Developing problem solving skills	81	84	83	93	65	75	78	86	87	85	76	89	89	81	54	89	83	77	87	95	75	84	85	82	88	87	57	83
7	4.22	Learning about the environment	81	79	85	84	70	83	78	76	83	85	77	82	86	76	69	85	78	79	76	95	100	80	65	79	92	91	71	73
8	4.13	About natural and man-made environments	80	75	88	83	80	50	72	66	82	80	96	74	89	72	85	85	65	78	74	90	75	86	77	73	68	83	86	75
9	3.96	Understanding international environmental issues	71	72	68	72	60	75	78	62	72	80	64	71	75	65	61	72	69	69	67	76	100	70	77	65	75	79	71	64
10	3.80	About communities	64	61	68	67	50	67	61	62	67	75	72	58	61	70	31	66	74	59	63	76	75	62	77	68	71	69	57	57
11	3.51	Mostly concerned with conservation	48	53	40	49	50	33	34	62	47	50	60	41	45	49	31	48	57	56	46	29	75	28	54	55	50	57	57	41
12	3.38	About ecology	44	43	48	45	50	33	22	48	50	40	54	41	43	46	23	46	52	50	28	37	50	40	46	50	50	39	58	43
13	3.38	About the economy	43	43	48	52	25	33	39	43	48	60	44	41	49	41	8	52	43	34	54	62	50	52	39	25	46	52	28	43
14	3.13	About political issues	38	39	40	45	30	25	39	38	42	60	36	35	40	41	8	46	39	24	41	52	25	38	46	42	24	52	29	39
15	1.44	Sub-standard Geography	10	11	5	6	15	17	12	10	9	11	13	17	9	9	8	5	22	13	4	5	0	6	29	3	0	26	0	9

definitions discussed in the previous section in the sense that these perceptions are investigated in this section in a more structured manner. The 15 items listed in this question were drawn from the Tblisi principles, the White Paper on EE and various other sources as reflected in the literature review. An analysis of the responses (Table 4.2) summarises these perceptions.

The analysis of this section (Table 4.2) revealed that 99 % of respondents perceived EE to be about understanding man's impact on the environment. This is in stark contrast with the definitions of the respondents discussed in the previous section, where only 10 % perceived EE to be about understanding man's impact on the environment. More than 90 % of respondents thought EE to involve an understanding of local environmental issues, learning from the environment and about managing the environment. Little support was given by respondents to the claims that EE is about conservation (48 %), Ecology (44 %), economy (43 %) and political issues (38 %). According to some respondents EE was definitely not sub-standard Geography (10 %). This is illuminating as it indicates that respondents perceive EE to have value.

The analysis of the responses in the various subsets (Table 4.2) revealed no significant differences in teachers' perceptions regarding EE.

While not statistically significant, the following trends

are noteworthy:

- i) In the comparison between Afrikaans and English speaking teachers and teachers using both languages it was found that English teachers placed more emphasis on EE as being related to the economy, learning in the environment and as a means to develop problem-solving skills. In comparison teachers who used both languages allocated a low value to natural and manmade environments as being part of EE.
- ii) Teachers who qualified 6 - 10 years ago perceived EE to be concerned with conservation (62 %). This viewpoint was not shared by the less experienced or the more experienced teachers in the subset.
- iii) Inexperienced teachers (0 - 5 years' experience) and their more senior colleagues held contrasting opinions on EE. Experienced teachers' (10 years' experience and more) did not perceive EE to be about managing the environment and communities. On the other hand inexperienced teachers perceived EE to be about learning in the environment, understanding international issues, the economy and political issues. The more holistic, interdisciplinary viewpoints of inexperienced teachers could be attributed to the fact that, as they are recently qualified, they may be aware of the latest theory on EE as encountered in their pre-service training.

- iv) In the subset related to gender, several differences emerged. Teachers at girls' schools, when compared to teachers at boys' and co-ed schools, perceived EE to be about learning in the environment, natural and manmade environments, communities and political issues. Their colleagues at co-ed schools placed less emphasis on the economy and more on Ecology and conservation.
- v) The subset relating to regions revealed a number of interesting differences regarding perceptions of EE. The claims concerning learning about the environment, understanding international issues and EE being about conservation were more strongly supported by teachers at rural schools than their colleagues in other regions. Teachers at metropolitan schools placed less emphasis on the conservation aspect of EE.
- vi) There were fewer differences between various communities. However, teachers at lower income schools gave less support to the role of EE with regard to problem-solving skills than their colleagues in the subset.

The following analysis of the open-ended section to question 14 gives further insight into teachers' perceptions of EE. This section was answered by 24 respondents (23 % of the survey group). Their comments can be divided broadly into five groups:

- i) Five respondents (4 % of the survey group) perceived EE to encompass Geographical subject knowledge, such as climatology, geomorphology, soils and settlement Geography. One respondent was more specific and stated that EE is "the Ecology section in the Std 9/10 syllabus". This view was echoed by another teacher who believed EE was "the interaction between the biotic and abiotic".
- ii) Three percent of the survey group perceived EE as the "integrated study bringing many areas together" and "everything linking man and the environment".
- iii) A third group perceived EE to be about environmental problems and their solutions. Problems that seem to be specific to EE included population pressure and rural poverty. The solution to these and other problems, according to the respondents, require methods of how to prevent "micro and macro scale disasters" should be taught. Furthermore "environmental ethics" must be developed, commitment must be more "environmentally friendly" and "the need of all aspects of the environment must be stressed in order to find a solution to the current problems".
- iv) Six respondents (5 % of the survey group) believed that EE concerns the relationship between people. One teacher wrote that: "pupils should be sensitized to each other". This sentiment was echoed by teachers

who believed that: "we should solve problems together, get people involved and work for better race relations" and "perhaps one should also examine the impact social/cultural values have on the environment".

- v) Four of the teachers answering this section (3 % of the survey group) associated EE with conservation, and saw it as "creating an awareness of the environment and the conservation of natural resources". This viewpoint was supported by teachers who are in favour of "making people aware of their environment thus preventing man from abusing it" and said "man should be concerned about his environment".

When these comments about EE - apart from the given claims - were compared with the definitions of the previous section, certain areas did correspond positively namely conservation, man-earth relationship and the skill of solving environmental problems. This indicates that Geography teachers regard the above-mentioned as integral parts of EE. Geography teachers' comments revealed that the relationship between people and certain aspects of Geographical knowledge should also be regarded as EE. The idea that EE is concerned with the relationship between people ties in with current concepts of EE, and could therefore be regarded as fitting. When these comments are compared to the IUCN definition of EE, Geography teachers' perceptions generally correspond with certain aspects of

the definition. However a key factor which emerges is the lack of a cohesive understanding of EE by the teaching body as a whole. This stresses the need for teacher education with regard to the more recent developments in education for the environment and for sustainable development.

4.2.4 The perceptions of Geography teachers' of why EE should be regarded as important

The fifteen claims contained in question 15 of the questionnaire were included to reflect Geography teachers' perceptions as to the importance of EE. These claims were drawn from the Tblisi principles, the White Paper on EE and other sources as reflected in the literature review and were selected as they indicate the importance of EE.

The analysis of this section (Table 4.3) revealed that thirteen of the fifteen claims received a response of 65 % and higher. Of the six claims that received more than 80 %, claims one, two and five related to conservation, four and six to personal development, while the fourth is a value claim. To a certain extent these claims correspond positively with the definitions put forward by respondents (See 4.2.2) on the nature of EE.

The two claims that received the least support are just as varied. The respondents did not perceive EE as important to the spatial and regional perspective. The claim that

TABLE 4.3

THE PERCEPTIONS OF GEOGRAPHY TEACHERS ON WHY EE SHOULD BE REGARDED AS IMPORTANT

COMPARISONS BETWEEN GROUP RESULTS

(Expressed as percentages)

(Ranked according to mean)

(N = 101)

RANK	MEAN	ITEM	TOTAL	MALE	FEMALE	ENGLISH	AFRIKAANS	BOTH - LANGUAGES	0-5 YEARS AGO QUALIFIED	6-10 YEARS AGO QUALIFIED	MORE THAN 10 YEARS QUALIFIED	0-5 YEARS EXPERIENCE	6-10 YEARS EXPERIENCE	MORE THAN 10 YEARS EXPERIENCE	HOD-YES	HOD-NO	AFRIKAANS-SCHOOL	ENGLISH-SCHOOL	DUAL MEDIUM	CO-EDUCATIONAL	BOYS ONLY	GIRLS ONLY	RURAL	URBAN (METROPOLITAN)	URBAN (SMALL TOWN)	MIXED	AFFLUENT	MIDDLE-INCOME	LOWER-INCOME	MIXED-INCOME
		N =	101	61	40	69	20	12	19	21	60	20	25	54	53	46	13	65	23	56	24	21	4	50	13	34	24	23	7	46
1	4.46	Stresses individual responsibility towards the environment	93	92	90	94	75	100	83	90	93	90	88	93	92	89	69	94	96	89	95	90	100	86	100	94	100	91	71	89
2	4.45	Emphasizes the man-earth relationship	97	90	85	96	65	92	83	95	86	90	92	86	89	87	69	94	83	81	100	95	100	88	77	91	100	95	72	81
3	4.41	Creates acceptable attitudes and values towards the environment	87	92	83	90	80	92	83	91	88	90	84	89	92	83	84	92	78	81	96	100	75	88	93	88	100	87	71	85
4	4.39	Develops observation of appreciation for the environment	86	87	85	88	80	83	89	81	87	90	84	85	91	80	92	91	70	84	83	95	75	88	85	86	92	83	100	83
5	4.34	Promotes cooperation in the prevention and solution of environmental problems	84	80	88	86	75	100	93	86	83	85	84	83	87	80	54	86	91	78	80	100	100	78	100	83	92	87	72	79
6	4.19	Encourages active participation by learners	83	80	85	90	80	100	78	81	85	85	84	81	89	76	77	83	83	80	84	86	75	82	85	82	95	74	85	79
7	4.11	Concerned with the management of the environment	76	89	70	84	60	58	72	71	80	90	68	76	83	70	62	85	61	70	84	84	100	76	70	76	92	74	72	70
8	4.10	Emphasizes the complexity of environmental problems	72	72	73	80	55	58	68	76	74	75	72	72	77	68	54	80	61	61	79	94	100	72	70	70	88	74	57	66
9	4.02	Explicitly considers environmental aspects in planning and development	71	71	70	75	60	58	72	71	68	80	76	63	77	63	62	75	61	66	71	79	100	78	85	50	87	83	57	58
10	4.01	Creates a balance between physical and human geography	68	67	73	70	70	67	61	81	67	75	76	63	70	67	77	71	61	66	62	61	50	70	54	76	63	79	58	70
11	3.97	Considers the environment in its totality and does not focus on any one aspect of it	67	64	73	67	65	75	52	62	73	60	64	72	75	59	54	68	74	68	55	81	50	60	77	76	75	56	71	68
12	3.90	Examines environmental issues on a local, national and international scale	65	69	68	74	60	50	72	67	68	75	60	71	74	63	62	74	57	63	71	81	25	75	61	65	87	78	28	60
13	3.81	Is concerned with the development of the environment	65	69	63	71	70	42	61	48	75	70	60	69	76	56	76	69	52	64	54	86	50	60	70	68	66	65	72	66
14	3.48	Emphasizes spatial and regional perspectives	43	44	45	49	35	33	22	53	50	45	48	44	47	43	31	49	39	38	46	62	50	48	23	48	54	34	43	44
15	3.38	Develops graphicacy, literacy and oracy	40	41	45	52	15	33	33	43	47	55	36	43	47	40	8	55	26	27	54	72	25	50	30	39	62	31	28	40

received the least support as far as the importance of EE was concerned was related to basic skills such as graphicacy, numeracy, literacy and oracy. Teachers did not seem to hold EE in high regard as far as the developing of Geographical concepts and skills were concerned. This is of concern since it would seem to indicate that teachers do not see strong links between Geography as a subject and the purpose of EE.

The analysis of the responses in the subsets (Table, 4.3) indicated statistically significant differences in comparison to the general responses with regard to the following:

- i) Teachers at girls' schools rated EE more highly than their colleagues at boys' schools or co-ed schools with regard to its role in the prevention of and solution to environmental problems.
- ii) Teachers at rural schools regarded EE as important in emphasizing the complexity of environmental problems, while teachers at metropolitan, small town and mixed urban/rural communities did not rate it as highly.
- iii) Teachers at affluent schools regarded EE as being more important in developing the skills of graphicacy, literacy and oracy than their colleagues at middle-income, lower-income and mixed-income schools.

While not statistically significant, the following trends are noteworthy:

- i) Afrikaans teachers, in comparison with English teachers and teachers that used both languages, did not perceive EE to be important because it stressed individual responsibility towards the environment and emphasized the man-earth relationship. English teachers on the other hand perceived EE to be important because it was concerned with the management of the environment, emphasized the complexity of environmental problems and considered environmental aspects in planning and development. Greater importance was also placed on the development of skills by English teachers'.
- ii) Teachers who qualified 6 - 10 years ago perceived EE as able to create the balance between physical and human Geography. This viewpoint of EE as a unifying force in Geography was not shared by their junior and senior colleagues. Newly qualified teachers did not regard EE as important with regard to the regional and spatial perspective, which their senior colleagues did. This is revealing as it indicates that newly qualified teachers are possibly not as well versed in the basic philosophy behind Geography as are their more senior partners.
- iii) Heads of Departments and Subject Heads rated EE more

highly than their other colleagues with regard to its importance to the environment in its totality and its concern with the development of the environment.

