

**THE ROLE PLAYED BY ENVIRONMENTAL EDUCATION
IN THE SECONDARY SCHOOL GEOGRAPHY SYLLABUS
IN A FUTURE SOUTH AFRICA**

T L Cowie

University of Natal

School of Education
University of Natal (Durban)
Private Bag X10
DALBRIDGE
4014
South Africa

**THE ROLE PLAYED BY ENVIRONMENTAL EDUCATION
IN THE SECONDARY SCHOOL GEOGRAPHY SYLLABUS
IN A FUTURE SOUTH AFRICA**

by

Trevor Leslie Cowie

B.A., B.Ed, M.Ed, H.D.E

Submitted in fulfilment of the requirements for the degree of Doctor of Philosophy
in the Department of Education, University of Natal, Durban

Durban
July, 1997

ABSTRACT

The primary aim of this study is to attempt to examine the role to be played by Environmental Education (E.E.) in the secondary school Geography syllabus in a future South Africa. At the present time and since the commencement of this study new interim syllabi have been formulated for Standard 2-7. Interim syllabi for Standards 8 - 10 have not been formulated and a decision has been made by the National Department of Education to continue using the existing syllabi until the year 2001 when the existing matriculation examination will fall away. It is the intention of the educational authorities to have all interim syllabi operational in the country's schools by 1996 at the latest with the first unified provincial education department examinations for Standard 10 to be written at the end of 1996. The process of formulating completely new curricula and syllabi for all subjects and standards has already begun. This process will be a lengthy one and could take up to 5 years or more to complete. This study should be seen as a contribution to the deliberations which must inevitably occur before completely new curricula and syllabi are formulated. The qualitative nature of most of the study as well as the empirical study described in Chapter Eight allow for ideas and suggestions on the incorporation of E.E. in the new syllabus as well as pointers to be made on what should constitute the new syllabus. The ideas and suggestions forwarded have been based on a fairly extensive review of current literature in the field as well as on the author's eighteen years of teaching and lecturing experience and membership of various educational committees involved in syllabus formulation.

Besides a review of current literature in the fields of Geographical Education, E.E., Development Education, Sustainability, Education for Sustainable living and Syllabus Formulation, chapters in this study will deal with the current position of E.E. in South Africa as well as in the education system, the position of E.E. in the current secondary school Geography syllabi in South Africa, the position of E.E. in the current secondary school Geography Syllabi in a selected number of other countries, including a fairly detailed examination of the position in selected African countries. A background scenario is then provided to the formulation of a new secondary school Geography syllabus in South Africa

before a series of recommendations are forwarded on what should constitute a new syllabus. Empirical studies on the incorporation of E.E. into the Geography syllabus are examined to provide support for the contention of this study that much scope remains for the inclusion of more E.E. into a new syllabus. Such inclusion would of necessity include elements of the concepts of development education and sustainability. Every attempt needs to be made to transform existing syllabi into something more relevant and meaningful to the pupils of today. Of necessity a process of 'Africanising' of the syllabus would be required as part of the process of syllabus renewal so as to cater more appropriately for the needs of the majority of pupils who will be studying the subject. In addition every attempt must be made to achieve a phase three status for the new Syllabus as advocated by Graves (1981).

This study is presented as a contribution to education and more specifically to Geography teaching in South Africa. Every effort is made to provide a case for the study of Geography in the new curriculum which will emerge and to have E.E. as a central focus in the study of the subject. The Government's proposal to introduce an outcomes/competencies based curriculum and to shift emphasis away from the subject-based curriculum presently in existence will obviously have ramifications for Geography as a subject as we know it at present. It is the contention of this study, however, that a place will have to be found, in some form, for the study of what we now label Geography in the present syllabus. The intention of this study was never to actually formulate a new syllabus as such as this of necessity needs a lengthy process of dialogue and consultation between all interested stake-holders and role players. It is hoped, however, that some of the ideas contained in this study will be considered in the deliberations which take place.

Finally, the dramatic political changes which have occurred in South Africa in recent years have inevitably produced changes in the educational sphere. These changes may have appeared to be a bit slow at first but have definitely recently picked up in intensity. This study has been conducted during this period of change, beginning with the start of the study in January 1992 through to the start of the original writing up of the study in January - April 1995. The changing scenarios have definitely not made it easy for the author but every attempt has been made to represent the position as accurately as possible as it was as at the end of April, 1995.

DECLARATION OF ORIGINALITY

I hereby state that this whole study, unless specifically indicated to the contrary in the text, is my own original work. I also declare that this thesis has not been submitted for a degree in any other university.

T L Cowie

Durban

July, 1997

ACKNOWLEDGEMENTS

The financial assistance of the National Programme for Human Needs, Resources and the Environment of Group Human Resources of the Human Sciences Research Council towards this research is hereby acknowledged. Opinions expressed in this work, or conclusions arrived at, are those of the author and are not to be attributed to the Human Sciences Research Council.

The critical attention and encouragement of the initial supervisor Professor B F Nel, formerly of the Department of Education, University of Natal (Durban) is much appreciated. The later critical attention and encouragement of Professor CR Harber, Head of the Department of Education, University of Natal (Durban) is highly valued.

Mrs Denise Sperring and Mrs Jane van Wyk, of the Department of Education, University of Natal (Durban) are thanked for the typing of this thesis.

The following list of persons and organisations were interviewed and consulted for the purposes of this study and the advice and assistance received is gratefully acknowledged.

Dr R Ballantyne	School of Social, Business and Environmental Education, Queensland, University of Technology.
Mr A Clacherty	Consultant in Environmental Education, Johannesburg.
Professor J L Earle	Department of Geography and Environmental Studies University of the Witwatersrand.
Professor R Fincham	Department of Geography University of Natal (Pietermaritzburg).
Dr L B Hurry	Author and Consultant in Geographical Education Environmental and Development Education.
Mr Tinus Joubert	Department of Environmental Affairs, Pretoria
Dr L P Kriel	Department of National Education, Pretoria
Mr CS Nightingale	Retired Head of Geography Department, Edgewood College of Education, Pinetown.
Dr D Roberts	Formerly Department of Geographical and Environmental Sciences, University of Natal (Durban).

Mr J Taylor	Extension Services, Wildlife Society of Southern Africa, Umgeni Valley, Howick.
Mr P Van Den Berg	Environmental Education Section, Ex-Natal Education Department, Pietermaritzburg.
Mrs U van Harmelen	Faculty of Education, Rhodes University.
Mrs E van Rensburg	Faculty of Education, Rhodes University.

Organisations

The Environmental Education Association of South Africa (E.E.A.S.A.)

Department of Environmental Affairs

Department of National Education

Institute of Natural Resources

KwaZulu Bureau of National Resources

KwaZulu-Natal Department of Education and Culture (ex-Natal Education Department)

Natal Parks Board

Umgeni Valley Project

Umgeni Water (External Education Services)

Wildlife Society of Southern Africa

LISTING OF ABBREVIATIONS USED IN THIS STUDY

EE	-	Environmental Education
EEASA	-	Environmental Education Association of South Africa
EEPI	-	Environmental Education Policy Initiative
GCISA	-	Geography Curriculum Initiative in South Africa
IUCN	-	Formerly the International Union for the Conservation of Nature and Natural Resources, now the International Conservation Union
SCISA	-	Science Curriculum Initiative in South Africa
UNEP	-	UNESCO's United Nations Environment Programme
UNESCO	-	The United Nations Environment, Science and Cultural Organisation
WCED	-	The World Commission of Environment and Development
WWF	-	Formerly the World Wildlife Fund, now the Worldwide Fund of Nature

CONTENTS

	Page
Title Page	i
Abstract	ii
Declaration of Originality	iv
Acknowledgements	v
List of Abbreviations	vii
Table of Contents	viii
List of Figures	xiii
List of Tables	xiv
List of Appendices	xv

Chapter One	Introduction to the Study	Page No.
1.1	Introduction	1
1.2	Missed Opportunities in Curriculum Development -Background	1
1.3.	Graves's Typology and Geography in South African Secondary Schools - an introduction	5
1.4	Challenges	7
1.5	The Scope, Aims and Objectives of the Study	17
1.6	Structure of the Study	18
Chapter Two	Literature Review : Geography and Geographical Education	
2.1	Introduction	20
2.2	The Nature and Historical Development of Geography	20
2.3	Philosophical Trends in Geography	37

2.4	The Educational Significance and Contribution of Geography	47
2.5	Geography in South African Secondary Schools	58
2.5.1	Historical Perspective	58
2.5.2	South African Geography Education and the Graves Typology	69
2.6	The Position of Environmental Education in the Current South African Secondary School Geography Syllabus	75
2.7	Conclusion	82
Chapter Three Literature Review : Environmental Education		
3.1	Introduction	84
3.2	The Historical Development of Environmental Education	85
3.3	A Rationale for the Development of Environmental Education	89
3.4	Definitions, Nature and Extent of Environmental Education	91
3.5	Development, Sustainability and Environmental Education	98
3.6	Ideologies of Environmental Education	112
3.7	Educational Significance and Importance of Environmental Education	118
3.8	The Position of Environmental Education in South Africa	121
3.9	The Relationship Between Geography and Environmental Education	126
3.10	Conclusion	131
Chapter Four Literature Review : Environmental Education in the Secondary School Syllabi of Selected Countries - An Examination		
4.1	Introduction	132
4.2	Geography as a vehicle for E.E. in British, Australian and Swedish Schools	132

4.3	The Position of Environmental Education in the School Syllabi of Selected African Countries	136
4.3.1	Environmental Education in Namibia	137
4.3.2	Environmental Education in Zimbabwe	151
4.3.3	Environmental Education in Kenya	171
4.4	Conclusion	182
Chapter Five	Research Methodology	
5.1	Introduction : Research Field and Aims	184
5.2	The Nature of Qualitative and Quantitative Research	184
5.3	Research Techniques used in this Study	185
5.4	The Nature of Document Analysis	187
5.5	Requirements of Document Analysis	190
5.6	The Need for More Document Analysis	191
5.7	Documents used in this Study	193
5.8	The Questionnaire as a Research Tool	193
5.9	The Questionnaire used in this Study	194
5.10	Conclusion	196
Chapter Six	The State of Environmental Education in South Africa, in the South African Education System and in the Current South African Secondary School Geography Syllabus	
6.1	Introduction	197
6.2	The Position of Environmental Education in South African Education System	198
6.2.1	Department of Environment Affairs (1989) White Paper on Environmental Education	198

6.2.2	Council for the Environment (1993): The Development of a Core Syllabus for Environmental Education in South Africa	201
6.2.3	Environment, Development and Environmental Education : A Working Document of Sources and Perspectives in Formal Education (1994)	205
6.2.4	The Integration of Environmental Education into Formal Education - Discussion document (1995)	207
6.2.5	Environmental Education Policy Options for Formal Education in South Africa (1995)	212
6.2.6	Further Critical Analysis of Documentation	221
6.3	Conclusion	223
Chapter Seven	A New Secondary School Geography Syllabus in South Africa	
7.1	Introduction	225
7.2	Conference/Workshop Analysis	
7.2.1	The Independent Schools' Geography Conference (1993)	225
7.2.2	Workshop: The Future of Geography in the South African School Curriculum: Reality, Relevance and Response	230
7.2.3	Natal Geographical Association Conferences	235
7.2.4	Conclusion	241
7.3	The Nightingale Syllabus	244
7.4	Critical Analysis of the Nightingale Syllabus Document	258
7.5	Conclusion	261
Chapter Eight	Empirical Research on the Need for the Inclusion of More Environmental Education into South African School Geography Syllabi	
8.1	Introduction	263

8.2	An Empirical Study I	264
8.3	An Empirical Study II	270
8.4	Conclusion	283

Chapter Nine Conclusions and Recommendations

9.1	Introduction	284
9.2	Synopsis of Current Thinking	284
9.3	Final Conclusions	296

List of References		299
---------------------------	--	-----

Appendices

LIST OF FIGURES

Figure No.	Description	Page No.
1	Standard 10 Geography pupil enrolment expressed as a % of total enrolment (1976 - 1984)	13
2	Std 10 Geography Enrolment: 1980 - 1992 Higher Grade and Standard Grade Black and other Departments	14
3	Std 10 Geography Enrolments 1980 - 1992 Higher Grade and Standard Grade	15
4	Percentage Std 10s taking Geography 1980 - 1993	15
5	D.E.T. Std 10 Subject Enrolments 1982 - 1992	16
6	Knowledge and contemporary perspectives in Geography	45
7	Structure of the Core Syllabus for Standards 8, 9 and 10 in White South African Schools	77
8	A Re-structured Geography Syllabus for Standards 8, 9 and 10	78
9	Environmentalism as a Paradigm	78
10	The Relationship between Environmental Education, Conservation Education and Outdoor Education	87
11	Cambridge School Certificate 'O' Level Geography Course Outline	160
12	D.E.T. Geography Std 8 to Std 10 Progression 1983 and 1992	227
13	A Possible Model for a new Geography syllabus in South Africa	236
14	Venn Diagram showing E.E.	242

LIST OF TABLES

Table No.	Description	Page No.
1	Ranking of problems as perceived by Black Teachers in Black Schools	8
2	Ranking of Teachers' complaints about Geography	9
3	Pupil enrolment in standard 10 Geography courses in South Africa (1970 - 1985)	10
4	Cape Education Department - Standard 10 examination candidate numbers in selected subjects (1976 - 1984)	11
5	Department of Education and Training (incorporating Depts of Education in the Self Governing States) - Standard 10 examination candidate numbers in selected subjects (1976 - 1984)	12
6	Approaches to Environmental Education	113
7	Seven Objectives of Environmental Education	113
8	Zimbabwe Junior Certificate Geography Course Outline	159
9	Number of Geography Students 1993	228
10	Results (I) of Empirical Study II	275
11	Results (II) of Empirical Study II	281
12	Results (III) of Empirical Study II	282

LIST OF APPENDICES

Appendix No.	Description
I	List of Schools Surveyed
II	Survey Form
III	Department of Environment Affairs White Paper on E.E.
IV	Council for the Environment document 'The Development of A Core Syllabus for E.E. in South Africa.'
V	Environment, Development and E.E. working Document.
VI	The Integration of E.E. into Formal Education Discussion Document.
VII	E.E. Policy Options for Formal Education in South Africa
VIII	Earle Graphs
IX	Nightingale Syllabus

CHAPTER ONE

INTRODUCTION TO THE STUDY

1.1 INTRODUCTION

The dramatic political changes which have occurred in South Africa in recent years have been accompanied by changing circumstances in the field of education. A unified single department of education is now in place and common interim syllabi for all subjects have been distributed to schools in time for the first unified provincial examinations for Standard 10 in 1996. Such interim syllabi are the precursors to completely new syllabi and curricula to be implemented in a few years' time. A timely and wonderful opportunity now exists for all interested persons and organisations to formulate ideas and suggestions on what could constitute the new subject syllabi. This study should be seen as one such contribution, to the deliberations on what might constitute a new Geography syllabus for secondary schools in South Africa. Recent past attempts at syllabus revision of Geography syllabi in South Africa have been disappointing efforts for various reasons which are to be discussed later in this study. It is the contention of this study that one of the disappointments over the years has been the failure to incorporate Environmental Education (E.E.) in any meaningful way in the Geography syllabus in South African Schools.

1.2 MISSED OPPORTUNITIES IN CURRICULUM DEVELOPMENT - BACKGROUND

In the 1960s Geography as a subject was transformed by a major paradigm shift ,the so-called new Geography posing both a crisis and a challenge to the schools. The paradigm shift involved a move from a regional to a systematic approach, a concern with the essential concept of Geography as a basis for curriculum design, and the adoption of new teaching strategies including the use of models, simulations, games, inquiry methods and problem-solving.

Syllabus revision in South Africa at the time was influenced by the 'new directions' being sought in Britain and the USA. The initial impetus for change came from the widespread concern with the overloading of regional Geography in the syllabus. These changes were reflected in the South African secondary school core syllabus of 1973 and evidenced by the inclusion of sections like population and urban Geography. The rationale of the syllabus,

favouring a systematic rather than a regional approach, is illustrated in the following quotation :

modern regional Geography is usually comparative and concerned mainly with regional development ... the knowledge acquired in systematic studies may then be applied in a regional content ... this syllabus sets out the Geographical concepts and facts considered as essential knowledge (Van der Merwe, 1982 in Clark, 1989, p.53). Other features included (with standards):

- (i) Systematic studies of Climatology (6-10), Geomorphology (7-10), Population Geography (8), Economic Geography (9) and Settlement Geography (10).
- (ii) Regional Geography was reduced to Natural Regions, one African country, and selected World regions (7), two 'technologically advanced' and two 'technologically less advanced' counties as case studies for population and economic Geography (8 and 9); and South Africa (regionally in 6 and thematically in 10) (Van der Merwe, 1982, in Clark, 1989, p.53).

Although few have denied that the 1973 syllabus revision was an improvement it has been widely criticised for its lack of integration between the systematic sections, for its abstract, theoretical nature which reduced the relevance for less able pupils and for being irrelevant to the needs of black pupils (Ballantyne 1982, Nightingale 1985). Revisions since 1973 have been further concerned with the reduction of the regional content. Earle (1976) reviewed the problems which accompanied the arrival of the new syllabus. One of the most apparent of these was the lack of teacher preparation for the new syllabus, including a shortage of suitable textbooks. Other criticisms included an overestimation of time for teachers to prepare lesson material as well as the need for teachers to be provided with adequate supplementary teaching material. According to Earle :

Syllabus renewal of this kind depends on organizational support on feasibility which is not possible for teachers, on their own, to effect (1976, p.263).

Criticism was also levelled at the length of the syllabus as well as at the fact that both grades of the senior secondary syllabus had been pitched unrealistically high - more at university entrance standard than at the average to appropriate school pupil learning standard. Earle points out that this latter problem could be easily overcome if practicing teachers were actively involved in syllabus construction, a situation which has not occurred in the past in South Africa where teachers have been regarded as syllabus implementers.

Indeed the need for school-based research to curriculum development has been subsequently made by, among others, Ledger (1978), Ballantyne (1982) and more recently it has been made by the new Curriculum Framework Document in South Africa (1995). This document reflects the major shift in educational ideology which has taken place since 1994. Key factors, such as teachers, are increasingly regarded as participants in education policy making rather than just implementers.

According to Earle:

the new syllabus gets no closer to man and his problems and does not generate understanding of and sympathy for the condition of the real social man who occupies a given territory. In a word, it lacks relevance (1976, p.264).

As mentioned earlier, teachers lacked guidance about what sort of performance and behaviour was expected of pupils. Requests by them for specimen examination papers were also not heeded by the authorities. Such papers could have guided teachers to work more intelligently to suitable standards in all the many subsections of the syllabus as well as have helped them to more effectively structure their preparation of the pupils for the matriculation examination.

Ballantyne wrote (1983, p. 73):

The present (1973) South African School Geography curriculum tends to reflect the views and needs of academics rather than those of teachers and pupils. This is especially evident at the high school level and is most obvious in Black education, as the content deals with topics which are often not perceived as relevant and are outside the experience of third world societies.

Work in this area by Preston-Whyte (1979) and Magi (1981) further advanced the debate amongst academics and teachers (including the author) concerning the relevance of the Geography curriculum at the time, and all felt the need for change. Ballantyne drew on the experience of practicing teachers at the time who questioned the relevance of the content being taught. Topics of study such as central place theory and geotropic winds seemed to be of little value to those pupils not continuing Geography at tertiary level. In fact there was even a body of opinion at the time (Wise, 1977, in Ballantyne, 1982) which believed

that the new syllabus was reducing the appeal among pupils for the subject, certainly for pupils of average or less than average ability.

Ledger (1980, p.66) analysing teacher responses to a questionnaire survey, found that teachers thought the new syllabus to be too long, that it needed more application of 'new' Geography, should be less factual and more conceptual, should study current events to create the correct required attitudes and values and should include more regional studies.

Ballantyne appealed to all persons and organisations concerned to heed his call for the need for Geography curriculum change at school level. Such change had to take greater cognisance of the needs of individual pupils. The syllabus should also, of necessity, give far more guidance concerning the manner in which topics could be taught so that the effectiveness of Geography teaching could be improved. A school-based research programme into the needs and abilities of pupils as well as the needs of society was called for. The need for more research findings was imperative for future syllabus construction and there was a need for more researchers in the field of Geographic education.

Between 1973 and 1983 Geography education within South Africa experienced many changes and it was not surprising therefore that the 1983 Geography syllabus revision reflected an attempt by Geographers to provide content relevant to pupils in a rapidly changing world. This syllabus placed emphasis upon the development of concepts, skills, attitudes and values rather than upon the learning of content knowledge per se. Teachers were also instructed to adopt a pupil-centred approach in their teaching practice. Nightingale (1985) when reviewing these developments argued that while the 1983 syllabus had much to please, it did not sufficiently reflect recent developments in the subject as well as trends which could have enhanced its educational value. It also did not take sufficient cognisance of the intellectual development and abilities of children, particularly in the Fourth Phase, and it still reflected Geographical thinking in the 1960s. Earle also believed that issues of crucial importance to man, like the environmental crisis and the problems of the Third World, which had surfaced in recent years and which had been incorporated in the new syllabus, were dealt with inadequately. He stated that those responsible for drawing up the new syllabus had failed, in terms of syllabus content, to capitalise on recent

developments in the subject. The following suggestions were made by Nightingale to try and redress some of the problems alluded to earlier:

- (1) Curriculum development must be given the emphasis it deserves both in individual subject disciplines and on a broad educational front. The education of hundreds of thousands of school children in this country is suffering because of neglect.
- (2) That subject specialists, who are up to date in their subjects, and who have some experience in the classroom, be seconded for a period of two to four years to undertake the necessary research. More than one person should be involved as the sifting of ideas is essential at every step. These people should have a sound knowledge of the latest developments in their subject disciplines, and of educational principles, as well as having experience in the classroom.
- (3) That these seconded teachers work in close co-operation with universities and colleges of education; and that the administrators of these institutions recognize, and make allowance for, the demands that will be made upon their staff who are involved with research teams.
- (4) That no syllabus revisions be allowed until the necessary research has been completed and made available to the members of the Core Syllabus Committee and other interested parties. (Nightingale, 1985, p.2)

He concludes:

Curriculum development units have been established in many countries overseas, and in some of our neighbouring states (e.g. Swaziland and Zimbabwe); they have made a very worthwhile contribution to education in these countries. We, it seems, are falling behind.