- iv) Teachers at girls' schools rated EE more highly than their colleagues at boys' schools or co-ed schools with regard to its role in the prevention and solution of environmental problems, emphasising the complexity of environmental problems, the balance it creates between physical and human Geography, its concern with the development of the environment and the development of skills. In general teachers at girls' schools regarded EE as being much more important than teachers at boys' and co-ed schools.
- v) Teachers at rural schools rated EE more important than their urban colleagues did with regard to the management of the environment and the complexity of environmental problems. This could be attributed to the fact that the rural population depends on the management of the environment and complex environmental problems, such as drought, for their survival to a much greater extent than the urban population needs to do.
- vi) Respondents at affluent schools generally regarded EE as more important than their colleagues at mixed, middle and lower income schools. Teachers at lower income schools did not share the enthusiasm for the three highest rated claims, and did not consider EE to

be as important as their colleagues in examining local, national and international environmental issues. The perceptions of teachers at lower income schools confirm the notion that when people struggle to survive, environmental issues tend to take a back seat.

The analysis of the open-ended section to question 15 elaborated on the reasons for why respondents perceiving EE to be important, although it was answered by only 15 respondents (14 % of the survey group). The comments can broadly be divided between those teachers who perceived EE to be important because it could enhance Geography and those who perceived EE to create the futures-orientated outlook that is needed to save the earth.

Three of the teachers answering this section emphasised EE as an approach which will encourage the move away from compartmentalised thinking in Geography, and to teach pupils about "real life" and "real people". By using EE in this manner it becomes a part of Geography and there is no need for a separate subject such as EE.

Several respondents in this section thought EE to be important because it created the necessary futures-orientated outlook. One teacher expressed it that: "Man must realize the environment must be used for his need, not his greed". This sentiment was echoed by teachers who wrote: "We must not waste our assets" that and "our future

is doomed if we continue to use up resources and to spoil the environment". Other teachers expanded on these views and perceived EE to be important because it meant education for and about sustainable development. This viewpoint was supported by teachers who said that "Sustainable development should be a pro-active approach within the context of human development to create a balance between human and environmental issues such as self-restraint and decision making; responsibility is needed, or else there will not be an acceptable quality of life in the future". One respondent supported this viewpoint by calling for a "green party" and found the lack of an environmental policy alarming. In order to create such a policy "the environment should become a social, political and economic force and school education must provide a basis for informed debate/action".

The analysis of the open-ended section revealed that Geography teachers perceived EE to be important as it encompasses concern for the future, the awareness of problems caused by man and the possible solutions to these problems. EE is generally perceived as providing solutions for or awareness of areas of environmental concern.

4.2.5 The perceptions of Geography teachers on how EE should be approached

This aspect was included to determine which approaches were

considered to be the most appropriate to Geography teachers when they used an environmental approach. In the questionnaire eight different approaches were listed (Table, 4.4). These approaches were derived from the Tblisi principles, the White Paper on EE and several other sources.

The responses to question 16 (Table, 4.4) revealed a variety of acceptable approaches by Geography teachers who used an environmental approach. Seven of the listed approaches received support of more than 70 % from the respondents. The approach that received the least support was the thematic approach with 52 % support. This might indicate that Geography teachers are not familiar with the advantages of such an approach and that time and syllabus constraints do not favour the use of a thematic approach.

When analyzed, the responses in the various subsets (Table, 4.4) revealed no significant differences with regard to the way in which teachers perceived the approaches to EE. While not statistically significant, the variations in the subsets were that:

- i) Teachers at Afrikaans schools viewed holistic and thematic approaches in a less positive light than their colleagues at English and dual medium schools.
- ii) Newly qualified teachers (0 - 5 years) generally rated all approaches to EE lower than their senior

TABLE 4.4
THE PERCEPTIONS OF GEOGRAPHY TEACHERS ON HOW EE SHOULD BE APPROACHED

COMPARISONS BETWEEN GROUP RESULTS

(Expressed as percentage)

(Ranked according to mean)

(N = 101)

RANK	MEAN	ITEM	TOTAL	MALE	FEMALE	ENGLISH	AFRIKAANS	BOTH - LANGUAGES	0-5 YEARS AGO QUALIFIED	6-10 YEARS AGO QUALIFIED	MORE THAN 10 YEARS QUALIFIED	0-5 YEARS EXPERIENCE	6-10 YEARS EXPERIENCE	MORE THAN 10 YEARS EXPERIENCE	HOD-YES	HOD-NO	AFRIKAANS-SCHOOL	ENGLISH-SCHOOL	DUAL MEDIUM	CO-EDUCATIONAL	BOYS ONLY	GIRLS ONLY	RURAL	URBAN (METROPOLITAN)	URBAN (SMALL TOWN)	MIXED	AFFLUENT	MIDDLE-INCOME	LOWER-INCOME	MIXED-INCOME
		N =	101	61	40	69	20	12	18	21	60	20	25	54	53	46	13	65	23	56	24	21	4	50	13	24	24	23	7	46
1	2,51	Environmental Education should use the environment as a medium for teaching awareness and concern	97	97	98	98	95	100	98	100	99	95	96	98	96	98	92	97	100	99	96	95	100	94	100	100	100	96	85	98
2	2,18	Environmental Education is a life-long process, continuing through all stages of education	93	92	100	97	95	83	89	100	95	95	84	100	94	95	92	97	92	94	92	100	75	94	92	100	100	96	72	95
3	1,82	Environmental Education must be interdisciplinary in approach	92	92	95	95	95	75	89	100	92	85	95	95	92	93	92	96	87	93	92	95	100	94	77	97	92	92	100	93
4	1,63	Environmental Education should utilise diverse learning environments and a variety of approaches	89	90	93	96	80	83	78	90	95	85	88	94	96	85	77	95	87	88	92	100	100	90	85	94	96	92	72	92
5	1,62	Environmental Education should be relevant to the learner's immediate surroundings and culture	86	85	93	89	90	83	73	100	88	80	88	91	95	80	93	89	83	87	80	100	50	92	77	91	83	87	72	93
6	1,59	Environmental Education must be holistic in approach	87	79	90	86	70	92	78	87	83	80	84	83	89	76	62	86	87	80	84	91	75	78	85	91	88	87	72	81
7	1,47	Environmental Education must be problem orientated in approach	70	75	63	73	65	67	78	62	72	85	52	74	70	72	70	71	70	73	71	62	75	60	77	83	75	79	57	66
8	1,38	Environmental Education must be thematic in approach	52	59	45	56	55	33	44	48	60	60	48	56	47	62	31	55	61	52	66	43	50	54	47	56	73	48	43	49

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colleagues. This might be attributed to the fact that they are inexperienced and have not had the opportunity of using a variety of approaches.

- iii) Teachers who qualified 5 - 10 years ago did not find the problem-orientated approach as suitable for EE as did their junior and senior colleagues.
- iv) Heads of Departments placed greater emphasis on the holistic approach than the post level 1 teachers who emphasized a thematic approach.
- v) Geography teachers at lower income school, viewed all approaches to EE in a less positive light than those at other schools. A possible explanation for this is that teachers at lower income schools are too occupied with teaching the essentials to consider employing different approaches.

The analysis of the open-ended section of question 16 gives further insight into the perceptions of Geography teachers on how EE should be approached. This section was answered by only ten teachers (9 % of the survey group) and did not bring any new approaches to light.

Several respondents re-emphasised the use of the environment as a medium of teaching awareness and concern with statements such as: "pupils should get involved in local projects" and "the outdoor classroom should be used

so that pupils can observe, analyze and interpret".

Emphasis was placed on the interdisciplinary approach by 3 respondents (2 % of the survey group). One teacher made the comment that "each subject area must be tied in with the environment and not taught in a box". This sentiment was echoed by statements such as: "EE is the link between the different parts of the syllabus" and "EE is the interface between all subjects".

4.2.6 The perceived role of Geography in the development and promotion of EE principles

The third section of the questionnaire examined teachers' perceptions of Geography in the development and promotion of EE principles (Table, 4.5).

The results of question 17 (Table, 4.5) indicated most respondents perceived Geography as a means or a vehicle to enhance and promote the understanding of the principles underpinning EE. Of the eight options, seven received a rating of 71 % and higher. The three options which received the greatest support concerned conservation (91 %), creating healthy attitudes towards the environment (90 %) and stressing the man-earth relationship (87 %). The support for conservation and the man-earth relationship corresponded positively with ideas expressed by respondents in previous sections.

The re-emphasis of these claims clearly indicated that

TABLE 4.5

THE PERCEIVED ROLE OF GEOGRAPHY IN THE DEVELOPMENT AND PROMOTION OF EE PRINCIPLES

COMPARISONS BETWEEN GROUP RESULTS

(Expressed as percentages)

(Ranked according to mean)

(N = 101)

RANK	MEAN	ITEM	TOTAL	MALE	FEMALE	ENGLISH	AFRIKAANS	BOTH - LANGUAGES	0-5 YEARS AGO QUALIFIED	6-10 YEARS AGO QUALIFIED	MORE THAN 10 YEARS QUALIFIED	0-5 YEARS EXPERIENCE	6-10 YEARS EXPERIENCE	MORE THAN 10 YEARS EXPERIENCE	HOD-YES	HOD-NO	AFRIKAANS-SCHOOL	ENGLISH-SCHOOL	DUAL MEDIUM	CO-EDUCATIONAL	BOYS ONLY	GIRLS ONLY	RURAL	URBAN (METROPOLITAN)	URBAN (SMALL TOWN)	MIXED	MIXED	AFFLUENT	MIDDLE-INCOME	LOWER-INCOME	MIXED-INCOME
		N =	101	61	40	69	29	12	18	21	60	20	25	54	53	46	13	65	23	56	24	21	4	50	13	24	34	24	23	7	46
1	4,46	Creating values such as responsibility towards conservation	81	92	93	97	90	75	94	95	90	100	88	91	92	92	65	96	87	89	92	100	75	94	93	91	91	96	96	85	89
2	4,40	Creating healthy attitudes towards the environment	90	92	90	94	85	83	89	95	90	95	96	88	91	91	77	95	87	89	87	100	75	92	92	91	91	96	92	100	87
3	4,31	Stressing the man-earth relationship	67	87	65	87	85	83	69	95	82	95	92	80	69	83	85	88	83	84	87	91	100	88	85	82	82	88	92	86	83
4	4,03	Emphasizing the role of fieldwork in Geography	81	80	68	71	100	58	89	67	75	95	72	71	76	76	100	71	74	77	84	62	50	76	77	76	75	92	79	43	70
5	4,00	Creating environmental literacy	75	69	88	78	60	59	80	81	73	80	72	76	79	72	69	80	70	75	62	95	50	76	77	73	79	79	78	72	75
6	4,00	Developing a future orientated outlook in Geography teachers	73	76	75	81	70	50	72	81	75	85	84	69	81	70	54	64	65	66	79	95	50	78	69	76	76	92	74	43	73
7	3,93	Adopting an interdisciplinary approach	71	71	75	78	70	42	77	76	68	60	68	70	76	68	62	79	61	67	76	81	75	74	54	76	76	75	79	57	71
8	3,52	Developing the affective domain of pupils	55	61	43	52	55	67	50	62	52	60	60	49	56	52	47	51	65	52	67	45	75	51	38	62	62	67	52	57	48

respondents attached great value to it.

The least support was for the claim that Geography could develop EE principles by developing the affective domain of pupils (55 %). Several respondents indicated that they did not understand the concept but did allocate a value to it. The lack of importance attached to this claim indicated that Geography teachers held an extremely important aspect of EE in very low esteem. The poor response to values and attitudes within EE was symptomatic of the positivistic paradigm which dominates Geography syllabi and examination systems in South Africa.

The analysis of the responses in the subsets (Table, 4.5) revealed two statistically significant differences when compared to the general responses in the following areas:

- i) Teachers at lower-income schools did not think Geography promoted EE principles by emphasising fieldwork or developing a futures-orientated outlook in pupils. In this they differed from their colleagues at affluent, middle and mixed-income schools.
- ii) Teachers at rural schools regarded Geography more highly as a means of promoting EE principles by developing the affective domain of pupils than teachers at metropolitan, small town and mixed urban/rural schools.

The analysis of the subsets (Table, 4.5), while not statistically significant, revealed that:

- i) Male teachers held the role of fieldwork and the affective domain in developing EE principles in much higher regard than female teachers. Female teachers, however, believed that Geography could develop the principles underpinning EE by creating environmentally literate pupils, which their male counterparts did not.
- ii) Afrikaans teachers, in comparison to teachers using English and both languages as medium of instruction, placed more emphasis on the role of fieldwork in developing EE principles.
- iii) Newly qualified (0 - 5 years) and less experienced teachers (0 - 5 years) placed a much greater emphasis on the role of fieldwork in developing EE principles than their senior colleagues.
- iv) In comparison with boys' and co-ed schools, girls' schools placed little emphasis on fieldwork. This could be attributed to the fact that fieldwork activities were perceived as more problematic to organise in girls' schools. Teachers at girls' schools, however, generally saw Geography as promoting EE principles in a much more positive light than their male colleagues.

- v) Teachers at rural schools, when compared to their colleagues, did not perceive fieldwork or the creation of environmental literacy to be important in developing EE principles. This was revealing as rural schools are normally associated with fieldwork opportunities.

- vi) When compared to teachers at middle, mixed and affluent schools, teachers at lower income schools did not view fieldwork or a futures-orientated outlook in teachers as benefits EE could reap from Geography.

These responses were further highlighted by the analysis of the open-ended section to question 17 which was answered by fourteen respondents (10 % of the survey group). Once again, despite the low response rate, the comments gave an interesting insight into individual teachers' perceptions of Geography's role in developing EE principles. These comments can be divided as follows:

- i) Four respondents (3 % of the survey population) thought Geography could develop EE principles by involving pupils in environmental projects in their local areas. This idea was expressed by one teacher as: "One should locate problems in school surroundings and do something positive to remedy the situation by a hands-on approach".