I have instanced the new Geography syllabus as a sad example of a golden opportunity missed; colleagues in some other disciplines feel as strongly as I do about the school syllabi which control their subjects. The finger of condemnation is pointed at our present haphazard method of syllabus revision. Until we take curriculum development seriously we can expect little improvement, for our present system of producing school syllabi guarantees an indifferent product. (Nightingale, 1985, p.3)

This study feels that the time is now appropriate for past mistakes in syllabus revision to be put aside in the quest to devise new syllabi required in the New South Africa.

1.3 GRAVE'S TYPOLOGY AND GEOGRAPHY IN SOUTH AFRICAN SECONDARY SCHOOLS - AN INTRODUCTION

The latest (1991) syllabus revision which has occurred, affecting only the junior secondary phase, represents a definite move by Geography in South African schools to attain what

Graves (1981) identified as being a Phase 3 status. The so-called Graves typology of Geography education will be more fully discussed in section 2.6 of Chapter Two of this study. At this point it is sufficient to say that in Graves' Phase 1 Geography is concerned with information about the world which is encyclopaedic in nature and provides a good general knowledge on the content of the subject. Phase 2 is closely identified with the man-environment paradigm and the study of regional Geography with once again a focus on Geographical content. According to Ballantyne (1988, p.110):

Phase 3 Geography is concerned with the educational role of the subject where a shift occurs in the perception of the use of Geographical content. Content knowledge becomes of secondary importance to the attainment of goals generally associated with pupil-centred education. He continues (1988, p. 111): the primary justification for inclusion of material is that it should aid the development of concepts, skills, attitudes and values.

Characteristics of Phase 3 Geography includes the need to stress process rather than product, non-directive teaching styles, pupil-centred not teacher-centred methodologies, pupil participation in the learning experience, use of discovery and inquiry based learning leading to a deeper conceptual understanding and skill development. At the classroom level the use of worksheets, case studies, simulation games, role plays and fieldwork are methodologies well suited to the achievement of third phase aims.

Reviewing the application of Phase 3 principles to the state of South African Geography education Ballantyne believed that the 1973 and 1983 syllabi were both attempts (albeit inadequate) to move secondary school syllabi into a Phase 3 status position. However, although syllabus aims may be Phase 3 in nature much directive, teacher-based classroom practice still occurs which mitigates against the Phase 3 status supposedly reached.

In addition, the narrow ideological context of Christian National Education in which the teaching of Geography occurred, prevented the subject from achieving full-blown Phase 3 status. In many 'Black' schools too Geography education was unlikely to achieve the desired standards due to the use of inappropriate teaching practices (Magi, 1981).

As Ballantyne points out, although syllabus aims (as in the 1991 syllabus) are third phase in nature they should be viewed as a statement of intent, a mark towards which Geography education in this country is heading. Accordingly the syllabus guide is often an expression

of where the subject would like to be, rather than where it is. Clearly too, the rate at which Geography education in South African will be characterised as third phase will be influenced by future political and demographic factors operating within the country. Ballantyne (1988) believed that until a single, non-racial Department of Education was fully instituted and started to rectify inequalities, Geography education in the country as a whole would not attain third phase status.

Such a single, non-racial Department of Education has, of course now been instituted and has started the lengthy process of trying to rectify inequalities. It is the contention of the present author that every attempt must be made during the process of transformation to ensure that Geography does in fact attain the third phase status alluded to by Ballantyne.

This can only occur if teachers at the chalkface are involved in the formulation of new syllabi which are relevant to the needs of pupils and the world or work which awaits them.

It is also the view of this writer (Cowie 1994) that a holistic, inclusive and integrative approach has perhaps never been more required than it is now in planning meaningful Geography syllabi at all levels. For Geography to make any real contribution to the education of a person the curriculum needs flexibility and relevance in order to guide teachers and pupils towards what should be achieved in each section of the work. The syllabus needs to be organized so that Geography can contribute to the development of a child's thought processes, his or her attitudes and values and his or her cognitive level. These sentiments are reflected in section 9.2 of Chapter Nine of this study.

Those involved in curricula and syllabus planning need to incorporate practicing teachers in their work as a matter of urgency so as to optimise all available resources and channel energies towards the achievement of true Phase 3 status for all school Geography syllabi in South Africa. Every effort must be made to secure the subject as a relevant, interesting and popular subject or learning area in any future educational dispensation in South Africa.

1.4 CHALLENGES

In order for these ideals to be achieved at least two further, unrelated challenges need to be met in South Africa. These are now briefly discussed but are not necessarily dealt with in order of importance. The first is that for the subject to survive it has, of necessity, to

become more 'Africanised' and relevant to the majority of the school-going population who will study the subject. Such a call has been made by Magi (1990) of the University of Zululand among others and is dealt with in Chapter Seven of this study. At this point, however, consideration needs to be given to the various problems which face the teaching of the subject in the traditionally black schools and which, of necessity, need to be overcome as quickly as possible if the teaching of the subject is going to enjoy any success. Interesting comparisons can be made by comparing a ranking of perceived problems in black schools as formulated by Magi (1981) (Table 1) and that conducted by Ledger (1980) (Table 2) among Geography teachers in White high schools:

Rank	Problem	Percentage
1	The Geography laboratory is poorly equipped	67
2	The Geography syllabus is too long	65
3	Practical work and fieldwork are not taught	61
4	The Geography department at school is poorly administered	55
5	A high percentage of students fail geography	49
6	Geography is taught by an unqualified teacher	47
7	The teacher shows inadequate knowledge of geography	35
8	There is a poor connection between primary school and high school geography	31
9	Poor methods of teaching Geography are used	27
10	The teacher is not enthusiastic about geography	22
11	Geography is a difficult subject	11
12	Geography classes are too big	3

Table 1: Ranking of problems as perceived by Black teachers in Black schools.

Source: Magi, 1981, p. 152

Rank	Complaint	Percentage
1	I experience difficulty in arranging fieldwork	55
2	The accent on examinations allows insufficient time for teaching Geography as it should be taught	47
3	The syllabus is too long and detailed	46
4	Mainly the weaker pupils take Geography in my class	38
5	I have difficulty obtaining the necessary teaching aids	36
6	I have too much marking to do	17
7	I have too much preparation to do	16
8	The syllabus content does not attract, motivate and maintain pupils' interest	13
9	The pupils are not interested in geography	13
10	My academic training did not equip me for teaching modern syllabuses	12
11		8
12	I cannot motivate the modern pupil	7
13	I do not have sufficient knowledge of geography	3
14	I have lost my initial enthusiasm for teaching geography	2
	I teach the subject by force of circumstance	

Table 2: Ranking of Teachers' complaints about Geography

Source: Ledger, 1980, p.65

A comparison of Magi's study (1981) with that conducted by Ledger (1980) among Geography teachers in White high schools, reveals that the source and emphasis of most of the White teachers' problems are student and education system oriented, with the syllabus and curriculum especially figuring prominently. Ledger's study suggests that there are fewer facility and equipment problems than in Black schools, although there is some difficulty in obtaining the necessary teaching aids. In both studies problems relating to fieldwork and the over long syllabus are highly ranked. This has important ramifications in the formulation of new Geography syllabi in South Africa and is discussed in Chapter Nine of this study.

Magi's study concluded that many factors may be cited as probable causes of the deterioration of Geography in Black schools but that students were still willing to continue to learn Geography in spite of the unfavourable prevailing conditions. Magi concluded by

hoping that South African education departments, particularly those concerned with Black education, would find his information interesting and challenging.

It is hoped that the points raised by Magi have or will be incorporated in the thinking of the now unified Department of Education.

The challenge then is to make the secondary school Geography syllabus as relevant and interesting to as wide a spectrum of pupils as possible. Recent studies (e.g. Earle 1993) seem to indicate that Geography is becoming a more popular subject among black pupils. However, until recently, studies have demonstrated, based on pupil enrolment trends, its tenuous status in the curriculum. (Ballantyne 1988). Ballantyne showed (Table 3) that there was evidence that Geography had slightly improved its percentage share of the total 'White' pupil enrolment at the Standard 10 level since 1970, while in 'Indian', 'Coloured' and 'Black' education, the reverse was the case. Viewing these trends against the demographic background of secondary school pupil growth relative to racial groups in South Africa clearly indicated that Geography's position, as measured by pupil enrolment, was far from healthy.

YEAR	WHITES		ASIANS		COLOURED		BLACKS		SOUTH AFRICA	
	TOTAL	GEOGRAPHY	TOTAL	GEOGRAPHY	TOTAL	GEOGRAPHY	TOTAL	GEOGRAPHY	TOTAL	GEOGRAPHY
1970	36 433	10 148 (28%)	2 726	2 187 (80%)	2 046	1 450 (71%)	2 938	1 678 (57%)	44 143	15 463 (35%)
1980	54 401	17 045 (31%)								
1985	na	na	11 396	3 769 (33%)	11 052	6 222 (56%)	72 395†	19 579 (27%)†	94 843‡	29 580 (31%)‡
% Increase 1970-1985	49*	68*	318	72	440	329	2 364	1 066	115	91

* 1970-1980

† Excludes pupils in Transkei, Venda, Bophuthatswana and Ciskei

‡ Excluding Whites

Dept. of Statistics, Report No. 21-02-05, Education Whites, 1970

Central Statistical Services, Report No. 21-02-15, Education Whites, 1980

Dept. of Statistics, Report No. 21-03-04, Education Schools for Coloureds and Asians, 1970

Dept. of Bantu Education, Annual Report for the Calendar Year, 1970

Information received from Statistical Services in the Department of Education and Culture (Asians and Coloureds) and Department of Education and Training (incorporating Dept. of Education in Self Governing States), 1987.

Table 3: Pupil enrolment in Standard 10 Geography courses in South Africa (1970-1985)

Source: Ballantyne, 1988, p.74

Further figures (Table 4) produced by Ballantyne revealed that in 'White' schools Geography as a subject in terms of relative growth had performed well, although in absolute terms (pupil numbers) the subject is still a relatively minor one compared with other electives.

Year	Account- ancy	Biology	Geo- graphy	History	Mathe- matics	Phy. Science	Total No. of Candi- dates
1976	5 950	9 151	3 644	5 538	6 858	4 288	14 084
1977	5 738	9 403	3 616	5 632	7 535	4 594	14 078
1978	6 087	9 418	3 930	5 215	7 545	4 671	14 250
1979	6 248	9 427	4 175	5 407	8 103	5 058	14 403
1980	6 275	9 450	4 207	4 924	10 290	5 207	14 899
1981	6 459	9 685	4 227	5 809	8 946	5 604	14 549
1982	6 698	9 799	4 368	4 647	9 017	5 722	14 621
1983	6 940	9 698	4 148	4 544	9 275	6 038	14 646
1984	7 295	9 715	4 516	4 720	9 760	6 288	15 309
% Increase 1976-1984	23	6	24	-15	42	47	9

Table 4: Cape Education Dept. - Std. 10 examination candidate numbers in selected subjects (1976-1984)

Source: Reports of the Director of Education, Province of the Cape of Good Hope, Dept. of Education (1976-1984).

Table 5 on the other hand, revealed that relative to the increase in total pupil numbers, Geography in Black schools had performed poorly in terms of its ability to attract pupils at the senior secondary level. Table 5 revealed that Geography education in 'Black' education was in an 'unhealthy' position and that every effort needed to be made to investigate reasons for the apparent inability of the subject to attract a reasonable percentage of the total pupil enrolment.

Year*	Accountancy	Biology	Geography	History	Mathematics	Phy. Science	Total No. of Candidates
1976	493	6 818	3 778	4 196	2 824	2 121	7 529
1977	510	9 643	4 571	6 836	3 612	2 571	10 449
1978	549	8 723	4 459	5 830	4 090	2 687	9 788
1979	842	13 252	6 064	8 830	5 842	3 938	14 745
1980	1 761	27 446	10 917	18 313	11 379	8 182	29 973
1981	3 080	34 155	11 540	22 247	14 244	9 429	36 283
1982	3 838	55 720	17 627	35 549	20 321	14 182	59 628
1983	4 537	54 045	15 589	32 983	22 174	13 414	58 788
1984	5 215	58 524	16 155	33 202	22 841	13 500	63 488
% Increase 1976-1984	957	758	327	691	708	536	651

- * 1976 Excludes Transkei candidates
- 1977 Includes Transkei candidates
- 1978 Excludes Transkei and Bophuthatswana candidates
- 1979-1980 Excludes Transkei, Bophuthatswana candidates
- 1981-1984 Excludes Transkei, Bophuthatswana candidates

Table 5: Department of Education and Training (incorporating Depts. of Education in the Self Governing States) - Standard 10 examination candidate numbers in selected subjects (1976-1984).

Sources: Department of Bantu Education, Annual Report, 1976

Department of Education and Training, Annual Reports, 1977-1984

Figure 1 also revealed this disturbing situation. Differences in the ability of Geography to attract pupils in 'White' and 'Black' schools are clearly seen when comparing trends in Standard 10 Geography enrolment in the Cape Education Department and Department of Education and Training between 1976 and 1984.

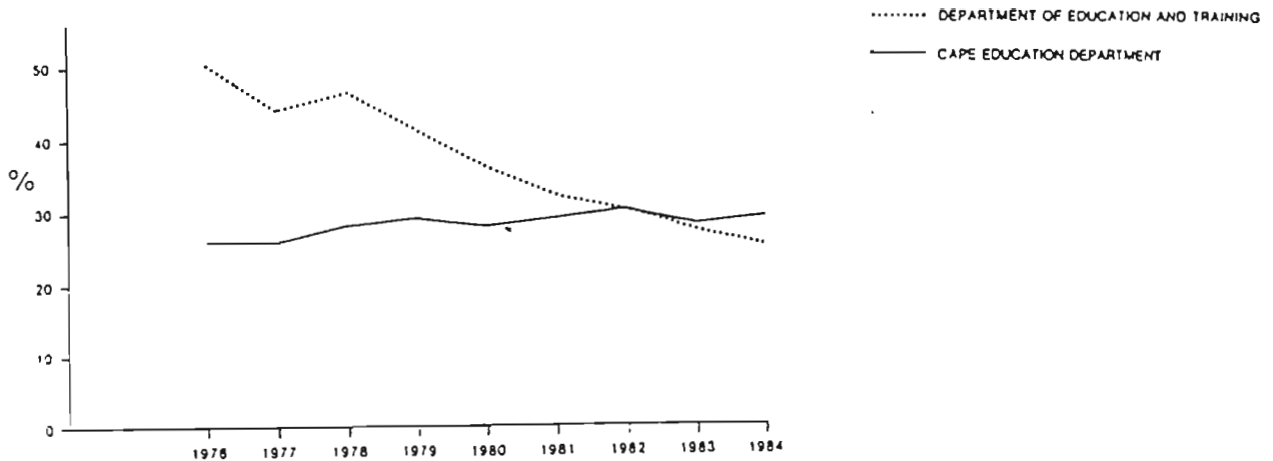


Figure 1: Standard 10 Geography pupil enrolment expressed as a % of total pupil enrolment (1976-1984).

Source: Ballantyne, 1988, p.77

Ballantyne (1988, p.77) states:

The popularity of the subject in 'Black' education is worrying when viewed in the light of demographic trends in the country, as it is reasonable to assume that the ability of Geography to attract 'Black' pupils at the senior secondary level is vitally important to the future well-being of the subject. He concludes in his paper (1988, p.77): Geography educators in South Africa cannot afford to be complacent when viewing the position of the subject in the secondary school curriculum. The growth in Geography pupil numbers in schools, while initially giving the impression that the subject is in a healthy state, hides the fact that only in 'White' education has pupil enrolment kept pace with the overall increase in total pupil numbers. Since 1970 Geography enrolment as a percentage of total pupil enrolment at the Standard 10 level has decreased by 47% in 'Asian' schools, 15% in 'Coloured' schools and by 30% in 'Black' schools (Table 1). Although reasons for this decline are difficult to isolate with any certainty, it is suggested that a major factor contributing to the present state of affairs is that secondary school Geography education is predominantly 'White-centred' in its nature. For instance, 'Black' participation in the construction of the Joint Matriculation Board core syllabuses is negligible if not non-existent. As a result of the structure and control of the core syllabus, Geography content largely reflects the views and needs of 'Whites' rather than those of other racial groups. The inappropriateness of parts of the syllabus for those living in 'Third World' rural communities is but one of the resulting consequences of the present system of syllabus construction.

This represents the challenge to those concerned with the restructuring of School Geography curricula and syllabi.

Recent research done by Earle shows that in spite of the problems alluded to in Ballantyne's study the number of pupils studying the subject in the former Department of Education and Training schools in South Africa and the National States is at the moment increasing and would seem to indicate a more healthy long term status of the subject. His study of the DET Annual report of 1992 plus other reports and documentation revealed the following:

- 1) A clear increase in the number of pupils taking Geography at the Std 8 level in the DET, both in South Africa and the Self Governing territories as well as in the two biggest national state departments of Bophuthatswana and Transkei (Figure 2).

Thousands

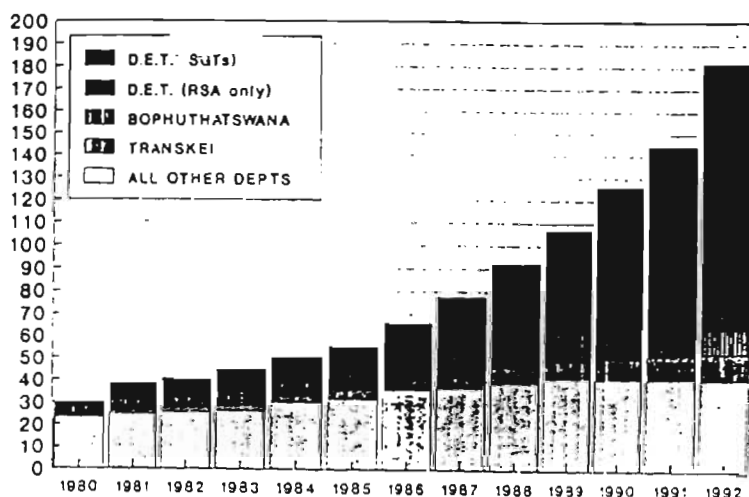
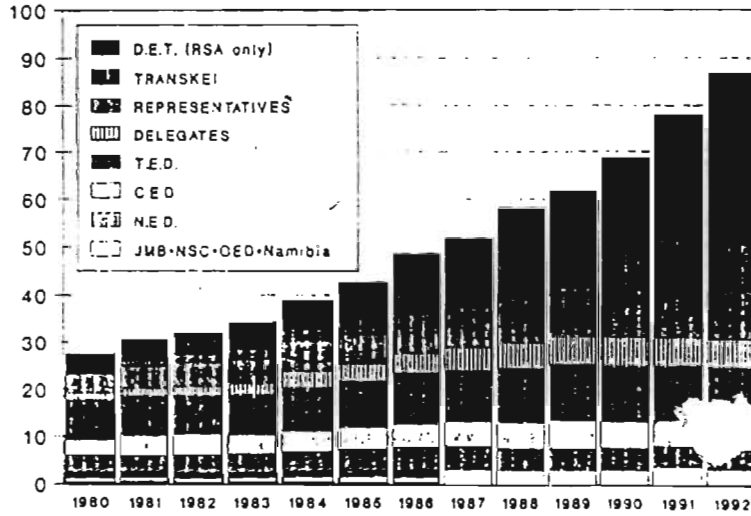


Figure 2: Std 10 Geography Enrolment 1980 - 1992
Higher Grade and Standard Grade
Black and Other Departments

Source: Earle, 1993

- 2) The increasing enrolments in the black DET and Transkei departments with the static or decreasing enrolments in other education departments in South Africa (Figure 3).

Thousands



**Figure 3: Standard 10 Geography Enrolments 1980 - 1992
Higher Grade and Standard Grade**

Source: Earle, 1993

- 3) A clear upward rise in the line graph for the DET and Transkei showing pupils taking Geography as part of their fourth phase subject package (Figure 4).

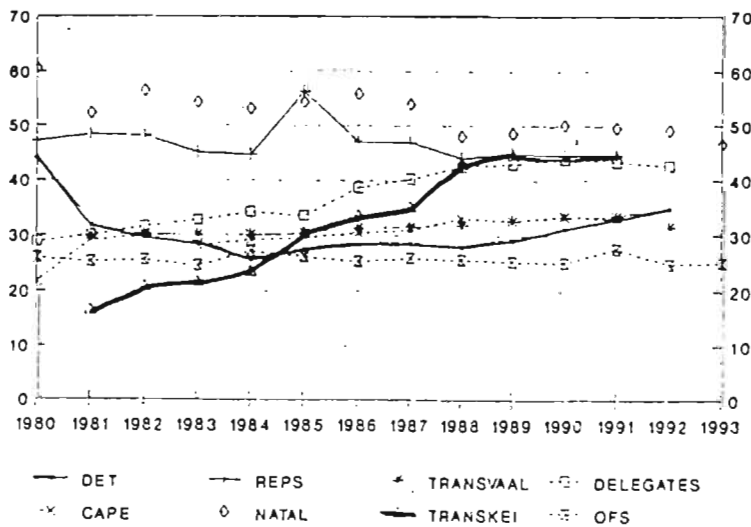


Figure 4: Percentage Std. 10s taking Geography 1980 - 1993

Source: Earle, 1993

- 4) An indication, in terms of comparison with other elective subjects, of Geography's increasing proportion of subject enrolments (Figure 5).