- ii) Several respondents stressed the man-earth

relationship as the most important way for Geography to develop EE principles.

- iii) Eight respondents (7 % of the survey population) thought that Geography could develop EE principles best by making Geography more relevant to pupils. This viewpoint was explained by one teacher's comment that: "By creating greater awareness of environmental issues the subject would become more attractive to pupils". Another echoed this: "A greater emphasis on environmental issues and processes is needed rather than factually based Geography".

These perceptions indicate that certain Geography teachers regard active involvement by pupils as a meaningful way for Geography to develop environmental principles. Such involvement would serve to move away from a theoretical classroom-orientated approach to a skills based subject requiring active involvement and participation.

4.2.7 The perceived role of EE in promoting Geography

This question was included to examine teachers' perceptions of how EE could develop or promote Geography. The 15 claims included in question 18 focused mainly on the literature review and on:

- i) The use of EE in developing skills, attitudes and values concerning the environment in pupils.

- ii) The use of EE as a means to develop pupils' interest in Geography, to improve their attitudes towards Geography and to increase the relevance of Geography as a wider discipline.

- iii) The value of EE as an approach for teachers to focus on important issues in the Geography curriculum, such as life skills, resource conservation and the man-earth relationship since these are important building blocks for a sustainable lifestyle.

The analysis of this question (Table, 4.6) revealed that Geography teachers perceived most claims to be relevant to the development of Geography by use of EE. The claims that received the most support related to involving pupils rather than just (a) passing on knowledge (94 %), (b) developing a sense of the 'real world' in pupils (90 %), (c) emphasizing the man-earth relationship (88 %) and (d) developing a resource conservation ethic in pupils (87 %). The claims concerning conservation and the man-earth relationship is a re-emphasis of previous viewpoints.

The claim that received the least support concerned the role of EE in developing Geography if pupils were prepared for the examinations, mainly from the examiners' viewpoint (8 %).

The analysis of the responses to the various subsets (Table, 4.6) revealed that teachers at girls' schools rated

TABLE 4.6

THE PERCEIVED ROLE OF EE IN PROMOTING GEOGRAPHY

COMPARISONS BETWEEN GROUP RESULTS

(Expressed as percentages)

(Ranked according to mean)

(N = 101)

RANK	MEAN	ITEM	TOTAL	MALE	FEMALE	ENGLISH	AFRIKAANS	BOTH - LANGUAGES	0-5 YEARS AGO QUALIFIED	6-10 YEARS AGO QUALIFIED	MORE THAN 10 YEARS QUALIFIED	0-5 YEARS EXPERIENCE	6-10 YEARS EXPERIENCE	MORE THAN 10 YEARS EXPERIENCE	HOD-YES	HOD-NO	AFRIKAANS-SCHOOL	ENGLISH-SCHOOL	DUAL MEDIUM	CO-EDUCATIONAL	BOYS ONLY	GIRLS ONLY	RURAL	URBAN (METROPOLITAN)	URBAN (SMALL TOWN)	MIXED	AFFLUENT	MIDDLE-INCOME	LOWER-INCOME	MIXED-INCOME
		N =	101	61	40	69	20	12	18	21	60	20	25	54	53	46	13	65	23	56	24	21	4	50	13	34	24	23	7	46
1	4.39	Involving pupils rather than just passing knowledge on	94	97	90	96	95	83	89	95	97	95	100	93	95	96	93	95	92	93	96	95	100	96	93	91	96	91	100	94
2	4.39	Developing a sense of the real world in pupils	93	89	93	91	85	92	78	95	92	90	96	83	91	90	85	91	91	91	84	95	75	92	85	91	92	96	100	85
3	4.35	Emphasizing the man-environment relationship	83	90	85	84	75	83	83	86	90	100	88	87	93	82	77	93	83	82	96	95	100	90	77	88	100	92	81	81
4	4.34	Developing a resource conservation ethic in pupils	87	92	80	91	90	67	94	86	85	95	92	81	91	82	92	91	74	84	87	95	100	92	85	79	87	83	100	87
5	4.27	Placing emphasis on management of the environment for sustainable living	86	84	93	93	80	67	78	92	89	65	84	89	89	84	76	94	74	84	88	95	100	86	65	88	100	83	86	83
6	4.25	Creating the correct attitudes such as care, concern and tolerance in pupils	85	82	93	87	65	83	78	100	83	85	92	83	65	67	77	90	82	82	84	100	50	92	84	82	83	89	86	88
7	4.25	Making the subject more relevant to pupils	84	82	85	87	75	75	83	86	84	65	84	83	83	85	77	86	78	80	83	93	100	82	54	94	96	83	100	75
8	4.21	Using the environment as a teaching resource	82	89	88	91	65	75	89	86	88	95	89	85	97	83	65	93	79	86	92	91	100	88	92	85	100	87	86	83
9	4.11	Enabling the teacher to use an integrated approach when teaching Geography	87	77	90	81	85	83	83	81	81	80	88	80	85	78	92	84	74	82	76	91	75	82	77	85	75	67	72	65
10	4.10	Creating environmentally literate pupils	79	77	83	77	85	83	83	77	79	83	84	76	80	79	85	79	78	82	67	86	50	74	65	83	79	78	86	79
11	4.10	Developing life skills in pupils	77	77	90	86	75	50	78	86	77	85	88	72	79	78	70	85	69	73	75	100	50	82	62	85	87	82	57	76
12	3.87	Supplying knowledge about the environment	65	69	65	73	70	33	56	62	73	80	64	65	72	63	63	72	52	60	75	75	50	76	54	62	67	87	58	59
13	3.76	Developing the affective domain of pupils	62	66	54	63	65	42	66	60	58	70	68	55	63	59	69	62	52	59	67	60	100	59	39	67	67	52	71	61
14	3.75	Developing spatial skills in pupils	62	62	63	64	65	50	61	76	60	60	72	61	64	63	70	63	57	61	59	72	50	62	47	71	63	66	43	67
15	2.04	Preparing pupils for the exams as seen from the examiner's viewpoint	3	11	5	6	25	0	6	10	10	15	4	9	11	7	15	6	13	13	4	5	0	6	8	15	8	4	0	13

EE more highly as a means to develop Geography by developing life skills in pupils than their colleagues at boys' or co-ed schools.

While not statistically significant, the following trends are noteworthy:

- i) Male teachers held the development of a resource conservation ethic and the affective domain in higher regard than female teachers. The latter, however, placed more emphasis on an integrated approach and the development of life skills in pupils when teaching Geography.
- ii) Teachers using both Afrikaans and English as a medium of instruction were less enthusiastic about the role of EE in developing Geography than teachers who used only Afrikaans or English. Afrikaans teachers placed great emphasis on preparing pupils for the examinations as seen by the examiner.
- iii) Inexperienced teachers (0 - 5 years) did not place much emphasis on developing a sense of the "real world" or on the management of the environment for sustainable living. On the other hand, senior teachers placed much more emphasis on EE in creating the correct attitudes, supplying knowledge about the environment and developing spatial skills and consequently, promoting Geography.

- iv) Teachers at girls' schools, were generally more positive about EE as a means of developing Geography than their colleagues.
- v) Geography teachers at small town schools in comparison with their colleagues in the subset, did not think EE could develop Geography by stressing the man-earth relationship, the possibility of teaching EE separately, developing life skills or the development of the affective domain.
- vi) Teachers in rural areas placed a high emphasis on developing the affective domain of pupils, in contrast to the perceptions on the affective domain expressed in the previous subsets. The change in emphasis could be attributed to the fact that the rural respondents consisted of only four individuals, which could easily lead to a distortion.

The analysis of the open-ended section to question 18 indicated how teachers viewed the role of EE in developing Geography. Only six respondents (5 % of the survey group) completed the open-ended section. The low response may give an indication that the respondents were satisfied that the claims as set out in question 18 (Table, 4.6) covered most possibilities.

The comments that were received related to the position of EE principles in a Geography syllabus and the use of EE

principles as an approach to teaching Geography.

One respondent suggested that the syllabus should be changed to a skills based syllabus to prepare pupils for their place in society and the environment. This sentiment was echoed by another who felt that EE should form the core of a skills based syllabus. A third respondent had reservations about changing the syllabus and thought that any change could damage Geography.

The second group of respondents put forward the idea that EE is the methodology used to create an understanding of one's own surroundings and the ecological processes that take place in such surroundings.

4.2.8 Geography teachers' perceptions of how changes in the present syllabus and examination system could benefit EE principles

This aspect was included in the questionnaire to obtain information on how teachers perceived the role of the syllabus and examination system in enhancing EE principles. An analysis of this question (Table, 4.7) indicated how teachers saw the present syllabus and examination system enhanced by the environmental approach.

As far as retaining the present syllabus and examination system is concerned the respondents were divided. The

TABLE 4.7

GEOGRAPHY TEACHERS' PERCEPTIONS OF HOW CHANGES IN THE PRESENT SYLLABUS AND EXAMINATION SYSTEM COULD BENEFIT EE PRINCIPLES

COMPARISONS BETWEEN GROUP RESULTS

(Expressed as percentages)

(Ranked according to mean)

(N = 101)

RANK	MEAN	ITEM	TOTAL	MALE	FEMALE	ENGLISH	AFRIKAANS	BOTH - LANGUAGES	0-5 YEARS AGO QUALIFIED	6-10 YEARS AGO QUALIFIED	MORE THAN 10 YEARS QUALIFIED	0-5 YEARS EXPERIENCE	6-10 YEARS EXPERIENCE	MORE THAN 10 YEARS EXPERIENCE	HOD-YES	HOD-NO	AFRIKAANS-SCHOOL	ENGLISH-SCHOOL	DUAL MEDIUM	CO-EDUCATIONAL	BOYS ONLY	GIRLS ONLY	RURAL	URBAN (METROPOLITAN)	URBAN (SMALL TOWN)	MIXED	AFFLUENT	MIDDLE-INCOME	LOWER-INCOME	MIXED-INCOME
		N =	101	61	40	59	20	12	18	21	60	20	25	54	53	45	13	65	23	56	24	21	4	50	13	34	24	23	7	46
1	3,51	Changing the present syllabus and exam system	51	45	61	56	32	54	61	42	51	55	55	48	49	54	33	59	41	45	55	62	50	55	58	42	68	35	71	48
2	2,60	Retaining the present syllabus but changing the exam system	23	21	24	18	32	27	22	11	24	15	28	21	24	19	34	18	27	27	23	13	25	13	34	30	19	26	28	20
3	2,51	Retaining the present exam system but changing the syllabus	22	29	13	24	21	18	28	26	20	30	32	17	24	24	25	24	18	29	23	10	25	19	8	33	13	39	0	20
4	2,09	Retaining the present syllabus and exam system	5	5	8	6	5	9	6	16	4	10	9	4	6	7	0	7	9	8	0	10	0	4	0	12	0	3	0	9

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results (Table, 4.7) indicated that 51 % felt that both the examination system and the syllabus should be changed to allow for an environmental approach in Geography. Only 6 % of the respondents felt that the status quo should be maintained. The results thus tend to indicate that most Geography teachers are not satisfied with the present syllabus and examination system as neither allows for the implementation of an environmental approach.

The analysis of the subsets revealed the following patterns and trends:

- i) Female teachers were more eager than their male counterparts to change the examination and syllabus system.
- ii) Afrikaans teachers were less enthusiastic than their English colleagues to change the syllabus and examination system.
- iii) Newly qualified teachers (0 - 5 years) tended to be more in favour of changing the syllabus than their senior colleagues.
- iv) Respondents from affluent and lower income communities revealed the greatest support for a change in the present system. This might be because the needs of the pupils in their communities are not addressed by the present system.

It was revealing that few teachers responded to the open-ended question of how they would change the syllabus so that it could enhance EE principles. None of the comments related to EE principles.

4.2.9 Current syllabus components considered suitable to the teaching of environmental principles.

This question was included to determine how Geography teachers perceived the different areas of the syllabus with regard to their suitability for teaching environmental principles. This question included the various components which constitute the current Geography syllabus used by the Natal Education Department.

The analysis of the results (Table, 4.8, arithmetic mean based on three point scale) reflected a diversity of components that could be approached in a manner compatible with EE, although the results could reflect the personal interests of teachers and the areas of teacher expertise. The results also revealed that teachers perceived Ecology (97 %), rural settlement (82 %) and urban settlement (75 %) as having the greatest potential for an environmental approach.

On the other hand the respondents perceived the Geography of regions outside Africa (26 %) and astronomy (7 %) to have the least potential for the teaching of environmental principles.