Percentage of Total Enrolments

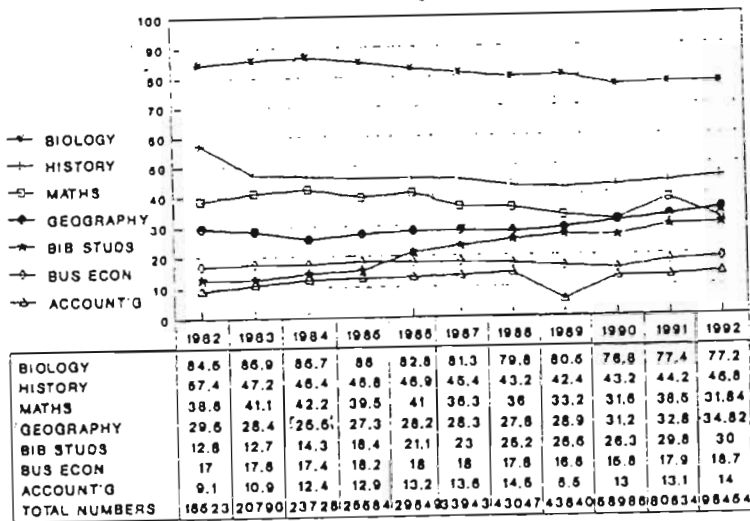


Figure 5: D.E.T. Std 10 Subject Enrolments 1982 - 1992

Source: Earle, 1993.

Even allowing the fact that the statistics used by Earle have been challenged by the Matriculation Board of the Committee of University Principals as not being 100% accurate, for reasons not given by them, there can be no doubting the trends illustrated in the graphs.

It is the contention of this study that the encouraging position revealed by Earle's research should act as a stimulus to the development of the subject in our schools. The challenge is there to be met and Geography educationists in this country need to rise to it. Every available Geographical resource needs to be utilised at this time to meet the challenge and carry the subject forward to a bright and healthy future. We all have a part to play to meet the challenge presented.

The second course of action required to ensure the future of the secondary school Geography syllabus in South Africa as a secure and stable part of the new curriculum, and

crises which affect the world in which the pupils will mature into adults in decision-making roles. Syllabi will need, of necessity, to incorporate E.E., aspects of development education and sustainability. E.E. programmes in developing countries have, in fact, been reconceptualised to be practical in nature with the aim of helping people to gain knowledge, skills and commitment to improve their conditions in life and their environment (Proceedings, 1994b), as will be discussed in Chapter Four. Schools in developing areas must not be isolated from the life surrounding them and every attempt must be made to relate school work, including Geography, to community work as is happening in countries like Sri-Lanka, Tanzania, Ghana, Malaysia, Sierre Leone and even parts of Southern Africa (Proceedings, 1994b). Schools in these areas are encouraged to establish production units and if possible to become self sufficient, as is being achieved with the Education with Production Curriculum in Botswana. For instance, pupils grow vegetables, raise livestock, and market them. They do craft work and cottage industry, again producing and selling. There is much scope for these activities in schools in South Africa, particularly in rural areas. The Geography syllabus could act as a vehicle for the achievement of the activities.

The challenge facing educationalists, is through syllabi and teaching methods to raise the low levels of environmental and conservation awareness among rural people who too often see the traditional environment movements as ignoring their basic needs and placing the needs of animals above their own. (e.g. The Wildlife Society's R60 000 Save the Rhino Fund). Environmental issues need to be identified as relevant by local communities. E.E. encouraged at grassroots level can contribute to achieve genuine community-based participatory environmental programmes to be established.

1.5 THE SCOPE, AIMS AND OBJECTIVES OF THE STUDY

The introductory chapter to this study has briefly suggested that the future success of Geography in a new curriculum for South African secondary schools depends on three main courses of action being taken viz. 1) an avoidance of past missed opportunities for meaningful and relevant syllabus revision in the subject. In doing this every attempt must be made to achieve a phase 3 status, as discussed earlier, for all newly constructed school Geography Syllabi in South Africa. 2) the need to 'Africanise' the subject and make it less Euro-centric, more relevant and meaningful to black pupils and 3) the need for greater incorporation of E.E. into the Geography syllabus in order to make the syllabus more

relevant and interesting to all pupils studying the subject in our schools. At this point it needs to be stated that Geography is not the only subject in the curriculum which can act as a vehicle for the promotion of E.E. but it is seen by this study as an eminently suitable one and is focussed on for this reason. Later sections and chapters in this study represent an attempt to contribute to the development of a future new secondary school Geography syllabus in South Africa. A syllabus draft called the Nightingale Syllabus is discussed in this connection. An empirical study is also provided to illustrate the need for the inclusion of E.E. into Geography Syllabi drafts.

1.6 STRUCTURE OF THE STUDY

Documentary analysis and discussion will take up the bulk of this study, together with an empirical study based on questionnaire analysis will contribute to the study's recommendations and conclusions.

Chapters Two, Three and Four of this study will seek to provide a literature review within which the study will be located. These literature review chapters will cover consideration of the following areas:

Chapter Two includes the Nature and Historical development of Geography, Philosophical trends in Geography, the Educational Significance and Contribution of Geography, Geography in South African Secondary Schools and the Position of Environmental Education in the current South African Secondary School Geography Syllabus.

Chapter Three includes the Historical development of Environmental Education, a Rationale for the development of Environmental Education, Definitions, Nature and Extent of Environmental Education, Development, Sustainability and Environmental Education, Ideologies of Environmental Education, Educational Significance and Importance of Environmental Education, The Position of Environmental Education in South Africa and the Relationship between Geography and Environmental Education.

Chapter Four also constitutes a literature review chapter and will attempt an overview of the state of E.E. in the Geography syllabus in a selected number of countries, including the United Kingdom, Australia and Sweden and which provide a Euro-centric view. In contrast a study of E.E. in a selected number of countries in Africa viz. Namibia, Zimbabwe

and Kenya provide an African perspective, which this study will suggest may provide a better model for the inclusion in E.E. in South African syllabi.

Chapter Five will constitute a research methodology chapter in which the use of documentary analysis, questionnaires, interviews and workshop analysis as research tools will be discussed and related to the aims and objectives of this study.

Chapter Six of the study will examine the current position of E.E. in South Africa and the South African education system. This will be attempted through a documentary analysis of selected key documents in the development of E.E. in South Africa.

Chapter Seven of the study will provide information on the formulation of a new secondary school Geography syllabus in South Africa. Included here will be a description and analysis of the Nightingale draft syllabus.

Chapter Eight will include analysis and discussion of two empirical studies conducted to investigate the relationship between Geography and E.E.

Chapter Nine will contain the study's recommendations and conclusions, with accompanying discussion and analysis. A list of references and appendices will follow.

CHAPTER TWO

LITERATURE REVIEW : GEOGRAPHY AND GEOGRAPHICAL EDUCATION

2.1 INTRODUCTION

The purpose of this chapter is to review the current state and position regarding Geography and E.E. so as to prepare for later analysis of how E.E. can best fit a new restructured secondary school Geography syllabus in South Africa. The chapter will attempt this by utilising a thematic approach. Among the themes to be explored will be: the nature and historical development of Geography as a subject in the secondary school curriculum; philosophical trends in Geography; the educational significance and contribution of Geography; a consideration of Geography's place in South African secondary schools and the position of E.E. in the subject. The next chapter will examine various aspects of E.E. and development and a later chapter (seven) will attempt to show how the salient points of these two areas could be incorporated through the concept of 'sustainability' into a new secondary school Geography syllabus in South Africa.

2.2 THE NATURE AND HISTORICAL DEVELOPMENT OF GEOGRAPHY

The current position of Geography in schools can be traced back to the introduction in the 1970's of the so-called 'new' Geography which forms the basis of the subject as it is currently being taught. Leading academics, scholars and practitioners at the time included people like Walford, Bailey, Hall, Boden and Graves. Each has attempted in his writing to examine the nature of Geography and Geography teaching in all its different facets in order to provide one with the necessary background information to build a new syllabus.

One of the early important texts on this subject was Rex Walford's collection of articles in New Directions in Geography Teaching (1973).

Walford states that during the evolution of Geography in the 1970's fundamental questions were asked of the subject including - what is conceived to be the aims of Geographical education? What special skills and knowledge should a Geographical training bestow? According to Walford the following aim became dominant - the study of the role that

location and distance play in the operation of the social, economic and political processes that bring about patterns of man-made phenomena and changes in those patterns. This aim implied a move in emphasis from regional (form orientated) to systematic (process-orientated) work; from subjective-qualitative to objective-quantitative handling of information; from unique to generalized explanations; and, often, from retrospective to predictive modes of study. The subject, further, stresses judgement and decision making by individuals, a posing of questions of value, the enabling of models of real-life situations to develop in the classroom and the recognition of societal problems as the proper objects of intellectual endeavour. The essential characteristics of trends in the 1970's were a tendency not to emphasize factual learning and empiricism (as has happened in the past) but theory formation, study by topic rather than by region, and a concern with the process by which current distributions occurred rather than a concern for them per se. A reaching out towards more validly scientific procedures occurred. There was also a long overdue improvement in the degree of precision with which information was handled and hypotheses tested. The changes can be summed up as a move from a factual orientation to an orientation concerned with concepts, methods, values and attitudes.

It will be seen later in this study how these characteristics have been incorporated in syllabi drafts which have been forwarded in South Africa. They seem to have become basic tenets around which any reasonable syllabus draft needs, of necessity, to be constructed.

In any analysis of the nature and historical development of Geography certain questions need to be asked at the outset. Why teach Geography at all? What is Geography? What are its limits? What are its distinctive contributions to the process of education? A consideration of these questions is essential to an examination of the nature of Geography

In this connection it is worth noting that the whole concept of a 'subject' in the curriculum is problematic and historically defined. Ivor Goodson (1987, 1988) has examined the role of school subjects in the curriculum, much of his study being from a historical perspective.

According to Goodson (op.cit.) the establishment of Geography was a protracted, painstaking and fiercely contested process. The story is not the usual one of the translation of an academic discipline, devised by groups of scholars in universities, into a version to be used as a school subject. With Geography the story unfolds in reverse order with a drive

on the part of groups and teachers at school level to influence developments in the university sector to define the subject's knowledge base and formalise it into a discipline. In the early stages in the emergence of Geography, teaching of the subject was taught by non-specialists and tended to comprise a boring collection of facts and figures. The take-off on the road to academic establishment occurred for Geography with MacKinder's statements at the British Geographical Association in September 1903. In his manifesto exams in the subject were to be set by Geography teachers themselves, exams would be chosen that were best for the 'common acceptance' of the subject, the teaching of the subject was to be exclusively in the hands of trained Geographers and the universities were to be encouraged to establish faculties and schools in which training of Geography teachers could occur. MacKinder's strategy seemed to offer solutions for the problems Geography faced at the time in its development.

It was not until after 1945, however, that most school departments of Geography were directed by specialist trained Geographers, many of them university graduates. However, while establishment in universities solved the status problems of the subject within schools, within universities themselves the subject's status still remained low. The arrival of 'new Geography' in the 1960's and 1970's finally seemed to finally establish the subject's status at the highest academic levels, as reflected in the current position of the subject in universities.

The aspiration to become an academic subject and the successful promotion employed by Geography teachers and educationists, particularly in the work of the British Geographical Association, has been clearly evidenced. The subject's drive towards higher status at all levels has been accompanied by opportunities to command larger finance and resources.

The British Geographical Association throughout has tended to act as a mediator between the subject as defined by scholars and the subject as traditionally taught in schools. Every effort was made to close this gap as well as playing an important part in defining the internal unity of the subject at various levels. It was on hand to defend the integrity of its own knowledge base which it has fiercely promoted for over 80 years.

The nature and historical development of Geography has been analysed by Bailey (1974). He remains one of the foremost writers in the field of Geographical education, and it is

worth noting how the ideas he discusses in his book have influenced Geography syllabi development in the years following its publication.

Bailey began his analysis by considering definitions of Geography. He states that there have been many attempts to define Geography, and much teaching, frequently excellent, is not based upon any clearly understood definition. It will be seen that a key problem in attempting to define 'Geography' is that the subject straddles both the natural and social sciences. It incorporates different ways of 'knowing', both quantitative and qualitative. As will be discussed later, the subject can be seen to draw its inherent strength from this duality.

Probably it is true to say that all definitions proposed by Geographers, as opposed to those suggested by non-Geographers and sometimes included in dictionaries, include reference to four things:

1. the distribution of natural and man-related phenomena on the earth's surface;
2. the spatial organisation of such phenomena;
3. location or place; and
4. man-and-environment relationships.

Proposed changes in Geography syllabi for South African Schools discussed later in this study need to take these points into account. Changes in syllabi design can take place around these four foundational 'pillars' of the subject.

Bailey (op.cit.) points out that no recent definition of Geography has even suggested that the subject is mainly descriptive; yet many people still think of it in this way, possibly because of the Geography they were taught at school.

Bailey considers three definitions of Geography which he feels warrant special attention. Alexander von Humboldt (1769-1859), one of Geography's founding fathers, defined his field of study as "that which exists spatially together". Alfred Hettner (1859-1941) wrote that "Geography is concerned to study the areas of the earth according to their casually related differences." In 1925 the distinguished Swedish scientist Sten de Geer defined

Geography as "the science of the present-day distribution phenomena on the surface of the earth".

These definitions, and especially de Geers, bring out two important ideas. First, that Geography is a distinctive way of looking at the earth's surface -the subject has in fact been described as a point of view. Second, that Geography is concerned with spatial relationships between surface phenomena, rather than with those phenomena per se (Bailey, 1974, p.11).

Regarding the limits of Geographical study Bailey states that De Geer's definition is a useful one. First it limits study to surface distributions and second, it specifies distributions at the present day. Clearly these are guidelines, not absolute limits. Thirdly, it is likewise unrealistic to limit Geographical studies completely to present-day conditions.

In his own words:

Although it is important to have a working definition of Geography, this must never be treated as a final and unalterable statement. Definitions are no more than aids to development. In school, pupils need to be introduced to the widest possible variety of explanations. It is probably true to say that, in recent years, Geography has suffered in schools because its boundaries have been too narrowly drawn. (p.14)

Continuing his analysis Bailey then goes on to examine skills used in Geography:

Like other subjects, Geography uses skills which are more or less special to itself; and it contributes to the development of a range of general skills, which are the preserve of no single subject. These general skills include the effective use of language and the manipulation of numbers, drawing, the capacity for oral self-expression and for logical thought. The Geographer shares with his colleagues a responsibility for developing these skills in all his pupils, according to their capacities. (p.16)

A list of skills, not necessarily in order of importance is provided by Bailey:

- (a) Geography has a special role to play in the development of graphicacy, the ability to represent data in the form of mathematical graphs.
- (b) Closely related to graphicacy are the skills learned in picture interpretation. Few school subjects make such frequent and systematic use of pictures of all kinds.

- (c) Numeracy is involved in the skills acquired through the simple statistical methods which are used by the Geographer.
- (d) Fieldwork required yet another group of skills e.g. observation, recording and interpretation. It is the contention of this study that these skills need to be incorporated into new syllabi for Geography as they develop in South Africa.

The importance of the inclusion of skills in any Geography syllabus is almost universally accepted and forms the basis of ideas on a proposed new Geography syllabus for South African secondary schools, discussed in Chapter Seven of this study.

Bailey then discusses the changes which occurred in the subject in the 1960's and 1970's. Regarding these new developments in Geographical study Bailey states that:

1. For school Geography, the adoption of new ideas from the universities represent a return to the mainstream of Geographical development, after a lengthy diversion. This period of diversion was characterised by static regional descriptions and a strong emphasis upon memory work.
2. Geography is a scientific discipline and therefore Geographers must use standard methods of scientific enquiry to pursue their studies. Research methods widely adopted include the application of statistical procedures, the use of theoretical models, and the formulation and testing of hypotheses.
3. In every branch of the subject there is now a stronger emphasis upon the study of process. Conceptually, Geography has moved from a predominantly static towards a dynamic view of the world.
4. Studies of man-and-environment relationships have long been a major concern of Geographers. These studies have now been extended to include not only physical, biotic, historical, cultural, social, economic and political environments, but also man's own perceptions of his environments, and his consequent responses.

5. Geographers have become much more aware of the extreme complication of environmental relationships. This heightened awareness is exemplified by the adoption from biologists of the idea of the ecosystem as a vehicle for study.

It is important to note that the above developments reflect the characteristics of the 'new' Geography identified by Walford (1973) in this chapter.

It is the contention of this study that the above developments have been reflected to various degrees in Geography syllabus revision in South Africa and will continue to provide important pointers to those involved in the syllabus reconstruction process in the emerging New South Africa.

Perhaps the most important contribution by Bailey regarding new developments in school Geography is that the 'new' Geography is essentially a way of thinking rather than a body of knowledge; it is a distinctive way of handling Geographical data, but it is not itself a body of data.

Bailey lists a number of approaches to teaching Geography according to the 'new' concept of the subject which existed at that time. It is acknowledged though, that these approaches could also apply to certain other subjects:

- (i) There will be a strong emphasis upon analysis, logical explanation and reasoning, rather than upon description. Description will still be important, but one of its principal functions will be to apply the factual knowledge upon which reasoning can be based.
- (ii) This emphasis upon reasoning will be complemented by an abundance of work designed to nourish and inform pupils' imagination.
- (iii) Studies of dynamic processes, interactions, systems, changes of all kinds will be important throughout the course, and in all branches of the subject.
- (iv) Resource materials and field work will be used to present pupils with evidence, from which they can draw conclusions for themselves.
- (v) New techniques of study, e.g. the use of statistical methods or geological maps, will be introduced in response to learning needs.

- (vi) Wherever possible, pupils will be involved in the processes of decision-making, through the use of simulation games, role-play, prepared discussions, debates and other pedagogical techniques.
- (vii) Studies of particular cases will also lead to the formulation of theoretical models which, where possible, will then be tested and modified.
- (viii) Teaching will sometimes be structured around the formulation and testing of hypotheses.
- (ix) Pupils will be asked to examine social, economic and political conditions and problems in the areas they study, including their own local areas, and as part of their systematic work.
- (x) Geographers will be collaborating with other subject specialists in both the humanities and science fields. (pp.41-42)

It is the contention of this study that the above characteristic approaches to teaching the subject are reflected in the Nightingale syllabus, to be discussed in Chapter Seven of this study. This syllabus forms the basis of a new suggested syllabus for secondary pupils in South Africa.

Bailey has attempted to show the process, orientation and dynamism of the subject as well as providing sets of underlying principles and characteristics on which an understanding of the subject can be based. Such information may well be of importance to persons and organisations involved in processes of syllabus revision or reconstruction as is occurring at the present time in South Africa. These processes suggest the tentative and socially constructed nature of school subjects and their content material, a point which needs to be noted.

In Chapter One of his book Boden (1976) asks the question, 'What is School Geography?'

According to Boden most Geography lessons have a common purpose which reflect the literal meaning of the word 'Geography'. They describe and attempt to explain the locational nature of features at and near the Earth's surface. Characteristic of recent definitions is the statement that the questions about location, spatial structure and spatial process which we ask and answer, distinguish Geography from the other sciences. This, like most definitions, emphasises the one key interest of Geography which gives it

coherence and continuity as a study - namely, concern with understanding how features came to be located where they are in terrestrial space.

School Geography uses a number of organising frameworks to describe where things are and to explain how they are locationally related. Three basic frameworks are currently used - conceptual, systematic, and regional. In conceptual studies the focus is on ideas - the prime purpose is to enable pupils to learn ideas about location which can be applied generally. In systematic studies focus is on distinctive features in the landscape and their particular locational characteristics. In regional studies presentation is organised around subunits of the Earth's surface, not general ideas or particular features. Recent trends are more and more towards conceptually based studies, which has marked a significant change in School Geography in the 1970s. As has been discussed earlier such studies were introduced as a product of a change in the way Geographers approach the description and explanation of location. The conceptual revolution in Geography had two important effects - viz. 1) its introduction concentrated Geographical study firstly on how things came to be related locationally, and only secondly on where things are. Traditionally, Geography had operated the other way round. 2) It concentrated the study on seeking explanations of processes in simplified model terms first. The procedures of the scientific method, which are both inductive and deductive allowed this new approach to develop and become incorporated in school syllabi.

Rex Walford (1982) in an article titled British School Geography in the 1980's : an easy test? reviews the state of British Geography at the time as well as outlines and assesses the significance of the major changes which have occurred in Geography teaching in schools in England and Wales since the 1960s. His article also seeks to identify some of the influences which are likely to shape such teaching in the future.

Building on his earlier analysis (1973) discussed at the beginning of this chapter Walford points out that much of the stimulus for change in school Geography in recent decades has derived from those aware of the fact that in certain quarters Geography was seen as a subject based on undue memorisation of facts. They realised that such a subject would constitute an 'easy test' and was likely to have little place in a genuinely relevant curriculum.

Like Boden (1976) Walford saw the influences on the development of British Geography from the 1960's to the 1980's as many and varied and included the Geographical input of higher education, the influence of educational thinkers like Bruner and Bloom as well as changes in society and resulting institutional adjustments in education. A greater vocational significance in the subject also became more important at this time and were accompanied by vigorous curriculum developments in the subject.

Significant curriculum developments in school Geography at this time included the GYSL Project (Geography for the Young School Leaver), the Schools Council Project known as the Bristol Project or '14-18' and the University of London's Institute of Education 16-19 project.