TABLE 4.8

CURRENT SYLLABUS COMPONENTS CONSIDERED SUITABLE TO THE TEACHING OF ENVIRONMENTAL PRINCIPLES

COMPARISONS BETWEEN GROUP RESULTS

(Expressed as percentages)

(Ranked according to mean)

(N = 101)

RANK	MEAN	ITEM	TOTAL	MALE	FEMALE	ENGLISH	AFRIKAANS	BOTH - LANGUAGES	0-5 YEARS AGO QUALIFIED	6-10 YEARS AGO QUALIFIED	MORE THAN 10 YEARS QUALIFIED	0-5 YEARS EXPERIENCE	6-10 YEARS EXPERIENCE	MORE THAN 10 YEARS EXPERIENCE	HOD-YES	HOD-NO	AFRIKAANS-SCHOOL	ENGLISH-SCHOOL	DUAL MEDIUM	CO-EDUCATIONAL	BOYS ONLY	GIRLS ONLY	RURAL	URBAN (METROPOLITAN)	URBAN (SMALL TOWN)	MIXED	AFFLUENT	MIDDLE-INCOME	LOWER-INCOME	MIXED-INCOME
		N =	101	61	40	69	20	12	18	21	60	20	25	54	53	46	13	65	23	56	24	21	4	50	13	34	24	23	7	46
1	2.97	Ecology	87	97	98	97	93	100	100	55	88	100	96	96	100	94	93	99	96	95	100	100	100	96	100	97	100	96	86	98
2	2.82	Rural settlement Geography	82	87	78	88	75	68	78	86	83	85	88	80	85	80	77	89	70	79	92	86	100	82	69	88	96	95	86	85
3	2.75	Urban settlement Geography	75	75	78	84	60	58	72	76	77	78	84	72	74	78	54	86	61	66	92	86	75	80	62	77	83	74	86	72
4	2.63	Climatology and meteorology	65	66	65	64	70	68	61	57	58	65	68	63	70	59	77	68	52	64	63	71	75	70	54	62	63	52	71	73
5	2.63	Population Geography	63	61	73	71	55	50	61	71	63	60	68	65	68	61	39	71	65	60	63	86	50	66	62	68	71	57	43	70
6	2.54	Oceanography	61	57	70	68	55	42	72	68	58	65	60	63	70	54	69	69	39	52	71	61	50	70	54	56	67	57	43	66
7	2.52	South Africa	61	59	60	57	70	58	61	57	60	70	60	56	60	59	77	55	61	63	50	62	75	56	62	62	54	65	43	62
8	2.50	Geomorphology	60	68	50	65	45	58	68	43	63	70	52	59	64	54	46	65	57	57	67	62	75	60	77	53	54	61	57	64
9	2.44	Map reading and interpretation	55	56	50	49	60	68	44	62	53	50	64	50	57	50	54	51	61	48	63	57	100	54	39	53	58	35	57	60
10	2.42	Developing and developed countries and the economic development of such areas	47	44	57	55	45	25	56	57	45	55	44	50	57	41	54	54	35	45	50	62	25	50	39	56	63	52	0	49
11	2.35	The regional Geography of Africa	46	41	58	48	55	33	50	57	43	55	56	41	55	39	54	48	44	45	33	71	25	48	46	50	42	57	0	53
12	2.32	Economic Geography	41	39	48	48	40	17	44	43	40	55	44	35	38	46	39	48	30	32	46	67	25	54	15	38	46	39	43	43
13	2.00	The Geography of regions outside Africa	25	24	35	29	26	25	12	29	32	16	28	32	38	16	26	28	30	26	17	48	25	28	17	32	21	26	14	35
14	1.32	Astronomy	7	7	8	7	10	0	11	10	5	5	4	6	8	7	0	8	9	4	8	14	0	10	0	6	13	4	0	6

The analysis of the responses in the various subsets (Table, 4.8) revealed that the perceptions differ statistically significantly from the general responses in the following areas:

- i) Teachers at lower income schools rated the syllabus sections on developing and developed countries and the economic development of such areas and the regional Geography of Africa lower than their colleagues at affluent, middle-income and mixed income schools.
- ii) Population Geography was regarded as a section that facilitates the teaching of environmental principles by teachers at girls schools rather than teachers at boys-only and co-ed schools.

Whilst not statistically significant the following trends emerged:

- i) Female teachers supported oceanography, regional Geography and population Geography more strongly than male teachers who showed strong support for geomorphology as a means to develop environmental principles.
- ii) English speaking teachers perceived almost all areas of the syllabus to be suitable for an environmental approach. This tendency was duplicated in the comparison between heads of departments, subject heads

and post level 1 teachers, where their Afrikaans counterparts were generally sceptical.

iii) Fewer differences emerged between metropolitan schools and the smaller centres. However, teachers at rural schools placed more emphasis on rural settlement, South Africa and map work than their metropolitan colleagues. This could be attributed to the fact that these sections are more relevant to rural communities.

iv) In the subset related to income it emerged that teachers at lower income schools were generally less positive about teaching environmental principles in the different areas of Geography when compared to their colleagues at more affluent schools.

Although the results of the questionnaire tended to indicate that Geography teachers felt that the different syllabus sections could facilitate the teaching of environmental principles, the semi-structured interviews revealed that they had a very limited view on the manner in which this should be done.

4.2.10 Perceived problems in teaching environmental principles in Geography

The problems that respondents expected to encounter when teaching environmental principles in Geography will influence the organisation and implementation of this

TABLE 4.9

PERCEIVED PROBLEMS IN TEACHING ENVIRONMENTAL PRINCIPLES IN GEOGRAPHY

COMPARISONS BETWEEN GROUP RESULTS

(Expressed as percentages)

(Ranked according to mean)

(N = 101)

RANK	MEAN	ITEM	TOTAL	MALE	FEMALE	ENGLISH	AFRICANS	BOTH - LANGUAGES	0-5 YEARS AGO QUALIFIED	6-10 YEARS AGO QUALIFIED	MORE THAN 10 YEARS QUALIFIED	0-5 YEARS EXPERIENCE	6-10 YEARS EXPERIENCE	MORE THAN 10 YEARS EXPERIENCE	MOD-YES	MOD-NO	AFRIKANS-SCHOOL	ENGLISH-SCHOOL	DUAL MEDIUM	CO-EDUCATIONAL	BOYS ONLY	GIRLS ONLY	RURAL	URBAN (METROPOLITAN)	URBAN (SMALL TOWN)	MIXED	MIXED	AFFLUENT	MIDDLE-INCOME	LOWER-INCOME	MIXED-INCOME
		N =	101	61	40	69	20	12	18	21	60	20	25	54	53	46	13	65	23	56	24	21	4	50	13	24	24	24	23	7	46
1	2.38	An overcrowded curriculum	75	78	79	76	56	82	75	85	73	72	83	70	74	74	45	76	86	76	77	67	75	75	92	67	67	82	70	100	70
2	2.25	Lack of adequate funding for fieldtrips ect.	73	72	75	67	85	83	82	85	65	79	79	67	70	75	65	65	87	24	50	67	50	71	65	74	74	41	83	57	85
3	2.21	Exam pressures do not leave room for teaching environmental education	57	59	50	52	65	58	77	60	47	68	58	48	57	52	65	52	49	68	50	29	50	58	54	53	53	50	52	66	55
4	2.18	Lack of teacher preparation time	50	52	50	49	55	55	35	55	52	26	52	57	54	46	45	49	59	51	55	47	50	52	58	47	47	59	46	57	49
5	1.95	Lack of appropriate materials	35	29	32	30	42	33	38	40	29	33	46	26	40	23	37	29	41	38	14	40	0	38	46	24	24	23	26	29	37
6	1.94	Scarce or inadequate resources	30	29	28	30	22	17	44	35	22	39	42	18	32	23	31	29	27	31	23	29	25	35	46	12	12	18	44	43	24
7	1.93	Textbooks do not cover environmental education	27	14	18	25	35	25	63	30	13	42	25	22	30	23	39	25	26	30	32	14	0	25	23	35	35	32	26	14	28
8	1.88	Teachers who are not environmentally literate cannot pass on knowledge they don't have	27	22	33	21	32	50	29	30	24	21	29	27	32	19	39	21	36	31	14	29	0	21	50	29	29	18	9	14	40
9	1.57	Attitudes and values are not really examinable	13	22	13	18	21	17	44	15	13	28	17	17	19	19	31	18	14	18	32	5	0	21	8	21	21	14	22	14	20
10	1.55	Teacher's avoidance of the unknown dimension	18	21	10	12	33	31	30	30	8	33	21	9	15	19	8	11	36	24	9	5	0	11	54	12	12	9	22	0	20
11	1.34	Teacher's lack of understanding of environmental education	16	20	8	13	16	25	13	30	12	22	21	11	13	19	0	14	27	16	18	10	0	17	31	9	9	18	13	14	15
12	1.30	Teacher's lack of personal commitment to environmental education	16	19	5	9	11	42	25	20	8	28	13	9	11	16	0	10	32	16	14	5	25	6	46	9	9	5	22	0	15

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approach in schools. The perceptions of the range of the problems and their importance will affect the success of an environmental approach in Geography, should this be implemented in a future curriculum. Question 21 (Table, 4.9, arithmetic mean based on three point scale) tried to isolate these problems and to assess their importance.

The analysis of this question (Table, 4.9) revealed that 75 % of the respondents considered the overcrowded curriculum as the biggest stumbling block when teaching environmental principles in Geography. The lack of adequate funding for field trips was also quoted as being a major problem by 73 % of Geography teachers. Examination pressure was identified as a major problem by more than half of the respondents. A small minority of teachers' perceived lack of understanding of and personal commitment to EE as major obstacles. The perceived problems are real and are not likely to disappear soon as the continuing explosion of knowledge will lead to more pressure on the curriculum. At the same time the state of the economy will possibly relegate fieldwork to becoming a 'luxury'.

The analysis of the responses in the subsets (Table, 4.9) revealed that the following responses differed significantly from the general responses:

- i) Teachers at lower income schools blamed examination pressure for their not teaching environmental principles more strongly than their colleagues at

affluent, middle-income and mixed-income schools, while Afrikaans medium teachers also regarded this aspect more highly than teachers at English medium schools.

- ii) Teachers at small town schools rated avoidance of the unknown dimension as a major problem when teaching environmental principles more highly than did their colleagues at metropolitan, rural and mixed urban/rural schools.

The following trends, whilst not statistically significant, emerged:

- i) The perceptions of male and female teachers regarding problems encountered when teaching EE in Geography generally corresponded positively. Male teachers stressed textbooks that do not cover environmental principles, teachers' lack of understanding of EE and the lack of personal commitment to EE as major problems.
- ii) Teachers using Afrikaans as a medium of instruction did not perceive the curriculum to be overcrowded. English teachers, perceived fewer problems in teaching environmental principles in Geography than those using Afrikaans or both languages as media of instruction.
- iii) Geography teachers who qualified more than 10 years

ago did not find examination pressures or funding for field trips a problem. In comparison newly qualified, inexperienced teachers had major problems with preparation time, the coverage of environmental principles in textbooks and the examination of attitudes and values.

- iv) Girls' schools did not find examination pressures to be a problem, while boys' schools did not perceive funding for field trips or the lack of appropriate materials to be a problem.
- v) Rural schools in comparison to urban, small town and mixed environment schools, identified very few problems at all when teaching environmental principles in Geography.
- vi) Schools in affluent and lower income communities indicated very few problems with funding for field trips.

The open-ended section gave teachers the opportunity to elaborate on problems experienced when teaching environmental principles in Geography. The following emerged from this section:

- i) Timetables were too rigid and did not leave room for fieldwork. The disruption caused by teachers who were on fieldwork outings created frustration among fellow

teachers.

- ii) Pupils tended to create disciplinary problems when out of the classroom. That caused teachers to be afraid of leaving the classroom and resulted in very limited fieldwork expeditions.
- iii) Classes were perceived to be too large for effective fieldwork.
- iv) Finding suitable transport for fieldwork was identified as a problem. The transport problem was aggravated by the current political and economic climate.
- v) The lack of a sound philosophical base for Geography as an earth science created apathy amongst pupils, who perceived the Ecology part of Geography to be an extension of the biology class.
- vi) The lack of knowledge of EE prevented teachers from exploiting their immediate surroundings thoroughly.

The perceived problems when teaching EE in Geography such as transport, finance and class size are not likely to disappear; if anything, they will probably increase in the future. Solutions to these obstacles must be seen as being of critical importance.

4.3 SUMMARY

The questionnaire results highlighted the following factors:

- i) Geography teachers generally defined EE as a means to create awareness and concern for the environment, conservation, the man-earth relationship, man's impact on the environment, problem solving in the environment and management of the environment. These definitions were re-emphasised in most of the subsets. Although these definitions by Geography teachers as a group did tie in with the IUCN definition of EE, individual teachers tended to have a far more conservative views of EE.
- ii) Teachers inherently understood that EE should be regarded as important.
- iii) Geography teachers used a variety of approaches when teaching EE principles in Geography.
- iv) Geography teachers regarded EE and Geography to complement one another.
- v) Teachers agreed on the need for change in the present syllabus and examination system in order to allow for a greater environmentally weighted approach.

- vi) Geography teachers viewed only certain components of the current syllabus as suitable for the teaching of environmental principles.
- vii) The respondents perceived an overcrowded curriculum and a lack of adequate funding for field trips to be the most pressing problems when teaching environmental principles in Geography.

The questionnaire results also made it clear that:

- i) Teachers at girls' schools held EE in much higher regard than teachers at boys' or co-ed schools.
- ii) Geography teachers had a limited conception of skills such as numeracy, graphicy and oracy and of the affective domain.
- iii) Teachers had a poor grasp of regional and spatial perspectives.
- iv) The Geography teachers at lower income schools did not hold EE principles in high regard.

Although it would seem that Geography teachers have a good grasp of the nature, importance and approaches to EE, the questionnaire results revealed a number of anomalies. This indicated a diversity of perceptions on the role of EE principles in Geography. These anomalies, as well as the

fact that teachers are apparently au fait with environmental principles, will be investigated by means of semi-structured interviews in Chapter 5.

The implications of the questionnaire results on a possible future Geography syllabus with a focus on environmental principles could be multifarious. Firstly, the majority of Geography teachers employed by the Natal Education Department would apparently welcome a change to a syllabus with such a focus since they seemed knowledgeable about the nature of EE, the approaches to it and why it is important. Such a shift in focus should ease the major problems the respondents identified in the current syllabus namely the fact that it is overcrowded and allows no room for fieldwork.

A second aspect which should be considered is the fact that all respondents were from the same department and well qualified. However, any shift in focus would require in-service training. This aspect would reach huge proportions if it were to include all disadvantaged Geography teachers after the various departments have amalgamated.

A possible future Geography syllabus with a focus on environmental principles should allow for the fact that the respondents in general had a poor grasp of skills such as numeracy, graphicacy, oracy and of the affective domain. Furthermore, teachers were not well informed about regional and spatial perspectives.