By the 1970's the teaching of Geography showed healthy signs. Much had been achieved in the development of individual work activities, in the use of games and role-plays, in the use of audio-visual material and in project oriented investigative field-work. Whereas the 1970's was a period of internal renewal for the subject the 1980's was to be a decade of external pressures being placed upon it.

The subject could no longer expect to shelter under the umbrella of being one of the protected core curriculum subjects and Geography departments in schools, to avoid feeling threatened, needed to be involved in developing vigorous, sensitively developed courses relevant to the needs of their particular communities. A relevance to vocational training was seen as crucial to the growth and survival of the subject.

Encouraging landmarks on the horizon in the early 1980's included a willingness for educators to become much more concerned with the development of attitudes and values, about development issues and of alternatives to the Western development model. Welfare Geography was studied in many schools, as well as environmental concerns, urban problems and socio-economic considerations. Such topics produced a more humane action-orientated Geography. Also, Geography teachers at the time were active in promoting the educational uses of computers and micro-processors. Encouraging statements like those listed below have emerged from various workshops and conferences

examining what students should have gained by the time a sixth-form course in the subject had been completed:

1. an awareness of certain important ideas in three areas: in physical Geography; in human Geography; and in the interface between the two;
2. an appreciation of the processes of regional differentiation;
3. knowledge derived from a study of a balanced selection of regions and environments, linked with a broad understanding of the complexity and variety of the world in which the students will become a citizen;
4. an understanding of the use of a variety of techniques and the ability to apply those appropriately;
5. range of skills and experiences through involvement in a variety of learning activities both within and outside the classroom;
6. an awareness of the contribution that Geography can make to an understanding of contemporary issues and problems concerning people and the environment;
7. heightened ability to respond to and make judgements about certain aesthetic and moral matters relating to space and place.

These seven statements represent an encouraging breadth of vision about what ought to be happening in sixth form Geography. Knowledge and facts are seen to be but a component of the total course. Syllabus planners in South Africa need to incorporate the seven statements above into draft Geography syllabi. It is the contention of this study that this has largely been achieved in the proposed syllabus forwarded in Chapter Seven.

According to Walford the real challenge of the 1980's lay in ensuring that the subject had a coherent rationale which justified its existence amongst many other competing disciplines which all sought a place on the school curriculum. Geography's contribution was seen to be to help people to orient themselves in space and to see themselves as citizens of the world. The planet was seen to be faced by social and environmental issues which threatened its very survival. These are the parameters which provided the challenge, the

excitement and the relevance for school Geography in Britain in the 1980's. Within this context both school Geography and Geography in higher education found a unity of interest which enabled the discipline to continue to be a force in the British curriculum.

Yet another paper concerning itself with the nature of Geographical education is by Beddis (1983).

In chapter one he states that in the early 1960's a main aim of Geographical education seemed to be the replacement of rote learning of abstract and highly generalized descriptive information, presented in a regional framework, with an awareness and understanding of what places, people and the relationships between them were actually like. Realism was a key aim, and resources were made available to schools to help young people gain some idea of what places and life styles were like. Another manifestation of this striving for realism was the growth of fieldwork which sought to make the real world accessible to pupils.

According to Beddis the 1970's were a decade often labelled in Geographical education as the time for 'a search for theory'. It was a time of revolution in the Geographical world. Two Geographers who seem to have had a major impact on the teaching profession at the time were Richard Chorley and Peter Haggett, both leading protagonists of the so-called 'new' Geography. Two Geography teachers in independent schools who were early disciples of the 'new' Geography were Brian FitzGerald and John Everson. They were instrumental in leading discussion on the weakness of the idiographic approach and the need to change to a nomothetic one. Rex Walford was also, at the time, a disciple of the 'new' Geography in schools. His views have been considered previously in this chapter.

In his analysis of the so-called 'new' Geography, Beddis states that in the early 1970's the enlightened traditionalism of the early 1960's had been challenged and a fundamentally different approach to Geographical education proposed. A new emphasis on theory, particularly that relating to spatial patterns and processes was a hallmark of the new approach. Attempts were made to develop spatial concepts into various sorts of models while an appropriate mode of enquiry was encouraged - that of hypothesis generation and testing.

This stress on theories and models implied that Geography was less interested in the unique case - the particular farm, town, region - than in generalizations. Regional Geography of the old descriptive style fell into disrepute at this time. The study of space, the geometry of landscape and society, became more important than the study of real and specific cases unrelated to theory.

Alongside this change was an increased emphasis on understanding, rather than factual learning as an aim of education. It is only fair to comment that the best of the more traditional Geography, even with its concern for the unique, was just as critical of unthinking rote learning, and just as supportive of an understanding that could be transferred to new situations. It was also argued that theoretical Geography could quite easily become little more than rote learning even if concepts and models did replace more descriptive facts. There is no question, though, that the emphasis of the new movement was on the generations and understanding of ideas.

According to Beddis during the 1970's the Schools Council Geography projects in the U.K. had a significant and probably the dominant influence on Geography teaching in secondary schools. At the time Geography teachers and their pupils wanted something more relevant and interesting than the traditional watered-down academic course or trivial topics. Of course there were those teachers who remained unwilling to concede the desirability of a conceptual Geography but they were in the minority and the majority of teachers at the time could congratulate themselves that their contribution to the school curriculum debate was as vigorous, up-to-date and progressive as that of any other discipline.

Beddis saw that the enthusiasm, optimism, and confidence of the early and mid 1970's were much harder to discover in the early 1980's. Geography teachers in Britain felt threatened by the apparent though disclaimed, low status afforded the subject in several important Department of Education and Science and Her Majesty's Inspectorate documents. At this time Geography appeared not to be recognized as a significant element of the core curriculum. At the time the confident assertions and claims made about the subject by Geographers did not seem to be universally accepted.

The situations prompted Beddis to write:

If Geography is to survive as a genuinely worthwhile subject, enjoyed and valued by pupils and adults, it will have to adjust to the needs of the 1980s. There are a few pointers as to the directions these changes might take. (P.17).

Beddis gave his personal view in that while Geographical education needed to be self-critical he believed that there are several ways in which it could adjust itself in order to become a more worthwhile subject for young people in the 1980's and for the future viz.

1) There was no need to re-establish an interest in and concern for place in the subject, which he saw as a basic human characteristic. 2) The explanations offered by Geographers needed to be more catholic and honest. Geography teachers needed to explain to their pupils not just the landscape, but the total social, economic, and political life in places. Honest explanations of patterns and processes often demanded economic, social or political understanding. Beddis continues by urging relevance in subject syllabi:

There could be lengthy debate about the major issues facing society, but some stand out as quite fundamental. Most would include urbanization, resource depletion, environmental destruction, population growth, disparities in living standards, and the exploitation of some people by others. Many of these issues have a moral component, and it is hard to see how one can, or should want to, introduce young people to them on a purely intellectual or explanatory level. They matter not only to millions of individual people but to the future well-being of the whole human race. A Geography worth including in a school curriculum should take its share of responsibility for helping young people explore their attitudes towards these complex issues. Some might be painful to consider - unemployment, or inadequate housing, for example - but at least they may help pupils realize and understand their own situation. That, surely, is an important function of true education (p.18).

The call for relevance in the subject by Beddis and other writers like Walford (1973) and Bailey (1974) among others needs to be reflected in a new syllabus for Geography in South African schools.

Graves (1980) is another writer in the field of Geography whose views require consideration at this point. According to Graves, early attempts to justify Geography's place in the curriculum, which had as its basis a store of factual information, were bound to fail.

Consequently attempts were made by various writers to develop aims of Geography teaching which were less dependent on the particular factual information which might be taught. For example, when Archibald Geikie (1887) wrote on the teaching of Geography, he stressed the value of the subject for developing children's powers of observations and reasoning. He was less concerned with the particular factual content taught than with the mental processes developed. In particular he felt that Geography could help children to understand the scientific method of acquiring knowledge. In France in 1890 a set of 'instructions' for Geography teachers which made these same points as Geikie, but also saw Geography as contributing to the students' moral development - contributing to the development of solid virtues. This represents an elaboration of this argument which would probably find favour today. It is that the study of Geography teaches us to be tolerant of other peoples through our understanding of the struggles of others, of their ways of life, of their beliefs and of the perceptions of their natural and man-made environments.

This argument is also linked to another which has been taken up by many protagonists of Geographical education, namely that a knowledge of Geography makes it easier to make balanced judgements about national and world problems. Fairgrieve's (1926) faith in Geography as a school subject was expressed in the following terms: 'The function of Geography is to train future citizens to imagine accurately the conditions of the great world stage and so help them to think sanely about political and social problems in the world around'. (Fairgrieve's 1926 in Graves 1980 p.86) In the 1940's and 1950's Fairgrieve's statement provided a valuable focus for the activities of Geography teachers.

In considering these general aims of Geography teaching Graves believes that reference must be made to the idea first promulgated by Mackinder, namely that Geography as a subject helps to bridge the gap between the natural sciences and the humanities. For many years a claim was made for Geography to have a strong place in the curriculum on the grounds that it had an integrating role and demonstrated the relationship between diverse disciplines in the study of a given area. This view is seen as a fundamental strength of the subject.

It is the contention of this study that one of the unique strengths of the subject is its ability to straddle both the Sciences and the Humanities with E.E. providing the cementing

mechanism. In this connection Graves goes on to advocate that the ecosystem or man-land paradigm be utilised by Geography teachers when discussing aims and objectives in Geographical education and in the formulation of new syllabi. This point is discussed later in Chapter Seven and forms a central theme of this study.

Building on his earlier analysis Graves (1982) believes that changes in Geographical knowledge over the years have evolved to the point where the Geographer's task is to understand how human societies can solve the many problems of spatial organization posed by the peopling of the earth and its development. Facts and features of various parts of the earth are used to study the problems of spatial relations on earth, problems which are made manifest by overpopulation, underdevelopment, urban sprawl, regional planning, agrarian reform and land-use policies. Events need to be seen in a Geographical or Environmental context with the spatial implications being understood. As has been discussed earlier in this study the subject has evolved as a science since the 1950's with the so-called 'new Geography', with its concern for theory, for deductive methods, for quantitative techniques and for helping to solve practical spatial problems. These changes have often been labelled a conceptual revolution in Geography, in which a new discipline is seen to replace a more traditional, descriptive and encyclopaedic subject no longer relevant to present-day needs. As a result, deep divisions among researchers and teachers, traditionalists and innovators, those favouring qualitative studies and those favouring quantitative studies. The fact is that the subject was simply evolving in the same way as most social sciences, in changing its methodology and its objectives.

Graves's analysis reveals that while no precise definition of the subject as a whole seems to exist, there follows a list of the three principles about which there is some consensus, which appear best to typify Geographical thought and which therefore might be used by syllabus planners and teachers to structure the teaching of the subject. viz.