A revised syllabus should take genderised perceptions, such as the fact that teachers at girls' schools held EE in much higher regard than their male colleagues, into account. Another aspect that should be considered is that teachers at lower income schools did not hold EE in high regard at all. In the new South Africa the vast majority of teachers will be employed at lower income schools and any new syllabus with a focus on environmental principles should be adapted to the needs of the previously disadvantaged.

CHAPTER 5

ANALYSIS OF THE INTERVIEWS

5.1 INTRODUCTION

The semi-structured interviews were undertaken to clarify the results of the questionnaires with regard to the aspects mentioned below. To achieve this the structure and format of the questionnaire was maintained in designing the semi-structured interview schedule. (See Appendix G).

- i) Each section required additional elaboration, clarification and greater exploration in general.
- ii) The anomalies which were apparent in the questionnaires needed further investigation.
- iii) The questionnaire results indicated that the majority of the respondents were apparently au fait with the aims of EE, its nature, and the suggested approaches for the teaching there of. It was therefore felt that the interviews needed to explore these issues further.

5.2 THE INTERVIEW SAMPLE

The interview sample was a convenience sample (Cohen and

Manion, 1990) composed of the Geography teachers from participating schools. Of the ten teachers seven were males and three were females. Three of the interviewees taught at boys' schools, two were teachers at girls' schools and five were teachers at co-ed schools. All interviewees taught Geography up to standard ten and eight of those interviewed had ten or more years of teaching experience. A total of five interviewees held honours degrees, and seven used English as the medium of instruction. Of the participating teachers five held head of department posts.

Personal interviews were conducted with all interviewees as described in chapter three.

5.3 ANALYSIS OF THE INTERVIEWS

5.3.1 Perceptions of Geography teachers regarding the nature of EE

The initial question was designed to determine Geography teachers' perceptions of EE. The analysis of the questionnaires provided a wide and varied picture. This part of the interview was aimed at clarifying and exploring these perceptions.

The overwhelming perception here was that teachers considered EE to be complementary to Geography. The Geography teachers enlarged upon this by explaining

that EE should not be seen as a separate subject, but as a process, a way of thinking, acting and living Geography. Therefore EE should be seen as a thread that links the physical and human components of Geography into a unified whole. Several interviewees saw EE as a means of preventing Geography from becoming a 'wishy washy' subject with no 'theoretical base'.

As reflected in the questionnaires, EE was not perceived to be solely about conservation. Discussion revealed that conservation was seen as EE in a limited sense, and that it could even serve to alienate certain people from EE, as for instance in the case of black communities living next to nature reserves. Conservation, however, was regarded as important by the interviewees in as much as it focuses on the conservation of natural resources for future generations. Such conservation should include the wise development of resources and not static conservation. The teachers interviewed stressed that EE goes far beyond conservation and that pupils should be taught, in a pro-active manner, to look beyond the confines of conservation towards a more holistic picture.

The results of the questionnaire revealed that respondents did not perceive EE to be about politics. This viewpoint was confirmed by several teachers

during the interviews. When asked to explain this, no argument was put forward beyond merely confirming their viewpoints. A number of interviewees, on the other hand, felt strongly that EE was in fact about politics. During the ensuing discussions it emerged that EE and politics could be linked by organisations such as Green Peace. The view was also expressed that laws and decisions are made by the wealthy and powerful. This has allowed the South African environment to be mistreated during this century for short term gains. This process of 'who gets what' had excluded black South Africans to a great extent.

In contrast to the questionnaire respondents, the teachers interviewed indicated that they regarded EE as including economic issues. Further probing revealed that the teachers felt that the environment must suffer during development, which then causes a domino effect throughout society. To address this and other problems such as short term gain, pupils should be educated about resource depletion, pollution and sustainable living. Pupils should also be taught problem solving skills in order to handle the possible conflict that exists between the environment and the economy, for example in the use of pesticides.

Further probing revealed that the interviewees regarded EE as an area that clarifies the man-earth

relationship as perceived by different cultures, groupings and economic classes. The interviewees were adamant that the above mentioned relationship should be taught to pupils regardless of the fact that it is not sufficiently covered in the syllabus. This viewpoint illuminates the apparent understanding of the purpose of EE as revealed in the questionnaire results.

The analysis of the open-ended section of the questionnaire revealed that the majority of the respondents regarded EE to be closely related to the creation of environmental awareness. According to the interviewed teachers, this implied action such as starting or expanding school clubs or organisations that foster environmental awareness. The interviewed teachers emphasised the value of fieldwork to enable pupils to participate actively in protecting the environment. This would in turn create environmentally aware and active pupils and citizens.

5.3.2 Perceptions of why EE should be valued as important

The researcher furthermore attempted to obtain greater clarity regarding the teachers' perceptions of the reasons for the importance of EE. The analysis of the questionnaires revealed that respondents supported all the statements included in this section, apart from those dealing with the role of EE as a means of

developing skills and regional and spatial perspectives.

The apparent lack of understanding and analysis with regard to skills teaching and skills development is cause for concern. In the course of discussion with the teachers interviewed it was apparent that while the skills of graphicacy, numeracy, literacy, oracy and cognitive skills related to problem solving, planning and decision making were a part of Geography teaching they were neither systematically nor consciously developed. The interviewees further claimed that they were not aware of how EE could play a role in developing such skills. This they blamed largely on the lack of training at university and in-service courses.

The next area considered was that of spatial and regional perspectives which were given poor support in the questionnaire. When asked to explain this viewpoint, only one interviewee ventured an answer. According to the interviewee "it is necessary for all pupils to see and understand spatial and regional perspectives", and this could be achieved by introducing these perspectives into every syllabus, or to have a theme week for developing them. The viewpoints expressed by the interviewees during this part of the interview correspond positively with the results of the questionnaires, and reveal a disturbing

lack of understanding by Geography teachers regarding the concepts of spatial and regional perspectives.

The questionnaire results revealed that Geography teachers perceive the development of individual responsibility towards the environment to be an important aspect of EE. This was confirmed by the interviews. The interviewees enlarged upon this by claiming that each individual citizen should be made aware of the possible difference he or she could make.

To achieve such responsibility pupils should be encouraged to join societies such as the Boy Scouts and the Wildlife Society. The interviewees further indicated that such societies could help to generate respect for and responsibility towards the environment. According to the interviewees this could contribute to creating a life-long process of involvement in and positive interaction with the environment. The interviewees stressed the fact that such a process of involvement and interaction could also be beneficial to Geography as an earth science focusing on the man-earth relationship.

It was also shown by the interviews that Geography teachers perceived the environment in a 'holistic' manner, that is involving all available resources. When asked to explain these perceptions, it was indicated that the environment and its interrelated problems should be seen as a whole and that the focus

should move progressively from the local to the global environment. An example of putting this approach into practice was to compare the local squatter problem with those that exist in other areas of the globe.

Further probing revealed that the interviewees perceived a study of the local environment to be particularly suitable for primary school participation. Such local participation should include cleaning up rivers and using local trails. During the high school years the focus should shift in order to indicate how closely local and international issues interrelate. The interviewees supported this notion by indicating that local and international issues are of equal importance, since local issues are the building blocks for focusing on international issues.

It became clear from this section of the interview that the interviewees regarded EE as being important for different reasons, determined by their various personalities and points of view. This part of the interview revealed that Geography teachers' limited view of why EE should be regarded as important excluded generally accepted EE principles. One such principle relates to the historical context of problems, which allows learners to participate in planning their own learning experiences and also in solving complex environmental problems through

critical thinking.

5.3.3 The perceptions of how EE should be approached

The questionnaire attempted to find out what approaches the Geography teachers regarded as essential in the teaching of Geography for EE. The analysis of the questionnaire revealed that, other than for the thematic approach, those approaches listed were perceived as being appropriate for the teaching of environmental principles in Geography.

In discussing their lack of support for the thematic approach, the questionnaire results were contradicted. The interviewees claimed that a thematic approach was very suitable for environmentally focused teaching. It was also claimed that a thematic approach allows teachers to move from the general to the specific. This could be done by using a local case study to systematically determine the causes of the problem as well as to seek for solutions. The interviewees further claimed that a thematic approach allowed them to integrate all sections of Geography.

It became evident from this section of the interview that teachers are not absolutely uniform in their definition of a thematic approach. Some interviewees saw it as referring to cross-curricular teaching,

while others perceived it to be about cross-disciplinary teaching.

The next approach considered was the holistic approach. Interviewees saw this as being partially associated with a thematic approach. According to the interviewees, a holistic approach should be complemented by an inter-disciplinary approach across the curriculum. The ensuing discussion revealed that this would lessen compartmentalisation in Geography. The interviewees expressed the belief that EE should be taught by all teachers, and not only by those involved in Geography and Biology. Further probing revealed that certain subjects, such as Accountancy, do not really lend themselves to the teaching of EE. The Geography teachers interviewed all admitted that the teaching of EE depends largely on the attitude of the teacher involved and not only on the subject area. Motivated teachers are able to apply an environmental approach to any subject area.

The interviewed teachers made it quite clear that the approach to EE should be a life-long one, involving all stages of education. The interviewees enlarged upon this by explaining that the foundations of an environmental approach should be laid at pre-primary and junior primary school level. This would ensure pupils' involvement in and commitment to the environment from a very early age. At the same time,

pupils would have the opportunity to enjoy the environment.

A number of interviewees stressed the point that adult education should also include EE. This was deemed necessary to ensure that pupils are educated about the environment at home. One interviewee indicated the necessity for Geography teachers to experience EE as a life-long process. This could be brought about by regular in-service courses, workshops, association meetings, further study and regular visits by the subject advisor.

When asked whether EE should be approached in a manner relevant to the immediate surroundings and culture of the learner, the interviewees expressed some reservations. Further probing revealed that using a Euro- or Afro-centric approach to teach EE would lead to one-dimensional understanding. The interviewees insisted that this should be avoided in a multi-cultural country such as South Africa. The interviewees preferred an approach emphasising the different cultures and the accompanying different perspectives on the environment. They also claimed that such an approach could break down the isolation of the past and could bring pupils to view the environment from different perspectives. However, all the teachers interviewed stressed the fact that the local environment should be used as it is most

relevant to the pupil.

Finally, a problem-orientated approach was considered. The majority of the interviewees support this approach. They explained that such an approach could help pupils to acquire problem solving skills which should then be employed to assess environmental problems politically and economically. Furthermore the interviewees stated that such skills would allow pupils to ask critical and pertinent questions about environmental issues. This, in turn, would put classroom theory into practice and hopefully lead to action.

This section of the interview clearly revealed that the interviewees have no common definitions for concepts such as 'themes', 'holistic' and 'relevant'.

Terms are used interchangeably for concepts that may differ greatly.

5.3.4 Perceptions on how Geography could develop EE

This section of the interview was designed to determine Geography teachers perceptions on how Geography could develop EE.

The Geography teachers interviewed perceived fieldwork as the ideal vehicle to promote and develop EE. The interviewees claimed that fieldwork stresses the man-

earth relationship, creates the correct attitudes towards the environment and enhances conservation. Further probing revealed that Geography teachers considered fieldwork valuable because it involves the practical application of the classroom theory. The majority of interviewees indicated that pupils who have not done fieldwork should be regarded as disadvantaged. What was revealing was that the interviewees had a very poor conception of the "environment" in which pupils were to perform traditional fieldwork tasks such as collecting, measuring and sampling.

Another area discussed, was the enhancement of EE by developing the affective domain of pupils. Analysis of the questionnaires revealed that the respondents gave little support to this aspect. When asked to explain this somewhat negative response, it was revealed that the majority of the teachers interviewed had little understanding of the affective domain and merely regarded it as pupils' positive or negative feelings. These responses were regarded by the researcher as symptomatic of the emphasis in the existing school system on the cognitive domain.

One interviewee expressed the fear that, in trying to develop the affective domain of pupils, indoctrination could take place. The interviewee referred to the example of Green Peace members becoming so emotionally

involved that they become destructive. The interviewee elaborated on this by claiming that under such conditions no learning could take place. The lack of knowledge of teachers about the affective domain is disturbing, particularly in view of the emphasis which EE places on values and attitudes, and which is also emphasised in Geographical Education. Interviewees with a limited perception of how Geography could develop EE confirmed the fact that many of them saw EE as a separate body of knowledge focusing on environmental issues and their solutions. Limited viewpoints concerning EE such as these explain the sometimes vague ideas how Geography could serve to develop EE.

5.3.5 The perceptions relating to how an environmental approach could enhance Geography

This section of the questionnaire was designed to determine Geography teachers' perceptions regarding the way an environmental approach could enhance Geography and become more relevant to the pupils. The analysis of the questionnaires revealed that Geography teachers supported all but one of the statements included, giving strong support for the view that an environmental approach could enhance Geography. The one statement that received very little support was concerned with the notion of whether EE could enhance Geography in the existing examination system. When

asked to explain this reaction, the interviewees held considerably differing viewpoints.

During the ensuing discussions several interviewees supported the idea of incorporating environmental issues as teaching approaches in preparation for the examinations. The Natal Education Department Senior Certificate examinations do in fact incorporate such issues. Further probing revealed that this was deemed necessary to make the subject more relevant to pupils. The teachers interviewed further indicated that since the external examinations are the only yardstick currently used to measure pupil performance, they had to conform to their norms. A problem identified by the interviewees was that because of the examination system teachers are forced to use an environmental approach without having the means or know-how to do so. A possible solution to this problem is the use of newspaper articles such as the problem with pesticides in the Tala Valley because such case studies regularly appear in the examinations.

An optimistic perspective was put forward by an interviewee who claimed that all Geography teachers do use an environmental approach in the teaching of Geography. Since this was the case, the examiners had to conform to the present Geographical philosophy. The interviewee further emphasized that Geography teachers, acting as a pressure group, force the

examiners to ask environmentally orientated questions. Therefore the examinations content is determined by the teachers and the examiners merely act as facilitators.

The majority of teachers interviewed had problems with the current method of examining Ecology in Geography. The interviewees enlarged on this by explaining that pupils are not as ecologically literate as examiners perceive them to be with the result that the examiners expect too much. Another apparent problem was that Ecology was previously incorporated in a separate 'biological-type' question, removed from Geographical perspectives. Recently a more integrative approach has been followed which emphasises environmentalism by setting integrated examination questions. This is perceived by some interviewees as devaluing to Ecology. In the view of the researcher, Natal teachers see environmentalism as the unifying approach in recent Senior Certificate examinations.

The interviews also revealed that several interviewees did not use an environmental approach to prepare pupils for the examinations. This was justified by claiming that examinations fulfil limited needs in a one-off situation. The interviewees further claimed that an environmental approach should not be taught for better marks but for a better future.

The researcher subsequently attempted to obtain greater clarity on how the tenets governing EE develop Geography. Probing revealed consensus amongst the interviewees that using EE approaches developed a sense of the 'real world' in pupils. The interviewed teachers also emphasised the role of fieldwork in order to bring the 'real world' to the pupil. This could make Geography more relevant to pupils and encourage them to become involved in the environment, depending on how fieldwork is perceived.

It was revealed by this part of the interviews that Geography teachers are dependent on the examination system, both as a yardstick for standards and as a means of introducing new approaches into Geographical Education. Furthermore it became clear that several interviewees perceived EE as the Ecology part of the Std 10 syllabus. To add to the variety of notions several interviewees tended to view EE as a separate subject in Geography.

5.3.6 The perceptions of how changes in the present syllabus and examination system could lead to a greater emphasis on environmental approaches and so enhance Geography

This section of the questionnaire attempted to find out whether a change in the present examination system or syllabus would lead to a greater emphasis on an

environmental approach and so enhance Geography. The questionnaire results indicated clearly that Geography teachers believe that a move towards a greater environmental emphasis in the examinations and syllabus could benefit Geography. This part of the interview therefore attempted to clarify these perceptions.

When asked why they wanted to change the present Senior Certificate examination system, the interviewees explained that it merely tested theory in a compartmentalized way. This resulted in the creation of 'adaptors' and not of thinkers. According to the interviewed teachers there is an over-emphasis on the final examinations. When asked whether changes to the examination system should include an environmental approach, the interviewees suggested that the school assessment mark should be more heavily weighted. Doubt was even expressed whether this assessment is considered at all. The interviewees also feel that a compulsory fieldwork component is needed. When teachers were questioned about the nature of such a component, it became apparent that a skill-orientated approach with emphasis on the local environment, was envisaged. All the interviewees indicated that a final examination at the completion of high school was still needed in order to maintain standards but such an examination should incorporate the above mentioned aspects.

Subsequently the suggested changes to the present syllabus were considered. Discussion revealed that the interviewees favour changing the syllabus which they perceive as being too content based and not favouring an environmental approach. The syllabus content was furthermore perceived to be abstract and irrelevant; Coriolis force was quoted as an example. The interviewees also claimed that the syllabus was compartmentalized which made it hard for pupils to comprehend it as a whole. The interviewed teachers indicated that the syllabus merely dealt with theory and "never got down to the application of it". According to the interviewees this resulted in the "removal of the Geography pupil from the real world". At the same time the existing Geography syllabus did "not relate to the pupil's life".

Several solutions were offered to these problems. According to the interviewees there is a great need for environmental impact studies because impact studies could be used to teach processes of evolution.

This would in turn create skilled, environmentally literate pupils. One interviewee indicated that computers should be used more, especially to develop graphicacy in pupils, although he admitted that it would be impossible to supply all schools with enough computers. Several respondents suggested that South African case studies should be part of the Geography syllabus, and expressed their satisfaction with the

present standard seven syllabus which uses case studies of natural disasters as a teaching approach.

During the interviews a syllabus designed by S. Nightingale, previously of Edgewood College, received support from several interviewees. They see this as a balanced syllabus with a favourable emphasis on environmental approaches.

In general, interviewees favoured a change to the present examination and syllabus systems. This section of the interviews revealed that the favoured change was not merely to create a syllabus and examination system with greater emphasis on environmental approaches, but also in order to attend to various other factors, such as compartmentalization, purely content based testing and abstract concepts.

5.3.7 Perceptions of how each syllabus section facilitates EE

The questionnaire attempted to find out which sections of the syllabus are regarded by Geography teachers as suitable for the development of an environmental approach. The results showed that all syllabus sections, apart from astronomy, are perceived to a greater or less extent to be suitable for developing such an approach.

In explaining why astronomy could not be taught using EE approaches, the interviewees claimed that it was about outer-space which excluded all lifeforms and therefore it would be impossible. According to one interviewee it could only be done by using the concept of 'spaceship earth'. This interview confirmed the questionnaire results, namely, that all syllabus sections could be taught using EE approaches. The interviewees generally used examples to indicate how they would teach the sections from an environmental approach. The examples were: climatology - ozone, map reading - man's impact on vegetation, settlement geography - problems with squatters and economic geography - conservation of resources. One interviewee criticized the way that Ecology is currently taught suggesting that, rather than teaching it through a purely 'biological approach,' it should be related to a Geographical perspective.

The interviews revealed that Geography teachers have very set ideas about developing an environmental approach in the syllabus. These ideas are mostly concerned with environmental problems and their possible solutions. The lack of ideas of other possible environmental approaches to developing EE in the syllabus is striking and reveals an apparent lack of knowledge regarding the application of environmental approaches to the present syllabus.

5.3.8 The perceptions of the problems associated with an environmental approach in the study of Geography

The questionnaire results revealed that Geography teachers encounter several major problems when applying EE principles in Geography. During this part of the interview the researcher attempted to obtain greater clarity regarding these problems.

According to the questionnaire results, the major problem experienced was an overcrowded syllabus. This was confirmed by all but one of the interviewees. Upon further probing the interviewees explained that they perceive sections of climatology, geomorphology and regional Geography to be unnecessary. The interviewees indicated that these sections took the place of 'real life' Geography, such as the issue of squatters. A possible solution could be to neglect or to leave out certain sections of the standard six to nine syllabus. The available time could then be allocated to the teaching of environmental issues. This viewpoint promotes EE to a particular body of knowledge related to environmental issues, their problems and possible solutions. Not all interviewees shared this viewpoint, and some emphasised the need to teach all syllabus sections from standard six to nine as these formed the building blocks for standard ten.

A further problem revealed by the questionnaire

results is the lack of funding for fieldwork. This notion was confirmed during the interviews. Further probing revealed that interviewees perceive the recession and the model-C school system to be the main causes of this.

During the interviews several other problems associated with fieldwork came to the fore, namely that of transport, the safety problems caused by political uncertainty and a lack of time. The interviewed teachers indicated that very little could be done about the political situation, but suggested that good planning and the use of the schoolgrounds and parks could be a partial solution to the transport and time problems.

The next factor considered was the lack of preparation-time for teachers when trying to use an environmental approach in Geography. Analysis of the results indicated that respondents perceive the lack of teacher preparation-time to be a major problem. The interviewed teachers enlarged on this by indicating that they had to teach more periods to bigger classes in shorter periods. This resulted in increased stress and a decrease in available time. The interviewees further emphasised that they had not been trained in planning and integrating skills, which causes them to struggle for time. A possible solution to this problem was suggested by an idealistic

interviewee who remarked that teachers should not plan to teach EE: it should be taught anyway.

It also became apparent from the questionnaire results that teachers perceived the lack of understanding of EE to be a major problem. The interviewees supported this notion by explaining that they had not been trained in EE and therefore sometimes chose to ignore it. The teachers claimed that the in-service course for the 1987 syllabus had no follow-up, with the result that they soon became stale and lost any commitment to an environmental approach. According to the interviewees, environmental organisations do not reach Geography teachers, with the result that teachers are not aware of such bodies. This causes a shortage of appropriate materials for explaining EE to Geography teachers. Further discussion revealed that the majority of the textbooks do not supply sufficient information on EE. The exception according to the interviewees is the Window on the World Series (Earle, 1986).

5.4

Summary

The interviews served to illuminate several discrepancies when compared to the questionnaire regarding Geography teachers' understanding of the role of EE in Geography.

- i) Some teachers perceive EE as a separate body of knowledge which focuses on environmental issues, problems and solutions;
- ii) Others perceive EE as teaching Ecology;
- iii) EE is perceived as an approach to the teaching of Geography by some teachers;
- iv) Other teachers perceived EE as teaching environmental awareness, that is, knowing about the environment;
- v) Still other teachers see EE as environmentalism which is a marriage between positivism and humanism.

These discrepancies are important as they will determine the way in which teachers will respond to questions regarding EE.

The interviews furthermore revealed various problems not stressed by the questionnaire results.

- i) Geography teachers have a somewhat vague idea of spatial and regional perspectives;
- ii) At present the syllabus is inadequate for the use of an environmental approach in Geography and needs revision;

- iii) Geography teachers generally have a poor grasp of skill development in Geography, and how an environmental approach could contribute to the development of skills;
- iv) Several problems face Geography teachers who want to use an environmental approach in Geography the most persistent being those perceived as surrounding fieldwork.

As stressed above, the semi-structured interviews served to illuminate discrepancies and reveal various problems when compared to the questionnaire. To this end the interviews was of great value as a follow up to the questionnaire.

CHAPTER 6SUMMARY, RECOMMENDATIONS AND CONCLUSION6.1 INTRODUCTION

EE as a development in education cannot be ignored by Geography or Geographers. Since the world faces an environmental crisis, Geography as an environmental science should play its part in educating pupils about, from and for the environment in formal education. This would create acceptable attitudes and values along with the correct skills and knowledge for sustainable living.

The teaching of environmental principles in Geography could enhance the above-mentioned by ensuring that pupils study the environment in a holistic and interdisciplinary manner. If EE principles are to command such an important role in Geography, the teachers of the subject should have the necessary knowledge and expertise concerning the nature of environmental principles. This study was therefore concerned with investigating Geography teachers' perceptions regarding the role of EE in Geography. The research was conducted amongst Geography teachers at schools under the auspices of the Natal Education Department.

The final chapter of this half-thesis would serve to provide a summary of the research findings and suggest some

recommendations.

6.2 SUMMARY

The research revealed that Geography teachers generally embraced certain essential elements of EE and showed a broad understanding of environmental principles. This broad understanding included a wide variety of ideas about EE, namely: creating environmental awareness, concern for the environment, conservation, man-environment relationships, man's impact on the environment, environmental management and Ecology.

The ideas of individual teachers regarding the notion of EE showed discrepancies when compared to that of the sample population. Individual teachers had varying ideas concerning the nature of EE. These confused perceptions could largely be attributed to the fact that pre-service and in-service training did not address the role of EE in Geography. A need therefore exists to clarify what EE is about and what its role is in Geography. At present it seems that this would be addressed - at least for Natal Education Department teachers - at an in-service training course during September 1994 for Senior Secondary Geography teachers (Natal Education Department, 1994).

The results of the study furthermore revealed that:

- i) Teachers regarded EE as important because it

developed values, led to personal development and was concerned with conservation.

- ii) Teachers regarded most approaches as suitable for the teaching of environmental principles in Geography. Although, according to the questionnaire results, the thematic approach was regarded as an exception, the semi-structured interviews tended to disprove this.
- iii) Geography was regarded as having an important role to play in the development and promotion of environmental principles.
- iv) EE was perceived as playing a prominent role in developing the necessary skills, attitudes and values in pupils with regard to the environment. EE would therefore improve the relevance of Geography and would create more interest and positive attitudes amongst pupils towards Geography.
- v) Geography teachers appeared keen to change the present syllabus and examination system to allow for an environmental approach, since the present system was regarded as inadequate. Although teachers were generally positive towards the suggested change they lacked concrete ideas on how to change it. It therefore seemed that a change was desired, but not merely to allow for an environmental approach.

- vi) Various current syllabus components were considered suitable to the teaching of environmental principles. The teachers interviewed however revealed a relatively limited view of the syllabus' potential for the application of EE.

- vii) Geography teachers perceived certain problems that could influence the success of an environmental approach. The most important of these problems were the overcrowded curriculum, examination pressure and the lack of time, transport, and funding for fieldtrips. These problems were largely due to rigid timetables, large classes, unevenly weighted parts of the syllabus and the state of the economy.

Notwithstanding the positive attitudes highlighted above several areas of concern were revealed by the study:

- i) Spatial and regional perspectives were not regarded as integral to either the teaching of environmental principles or Geography. The interviews revealed that teachers lacked the necessary conceptual and theoretical background regarding spatial and regional perspectives. This serves to explain the poor response to this aspect of the questionnaire.

- ii) Key concepts such as 'holism', 'inter-disciplinary', 'themes' and 'relevant' were neither uniformly understood nor used consistently.

- iii) Geography teachers had a poor grasp of how EE could contribute to the development of basic skills such as oracy, numeracy, graphicacy and literacy.
- iv) The affective domain, as an important aspect of EE, was given very little support. The teaching of values and attitudes was therefore not regarded as important. Some teachers indicated that they did not understand what the affective domain was about.

The research furthermore revealed that teachers at girls' schools held EE in much higher regard than teachers at boys' or co-ed schools, while teachers at lower income schools were less concerned about incorporating EE principles in their teaching.

This study indicated that, if an environmental approach in the teaching of Geography is to be seriously considered, a great deal more has to be done regarding research and teacher education. For although the sample population are well qualified there is a serious deficiency with respect to the theory that underpins both current thinking in Geography and EE. Furthermore, while teachers generally indicated that they were conversant with the need for change there was considerable discrepancy about the direction such change should take.

6.3 RECOMMENDATIONS

In the light of the above Geography teachers need to be aware of and to understand the importance and value of teaching environmental principles. These principles, however, need to be understood within broader theoretical perspectives in terms of both Geographical Education and EE. This could be enhanced by focusing on immediate and long term recommendations.

6.3.1 Recommendations towards immediate action

- i) The journal of the Natal Geographical Association could be used to explain the notion of EE and to bridge the gap between theory and practice in Geography. Furthermore it could serve to clarify identified problem areas such as the affective domain and spatial and regional perspectives. The journal should also be made more accessible.
- ii) In-service and pre-service training pertaining to the notion of EE is needed so that teachers can understand the principles, aims and objectives underpinning this approach. Emphasis should also be placed on explaining the reciprocal relationship between EE and Geography. Such training must include in-depth explanation of spatial and regional perspectives and

why they are of extreme importance to the teaching of environmental principles in Geography. During teacher education the concept 'affective domain' and what it entails should also be explained. It is furthermore important that education includes the development of strategies and methodologies for the teaching of basic skills such as numeracy, oracy graphicacy and literacy.

- iii) Better communication between those concerned with planning and managing curricula and education practice and teachers is needed. Such two way communication should serve to give consideration to the position of an environmental approach. The proposed communication could then be employed to develop a policy on strategies and methodologies to allow these teachers an opportunity to understand and use such an approach.
- iv) Continuous research regarding the environmental approach and other identified problematic areas is needed. It is of extreme importance that the research done be disseminated in such a way that it reaches teachers. Geography teachers should also be encouraged to do research.
- v) Attention must be given to problems hindering effective fieldwork such as transport, large classes, funding and examination pressures. Accessible and readily understood strategies, material and

methodologies for doing fieldwork in the schoolground or in the immediate environment must be provided. Fieldwork should also be considered as a component for the end of the year examination.

6.3.2 Long term recommendations

- i) The assessment of environmental principles in an integrated manner through examinations needs to continue in Kwa Zulu-Natal and should be encouraged in other provinces.
- ii) The Geography syllabus needs to be restructured to allow for an environmental approach focusing on real issues and the incorporation of environmental principles.
- iii) The incorporation of an environmental approach in Geography textbooks in order to provide teachers with firmer guidelines regarding environmental principles.

6.4 LIMITATIONS

The limitations of this study (Chapter 3) emphasise the need for research regarding the perceptions of Geography teachers outside the Natal Education Department on the research topic. This would provide a total picture of perceptions of all Geography teachers in Kwa Zulu-Natal

regarding the role of EE in Geography.

6.5 CONCLUSION

Several factors contributed to Geography teachers' varied perceptions regarding the position of EE in Geography. Of these, the lack of opportunity to do fieldwork, a perceived out-of-date syllabus, the lack of clarity regarding the notion of EE and the lack of both pre-service and in-service training on EE are the most pertinent. These problems could nevertheless be addressed by the recommendations suggested and by teachers learning about EE, both by their own efforts and through experience. This would hopefully lead to relevance, enhancement and ownership of Geography by teachers and learners.

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PERSONAL COMMUNICATION

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DEPARTEMENT VAN ONDERWYS EN KULTUUR
DEPARTMENT OF EDUCATION AND CULTUREADMINISTRASIE: VOLKSRaad
ADMINISTRATION: HOUSE OF ASSEMBLY

APPENDIX - A

NATALSE ONDERWYSDEPARTEMENT
NATAL EDUCATION DEPARTMENTNavrae: Mnr D V Bromley
Enquiries:
Verw.: 2/12/2/3
Ref.:
Tel.: (0331) 942351 x343Natale Onderwysgebou
Natal Education Building
Privaatsak X9044
Private Bag X9044
Pietermaritzburg 3200

20 Januarie 1993

Meneer J M Wassermann
Hoërskool Werda
Privaatsak X24001
HILLARY
4024

Geagte mnr Wassermann

VERSOEK OM NAVORSING TE DOEN IN SAMEWERKING MET AARDRYKSKUNDE
ONDERWYSERS IN DIENS VAN DIE NATALSE ONDERWYSDEPARTEMENT

U brief van 19 Januarie 1993 het betrekking.

Die Natalse Onderwysdepartement keur u navorsing goed soos beskryf, onderworpe daaraan dat toestemming verkry word van die betrokke skoolhoofde.

Voordat toestemming verleen kan word om die vraelys aan onderwysers te stuur, moet 'n afskrif aan die Uitvoerende Direkteur: vir aandag: Superintendent van Onderwys mnr D V Bromley, by die bogenoemde adres, gestuur word.

As u enige aspek van u projek met die akademiese adviseurs van die Natalse Onderwysdepartement wil bespreek, skakel hulle gerus.

Dit sal waardeer word as u 'n afskrif van u tesis so gou doenlik beskikbaar sal stel aan die Uitvoerende Direkteur:Onderwys, vir aandag: SO mnr D V Bromley.

Ek wens u voorspoed toe met u navorsing.

Die uwe

MMS UITVOERENDE DIREKTEUR: ONDERWYS

Rig korrespondensie aan die Direkteur: Natalse Onderwysdepartement en meld verwysingsnommer
Address correspondence to the Director: Natal Education Department and quote reference number* EDUCATION
FAX: (0331) 943808



RHODES UNIVERSITY

P.O. Box 94, Grahamstown, 6140 South Africa
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40 Blairmont Ave.,
Bellair
DURBAN
4094

16 April 1993

Dear Principal

QUESTIONNAIRE: TEACHERS' PERCEPTIONS OF THE ROLE OF
ENVIRONMENTAL EDUCATION IN GEOGRAPHY

It would be greatly appreciated if your school could assist me by taking part in a survey being conducted for the purpose of research. I am doing a thesis on "The perceptions of Geography teachers of the role of Environmental Education in High School Geography" for the M.Ed degree (Rhodes University). Your school has been selected as you offer Geography as a subject up to matric level.

The enclosed questionnaire is, with your permission, to be completed by members of the Geography Department at your school.

The questionnaire has been approved by the Natal Education Department (see letter attached hereto) and by Mr Hennie Bosman: Superintendent of Geography.

I would appreciate it if this matter could be finalised as soon as possible during the course of the second term. I have enclosed a stamped, self-addressed envelope for the return of the questionnaire.

As I feel that my research will benefit both teachers of Geography and their pupils, I shall make the results available to the N.E.D. The questionnaires will be regarded as private and confidential.

Thanking you in anticipation for your assistance

Yours faithfully

J M WASSERMANN



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40 Blairmont Avenue
 BELLAIR
 DURBAN
 4094

16 April 1993

Dear Geography Colleague

I am doing a thesis on "Secondary School Geography teachers perceptions of the role of Environmental Education in Geography with particular reference to Natal education department teachers'" for the M.Ed degree (Rhodes University). I have devised a questionnaire which needs to be answered by all practising Geography teachers in Natal. Please could you assist me by ensuring that all Geography teachers in your school complete the enclosed questionnaires and return them to you. I would greatly appreciate it if you could then return the questionnaires to me in the enclosed self-addressed envelope.

The aim of the research being undertaken (as referred to above) is to investigate teachers' perceptions of the role of Environmental Education in Geography. As such it is essential that practising Geography teachers are canvassed for their perceptions towards the subject.

Obviously the success of the research will largely depend on the number of questionnaires' that are returned. Your assistance in this regard will be greatly appreciated. The questionnaires' will be regarded as private and confidential.

Thanking you in anticipation

Yours sincerely

J. M. Wassermann

UNIVERSITY OF RHODES

A QUESTIONNAIRE FOR TEACHERS OF GEOGRAPHY IN N.E.D. HIGH SCHOOLS

1 - 3

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This questionnaire is to be completed by teachers of Geography employed by the Natal Education Department. It is designed to obtain information about the way teachers regard Geography as a means to educate pupils towards becoming environmentally literate, by developing an understanding of the environment in its totality. As such there are no right or wrong answers. When answering the questions please reflect your own feelings and not what you perceive to be the correct answer.

SECTION A:

GENERAL AND PERSONAL INFORMATION:

Please complete this section by ticking the appropriate response\

Please use the columns provided as indicated.

1 Please indicate whether you are:

a Male

b Female

(Please tick the appropriate block)

2 Please indicate whether you are:

a Married

b Divorced

c Single

d Widowed

(Please tick the appropriate block)

3 Please indicate which language you use when teaching:

a English

b Afrikaans

c Both

(Please tick the appropriate block)

for office use only

	4
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	5
--	---

	6
--	---

4 Please indicate the highest Geography qualification you have obtained:

- a None
- b College
- c Geography 1
- d Geography 11
- e Geography 111
- f Honours
- g Masters
- h Doctorate

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

(Please tick the appropriate block)

for office use only

<input type="checkbox"/>	7
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5 Please indicate when you obtained your highest Geography qualification:

- a 0-5 years ago
- b 5-10 years ago
- c More than 10 years ago

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

(Please tick the appropriate block)

<input type="checkbox"/>	8
--------------------------	---

6 Please indicate your teaching experience in Geography:

- a 1-5 years
- b 5-10 years
- c More than 10 years

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

(Please tick the appropriate block)

<input type="checkbox"/>	9
--------------------------	---

7 Please indicate whether you are the Subject Head/
Head of Department for Geography at your school:

- a Yes
- b No

<input type="checkbox"/>
<input type="checkbox"/>

(Please tick the appropriate block)

<input type="checkbox"/>	10
--------------------------	----

8 Please indicate to which standards you have taught Geography:

- a Std 6
- b Std 7
- c Std 8
- d Std 9
- e Std 10

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- 11
- 12
- 13
- 14
- 15

(Please tick the appropriate block)

9 Is your school:

- a Afrikaans
- b English
- c Dual Medium

--

16

(Please tick the appropriate block)

10 Is your school:

- a Co-educational
- b Boys only
- c Girls only

--

17

(Please tick the appropriate block)

11 Please indicate whether your school serves a predominantly:

- a Rural community
- b Urban (metropolitan) community
- c Urban (small town) community
- d Mixed urban/rural community

--

18

(Please tick the appropriate block)

12 Please indicate whether your school serves a predominantly:

- a affluent community
- b middle-income community
- c lower-income community
- d mixed-income community

(Please tick the appropriate block)

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SECTION B

13 Please define what you understand by Environmental Education:

14 The following statements have been made about the nature of Environmental Education. Please rate each of the following statements from 1-5 on the scale as indicated.

- 1- indicates that you attach no importance to the statements
- 2- indicates that you attach little importance to the statements
- 3- indicates that you attach some importance to the statements
- 4- indicates that you attach great importance to the statements
- 5- indicates that you attach extreme importance to the statements

ENVIRONMENTAL EDUCATION IS:

- a mostly concerned with conservation
- b sub-standard Geography
- c about ecology
- d about natural and man-made environments
- e learning from the environment

insert 1-5
rating here

for office use
only

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5

- f learning about the environment
- g learning in the environment
- h developing problem solving skills
- i understanding local environmental issues
- j understanding international environmental issues
- k understanding man's impact on the environment
- l about the economy
- m about political issues
- n about communities
- o about managing the environment

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(Please check that all the above have a 1-5 rating)

Write down any other aspects which you think are encompassed by Environmental Education.

15 The following statements have been made about the importance of Environmental Education. Please evaluate each of the following statements on a scale of 1-5 as indicated.

- 1- indicates that you attach no importance to the statements
- 2- indicates that you attach little importance to the statements
- 3- indicates that you attach some importance to the statements
- 4- indicates that you attach great importance to the statements
- 5- indicates that you attach extreme importance to the statements

ENVIRONMENTAL EDUCATION IS IMPORTANT BECAUSE IT:

- a stresses individual responsibility towards the environment
- b encourages active participation by learners

insert rating
1-5 here

for office
use only

35
36

c	considers the environment in its totality and does not focus on any one aspect of it		37
d	creates acceptable attitudes and values towards the environment		38
e	is concerned with the development of the environment		39
f	is concerned with the management of the environment		40
g	promotes cooperation in the prevention and solution of environmental problems		41
h	examines environmental issues on a local, national and international scale		42
i	explicitly considers environmental aspects in planning and development		43
j	emphasizes the complexity of environmental problems		44
k	emphasizes the man-earth relationship		45
l	develops graphicacy, numeracy, literacy and oracy		46
m	emphasizes spatial and regional perspectives		47
n	creates a balance between physical and human geography		48
o	develops observation of appreciation for the environment		49

(Please check that all the above have a 1-5 rating)

Please indicate whether there are any other reasons why you think Environmental Education is important.

16 The following statements have been made about the way Environmental Education should be approached. For each of the statements, indicate your feelings to the scale below.

(1) Strongly agree; (2) Agree; (3) Undecided; (4) Disagree; (5) Strongly disagree.

a	Environmental Education must be interdisciplinary in approach	<input type="checkbox"/>	for office use only	<input type="checkbox"/>	50
---	---	--------------------------	---------------------	--------------------------	----

(1) Strongly agree; (2) Agree; (3) Undecided; (4) Disagree; (5) Strongly disagree.

- | | | | | |
|---|--|--------------------------|--------------------------|----|
| b | Environmental Education must be holistic in approach

(1) Strongly agree; (2) Agree; (3) Undecided; (4) Disagree;
(5) Strongly disagree. | <input type="checkbox"/> | <input type="checkbox"/> | 51 |
| c | Environmental Education should utilise diverse learning environments and a variety of approaches

(1) Strongly agree; (2) Agree; (3) Undecided; (4) Disagree;
(5) Strongly disagree. | <input type="checkbox"/> | <input type="checkbox"/> | 52 |
| d | Environmental Education should use the environment as a medium for teaching awareness and concern

(1) Strongly agree; (2) Agree; (3) Undecided; (4) Disagree;
(5) Strongly disagree. | <input type="checkbox"/> | <input type="checkbox"/> | 53 |
| e | Environmental Education should be relevant to the learner's immediate surroundings and culture

(1) Strongly agree; (2) Agree; (3) Undecided; (4) Disagree;
(5) Strongly disagree. | <input type="checkbox"/> | <input type="checkbox"/> | 54 |
| f | Environmental Education is a life-long process, continuing through all stages of education

(1) Strongly agree; (2) Agree; (3) Undecided; (4) Disagree;
(5) Strongly disagree. | <input type="checkbox"/> | <input type="checkbox"/> | 55 |
| g | Environmental Education must be problem orientated in approach

(1) Strongly agree; (2) Agree; (3) Undecided; (4) Disagree;
(5) Strongly disagree. | <input type="checkbox"/> | <input type="checkbox"/> | 56 |
| h | Environmental Education must be thematic in approach

(1) Strongly agree; (2) Agree; (3) Undecided; (4) Disagree;
(5) Strongly disagree. | <input type="checkbox"/> | <input type="checkbox"/> | 57 |

(Please check that all the above have a 1-5 rating)

Please indicate whether there are any other ways in which you believe Environmental education should be approached.

SECTION C

17 Please indicate the importance of the following statements regarding the way you see Geography's role in developing Environmental Education according to the scale below

- 1- indicates that you attach no importance to the statements
- 2- indicates that you attach little importance to the statements
- 3- indicates that you attach some importance to the statements
- 4- indicates that you attach great importance to the statements
- 5- indicates that you attach extreme importance to the statements

GEOGRAPHY CAN DEVELOP ENVIRONMENTAL EDUCATION BY:

	insert rating 1-5 here	for office use only	
a	<input type="checkbox"/>	<input type="checkbox"/>	58
b	<input type="checkbox"/>	<input type="checkbox"/>	59
c	<input type="checkbox"/>	<input type="checkbox"/>	60
d	<input type="checkbox"/>	<input type="checkbox"/>	61
e	<input type="checkbox"/>	<input type="checkbox"/>	62
f	<input type="checkbox"/>	<input type="checkbox"/>	63
g	<input type="checkbox"/>	<input type="checkbox"/>	64
h	<input type="checkbox"/>	<input type="checkbox"/>	65

(Please check that all the above have a 1-5 rating)

Please indicate whether there are any other ways in which you believe that Geography could play a role in developing Environmental Education.

18 Please indicate the importance of the following statements regarding the way you see Environmental Education's role in developing Geography according to a scale of 1-5

- 1- indicates that you attach no importance to the statements
- 2- indicates that you attach little importance to the statements
- 3- indicates that you attach some importance to the statements
- 4- indicates that you attach great importance to the statements
- 5- indicates that you attach extreme importance to the statements

insert rating
1-5 here

for office
use only

ENVIRONMENTAL EDUCATION CAN DEVELOP GEOGRAPHY BY:

a	preparing pupils for the exams as seen from the examiner's viewpoint		66
b	making the subject more relevant to pupils		67
c	involving pupils rather than just passing knowledge on		68
d	developing spatial skills in pupils		69
e	developing a sense of the real world in pupils		70
f	enabling the teacher to use an integrated approach when teaching geography		71
g	creating environmentally literate pupils		72
h	developing the affective domain of pupils		73
i	developing life skills in pupils		74
j	supplying knowledge about the environment		75
k	using the environment as a teaching resource		76
l	emphasizing the man-environment relationship		77
m	developing a resource conservation ethic in pupils		78
n	creating the correct attitudes such as care, concern and tolerance in pupils		79
o	placing emphasis on management of the environment for sustainable living		80

(Please check that all the above have a 1-5 rating)

Please indicate whether there are any other ways in which you believe that Environmental Education can develop Geography

19 Please indicate the importance of the following statements on how changes in the present syllabus and exam system could benefit Environmental Education's role in developing Geography according to a scale of 1-5

- 1- indicates that you attach no importance to the statements
- 2- indicates that you attach little importance to the statements
- 3- indicates that you attach some importance to the statements
- 4- indicates that you attach great importance to the statements
- 5- indicates that you attach extreme importance to the statements

ENVIRONMENTAL EDUCATION CAN DEVELOP GEOGRAPHY BY:

	insert rating 1-5 here	for office use only
a retaining the present syllabus and exam system	<input type="checkbox"/>	<input type="checkbox"/> 1
b retaining the present syllabus but changing the exam system	<input type="checkbox"/>	<input type="checkbox"/> 2
c retaining the present exam system but changing the syllabus	<input type="checkbox"/>	<input type="checkbox"/> 3
d changing the present syllabus and exam system	<input type="checkbox"/>	<input type="checkbox"/> 4

(Please check that all the above have a 1-5 rating)

SECTION D

20 The following sections broadly cover the High School Geography syllabus. In your opinion, to what extent does each section of the syllabus facilitate the teaching of Environmental Education? Please use the following rating:

1- Indicates that the section has little potential for Environmental Education teaching

2- Indicates that the section has some potential for Environmental Education teaching

3- Indicates that the section has great potential for Environmental Education teaching

- a map reading and interpretation
- b climatology and meteorology
- c geomorphology
- d ecology
- e urban settlement geography
- f rural settlement geography
- g population geography
- h South Africa
- i the regional geography of Africa
- j the geography of regions outside Africa
- k developing and developed countries and the economic development of such areas
- l economic geography
- m oceanography
- n astronomy

insert rating
1-3 here

for office
use only

- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18

(Please check that all the above have a 1-3 rating)

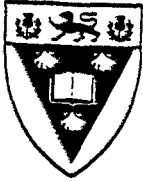
SECTION E

21 Problems encountered when teaching Environmental Education in Geography

The problems listed below are ones which could arise in the teaching of Environmental Education in Geography. Please indicate by placing a tick in the appropriate block whether you consider each of the problems to be a major one, a minor one or not a problem in teaching Environmental Education in Geography.

	major problem	minor problem	not a problem	for office use only	
a lack of teacher preparation time					19
b an overcrowded curriculum					20
c lack of adequate funding for fieldtrips etc					21
d scarce or inadequate resources					22
e lack of appropriate materials					23
f teacher's lack of understanding of environmental education					24
g teacher's lack of personal commitment to environmental education					25
h exam pressures do not leave room for teaching environmental education					26
i teacher's avoidance of the unknown dimension					27
j teachers who are not environmentally literate cannot pass on knowledge they don't have					28
k attitudes and values are not really examinable					29
l textbooks do not cover environmental education					30

Please indicate whether there are any other problems in the teaching of Environmental Education in Geography.



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40 Blairmont Ave
BELLAIR
DURBAN
4094

1 June 1993

Dear Principal/Geography Colleague

RETURN OF QUESTIONNAIRES': TEACHERS PERCEPTIONS OF THE ROLE OF ENVIRONMENTAL EDUCATION IN GEOGRAPHY

A while ago your school were send questionnaires on the abovementioned topic. I would be greatly appreciated if you could return it as soon as possible in the enclosed, stamped, self-addressed envelope. If you have already returned the questionnaires please ignore this letter.

It is important that my research receive as many as possible responses as I feel that my research will benefit both teachers of Geography and their pupils. The questionnaires' will be regarded as private and confidential.

Thanking you in anticipation.

Yours sincerely


J M WASSERMANN

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

Environmental education should:

- consider the environment in its totality - natural and built, technological and social (economic, political, cultural-historical, moral, aesthetic);
- be a continuous lifelong process, beginning at the pre-school level and continuing through all formal and nonformal stages;
- be interdisciplinary in its approach, drawing on the specific content of each discipline in making possible a holistic and balanced perspective;
- examine major environmental issues from local, national, regional and international points of view so that students receive insights into environmental conditions in other geographical areas;
- focus on current and potential environmental situations while taking into account the historical perspective;
- promote the value and necessity of local, national and international cooperation in the prevention and solution of environmental problems;
- explicitly consider environmental aspects in plans for development and growth;
- enable learners to have a role in planning their learning experiences and provide an opportunity for making decisions and accepting their consequences;
- relate environmental sensitivity, knowledge, problem-solving skills and values clarification to every age, but with special emphasis on environmental sensitivity to the learner's own community in early years;
- help learners discover the symptoms and real causes of environmental problems;
- emphasize the complexity of environmental problems and thus the need to develop critical thinking and problem-solving skills;
- utilize diverse learning environments and a broad array of educational approaches to teaching/learning about and from the environment with due stress on practical activities and first-hand experience.

APPENDIX G
SEMI-STRUCTURED INTERVIEW SCHEDULE

QUESTION 1

ENVIRONMENTAL EDUCATION IS:

- a mostly concerned with conservation
- b sub-standard Geography
- c about ecology
- d about natural and man-made environments

- e learning from the environment
- f learning about the environment
- g learning in the environment
- h developing problem solving skills
- i understanding local environmental issues
- j understanding international environmental issues
- k understanding man's impact on the environment
- l about the economy
- m about political issues
- n about communities
- o about managing the environment

QUESTION 2

ENVIRONMENTAL EDUCATION IS IMPORTANT BECAUSE IT:

- a stresses individual responsibility towards the environment
- b encourages active participation by learners
- c considers the environment in its totality and does not focus on any one aspect of it
- d creates acceptable attitudes and values towards the environment
- e is concerned with the development of the environment
- f is concerned with the management of the environment
- g promotes cooperation in the prevention and solution of environmental problems
- h examines environmental issues on a local national and international scale
- i explicitly considers environmental aspects in planning and development
- j emphasizes the complexity of environmental problems
- k emphasizes the man-earth relationship
- l develops graphicacy, numeracy, literacy and oralacy
- m emphasizes the spatial and regional perspective
- n creates a balance between physical and human geography
- o develops observation and appreciation towards the environment

QUESTION 3

The following statements have been made about the way Environmental Education should be approached.

Environmental Education must be interdisciplinary in approach

- (1) Strongly agree; (2) Agree; (3) Undecided; (4) Disagree;
(5) Strongly disagree.

Environmental Education must be holistic in approach

- (1) Strongly agree; (2) Agree; (3) Undecided; (4) Disagree;
(5) Strongly disagree.

Environmental Education should utilise diverse learning environments and a variety of approaches

- (1) Strongly agree; (2) Agree; (3) Undecided; (4) Disagree;
(5) Strongly disagree.

Environmental Education should use the environment as a medium for teaching awareness and concern

- (1) Strongly agree; (2) Agree; (3) Undecided; (4) Disagree;
(5) Strongly disagree.

Environmental Education should be relevant to the learner's immediate surroundings and culture

- (1) Strongly agree; (2) Agree; (3) Undecided; (4) Disagree;
(5) Strongly disagree.

Environmental Education is a life-long process, continuing through all stages of education

- (1) Strongly agree; (2) Agree; (3) Undecided; (4) Disagree;
(5) Strongly disagree.

Environmental Education must be problem orientated in approach

- (1) Strongly agree; (2) Agree; (3) Undecided; (4) Disagree;
(5) Strongly disagree.

Environmental Education must be thematic in approach

- (1) Strongly agree; (2) Agree; (3) Undecided; (4) Disagree;
(5) Strongly disagree.

QUESTION 4

GEOGRAPHY CAN DEVELOP ENVIRONMENTAL EDUCATION BY:

- emphasizing the role of fieldwork in geography
- developing the affective domain of pupils
- creating healthy attitudes towards the environment
- creating values such as responsibility towards conservation
- creating environmental literacy
- developing a future orientated outlook in geography teachers
- stressing the man-earth relationship
- adopting an interdisciplinary approach

QUESTION 5

ENVIRONMENTAL EDUCATION CAN DEVELOP GEOGRAPHY BY:

- preparing pupils for the exams as seen from the examiner's viewpoint
- enabling the teacher to teach ecology separately from the other sections
- involving pupils rather than just passing knowledge on
- developing spatial skills in pupils
- developing a sense of the real world in pupils
- enabling the teacher to use an integrated approach when teaching geography
- creating environmentally literate pupils
- developing the affective domain of pupils
- developing life skills in pupils
- supplying knowledge about the environment
- using the environment as a teaching resource
- emphasizing the man-environment relationship
- developing a resource conservation ethic in pupils
- creating the correct attitudes such as care, concern and tolerance in pupils
- placing emphasis on management of the environment for sustainable living

QUESTION 6

ENVIRONMENTAL EDUCATION CAN DEVELOP GEOGRAPHY BY:

- retaining the present syllabus and exam system
- retaining the present syllabus but changing the exam system
- retaining the present exam system but changing the syllabus
- changing the present syllabus and exam system

QUESTION 7

The following sections broadly cover the High School Geography syllabus. In your opinion, to what extent does each section of the syllabus facilitate the teaching of Environmental Education?

- map reading and interpretation
- climatology and meteorology
- geomorphology
- ecology
- urban settlement geography
- rural settlement geography
- population geography
- South Africa
- the regional geography of Africa
- the geography of regions outside Africa
- developing and developed countries and the economic development of such areas
- economic geography
- oceanography
- astronomy

QUESTION 8

Problems encountered when teaching Environmental Education in Geography

lack of teacher preparation time

an overcrowded curriculum

lack of adequate funding for fieldtrips etc

scarce or inadequate resources

lack of appropriate materials

teacher's lack of understanding of
environmental education

teacher's lack of personal commitment
to environmental education

exam pressures do not leave room for
teaching environmental education

teacher's avoidance of the unknown dimension

teachers who are not environmentally
literate cannot pass on knowledge they
don't have

attitudes and values are not really examinable

textbooks does not cover environmental
education