1. The analysis of locations and distribution.
2. The analysis of environments.
3. The study of spatial organization.

These three major concepts cover broadly the nature of modern Geography. They do not, however, do away with all ambiguities, some of which it is necessary to point out:

1. It is increasingly difficult to reconcile the dual character of Geography as an earth science and as a social or behavioural science. This makes it more necessary than ever to adopt a holistic approach to the study of spatial organization. The dual character of Geography results in Geographers being trained in a rich and wide field.
2. Geography is constantly being pulled in different directions by the content that the subject studies, be this population, communities, landscapes or spatial organization.
3. Geography as a discipline is often torn between explaining something unique and exceptional and dealing, like the natural sciences, in generalities.
4. Geographers do not always distinguish clearly enough between different scales of analysis, yet data change their significance according to the scale at which they are being examined. Geographers are sometimes guilty of not realizing that tackling problems at different scales requires an adjustment in concepts and terminology.

The difficulty faced in formulating new syllabi for Geography, which is a central focus of this study, is partly caused by balancing the requirements of the major concepts with the ambiguities listed above.

Graves goes on to state that to become an autonomous and responsible citizen people require a knowledge of Geography, not to say Geographical 'reflexes'.

According to Graves to have Geographical 'reflexes' is:

- * to perceive one's environment in the multiplicity and complexity of its constituent parts, to perceive it and not simply to look at it without really seeing it;
- * to understand what one sees in terms of the locations, the relationships, the networks; that is, not to submit passively to the sense impressions of the world as

it evolves, but to understand the world in terms of one's knowledge, in terms of models, in terms of analogies and previous points of reference;

- * to be able to operate in space, by being able to locate one's position and orientate oneself, whether inside a town, or a rural area, or on a mountainside and to be able to read the landscape and assess the forces which have shaped it;
- * to be able to seek explanations of what appears to be surprising and strange and to know roughly from where these explanations may come;
- * to know that spatial phenomena are not just the result of a multitude of formless chance events to be considered as given, but that all such phenomena by their location, shape and spatial interactions result from socio-economic and cultural processes which are replicable and therefore may be predicted;
- * to know that all locations and all organization of space whether controlled or spontaneous are manifestations of values whether these be social, economic, cultural or ecological values.

A Geographical education which provides pupils with Geographical 'reflexes' is seen as important for pupils and for this reason it is the contention of this study that Geography should form a foundation subject in the curricula of South African schools, from standards 2 to 10. Every attempt needs to be made to restructure Geography syllabi in such a way as to incorporate as far as possible the inclusion of the Geographical 'reflexes' referred to above.

2.3 PHILOSOPHICAL TRENDS IN GEOGRAPHY

While descriptive approaches to the teaching of Geography have been criticised, Geographical paradigms prior to 1960 have provided certain perspectives which have value. These include the view of Geography as a bridge between the arts and the sciences and the interest in regional studies. The former has given rise to the holistic and inter-disciplinary approaches to Geography and the latter to an interest in the developing and developed nations of the world. While there have been considerable changes in the approach to Geography in terms of what is worth including in the

syllabus and with respect to the purpose of Geographical education, Clark (1989) has demonstrated that a school syllabus encapsulates the sum of that which is perceived to have value in a discipline.

Notwithstanding the influence of past paradigms on Geography curricula (for example Probabilism and Environmental determinism among others) the following three perspectives have dominated the approaches adopted by Geography syllabuses in the western world.

- (i) Between World War II and 1970 Geographers tended to use one particular methodology viz. positivism. However, since the early 1970's serious criticism of the positivist approach has been expressed by a variety of disciplines. In many of these disciplines, this criticism has led to alternative other philosophical views and thus also to the adoption of new paradigms. Geography has not been excluded from these developments and for the last three decades we have seen many Geographers looking at the world, man and science through different "philosophical spectacles" and consequently practising Geography in different ways. The result of this is that Geography today is of a multiparadigmatic nature.

One of the main points of criticism of positivism has been and still remains that positivism "dehumanizes" science. This means that it negates the existence of human beings as rational, creative beings largely capable of creating their own ecosystem and having a unique perception and experience of and involvement in their environment. Thus, the methodological changes that have characterised Geography for the last 20 to 30 years have mainly taken place within Human Geography. While Physical Geography has largely remained within the positivist paradigm, many Human Geographers have turned to alternative paradigms.

Positivism thus represents a shift from the descriptive methodologies of rationalism and empiricism to the quantitative approach associated with scientific systematic studies. This approach is therefore characterised by an emphasis on analytical reasoning, a respect for evidence and a search for

general principles. This approach to knowledge was a reflection of the technocracy which characterised western society in the 1950's and 1960's.

The 'new Geography' of the 1960's and 1970's adopted the positivist perspective and the quantitative approach formed the basis of school Geographies in Britain (Geography 14-18), in the USA (High School Geography Project), in Sweden and in other parts of the western world. The 1973 syllabus introduced South African schools to this perspective.

The later influence of the quantitative paradigm in the 1985 Revised Syllabus and the 1993 Draft Core Syllabus is revealed in the emphasis on:

- the acquisition of cognitive skills;
- quantitative analysis rather than on description;
- the 'scientific' approach to learner-centred activities.

The syllabi, particularly the 1973 one, was criticised for its clinical approach to the subject and for the way in which the 'new Geography' either ignored man's role in the environment or if included in a study, reduced him to a statistic.

- (ii) The negative reaction of Geographers to positivism came from humanistic approaches such as social realism which regard knowledge from the perspective of assimilated experiences and advocates a more qualitative approach. A key feature of these perspectives is the greater emphasis placed on values, feelings and emotions in studies related to people - environment investigations.

The humanist approach first appeared in the 1970s as a critique of both positivist and behavioural Geography. It is not actually a single philosophical approach but rather a spectrum of approaches which share many characteristics and objectives, but between which there are nevertheless subtle differences.

The most important of these philosophical approaches are idealism, existentialism and phenomenology, all of which share the view that holds that

knowledge can only be acquired subjectively in a world of meanings created by individuals, that what exists is that what people perceive to exist.

Knowledge of the world is obtained through one's experience, which comes about through human emotion, values and meanings.

Humanists reject the positivist striving for objectivity, abstraction and generalisation. While human beings play virtually no role in positivism, humanism places them in the spotlight. Every attempt is made to put people back in Geography. Humanist Geography thus started out as a reaction against the sterile quantitative analyses of the positivist approach of the 1950's and 1960's. In broad terms, the humanist approaches of idealism, existentialism and phenomenology share the following general characteristics:

- (1) All three directions are opposed to positivist Geography, which reduced people to products of their environment. According to the humanist, Geography should be anthropocentric or human-centred.
- (2) The humanist approaches emphasise subjectivity and contributions made to Geographical research by the human spirit, such as intentions, values, sensitivity, intuition, individual thought, imagination, creativity and so on.
- (3) They look for links with the humanities - disciplines such as philosophy, literature, visual arts and architecture - rather than with the natural, social or behavioural sciences.
- (4) They emphasise the ideographic and holistic nature of Geography. The holism they support is a contextual holism that is based on a balance between excessive idealism and an equally excessive materialism.
- (5) The humanist methodology is eclectic. Humanist Geographers make no claim to a method of their own, but select what they need from the Geographer's toolkit of quantitative, qualitative and interpretive

methods and techniques. However, the objective is to understand rather than to explain or predict.

In educational terms the humanist paradigm emphasises the development of the “whole child” and therefore reflects the increasing importance placed on the development of the affective domain. In a Geographical context this approach led to a concern for human and regional Geography, which many Geographers felt had been under-emphasised in the ‘new Geography’. Regional and human studies in Geography are, however, examined from an issues-based stance rather than from an empiricist view. Thus, while qualitative in nature, they are related to what has been described as a far more open approach than the more traditional descriptive methodologies. The 1985 and 1993 South African Geography syllabuses reflect the influence of humanistic perspectives in the greater emphasis placed on an issues-based approach to themes such as urbanisation, rural problems and solutions, environmental management and the management of resources..

The value of such humanistic approaches is in alerting pupils to the need for tolerance and as a means to develop care and concern for the environment and the plight of others less fortunate.

This position, in reaction to the position of positivism prompted Geographers to search for an approach which was better suited to the needs of the pupils in terms of the reality of the 1980’s and beyond.

(iii) Environmentalism or the ecological perspective has tended to merge the approaches to Geographical education of the past thirty years developed in response to the perceived need for a ‘unifying’ paradigm which would provide a central conceptual and structural framework for Geography courses and which would bridge the gap between different components in the subject. The merger of the various perspectives (Figure 6, discussed again later in this chapter) resulted in what was accepted as a dynamic and flexible approach to the teaching of Geography, which could be applied equally well to Physical and Human Geography. The ecological perspective

was adopted by the British project, 'Geography 16-19' in 1980 and is reflected in the aims of the Geography curriculum (June 1990) proposed for schools in Wales. The application of the environmental approach to Geography teaching combines an understanding of process, pattern and relationship in the study of an aspect of the environment with that of perceptions relating to the issues and problems which exist in that environment. The pupil is, therefore, exposed to cognitive and affective processes, within a framework of knowledge which is perceived as having 'meaning' and which is relevant to the pupil's needs.

More recently the influence of Post Modernism has been felt in Geography. It is a term that has occurred to indicate a certain attitude or approach when theorising on the discussion on the nature of Geography. Essentially, it adopts an attitude of 'anything goes' and accepts that Geographic reality is fragmented into a chaotic kaleidoscope of spatial units, places, environments and landscapes and that one point of view on the origins of these is hardly to be preferred over another, because there is no absolute way of determining the respective merits of different theoretical viewpoints. There is thus no consensus in the subject - the anarchistic situation must simply be experienced and endured. Postmodern Geography emphasises differences both in society and on the earth's surface and therefore supplies a context in which one can study regional variation.

Post Modernism has brought about a critical reflection on the nature of modern western society (modernism) and questions underlying assumptions about knowledge. Disciplines of Post Modernism see tremendous opportunities for Geography and believe it represents a challenge for us today. Post Modernists believe that Geography is being presented with a unique opportunity to establish itself as a central discipline in the curriculum, probably within the social sciences.

All good Geographical annals and journals are grappling with the ideology and its effect on schools will become apparent in the near future.

It has been wondered whether the Geographer can select the 'best' parts of each of these approaches to Geography discussed in this section, as applicable to the specific

situation, or whether such a selection is impossible. The question is currently being debated hotly in Geographic literature. On the one side are those who think that the various subject philosophical directions are irreconcilable, while on the other side it is argued that Geographers can indeed exercise at least a degree of choice. This helps one to understand that Geography is characterised by a multi-paradigmatic approach within which the Geographer works eclectically. Current school syllabi in the subject reflect this position, as is demonstrated in the proposed syllabus discussed in Chapter Seven of this study.

Another important reference on the nature of Geography and Geographical education is the one by Hall (1982). The purpose of his paper was to examine the changes in outlook evident in Geography in recent years (as noted by Bailey (1974)) and to review their significance in the planning and teaching of the subject in schools. According to Hall, mere description of the structure and content of courses was inadequate. An evaluation was needed which encompassed both the ways in which the subject made a special contribution to the general education process and the manner of its supportive or integrated contribution across the curriculum. If there was no awareness of these matters, no coherence in outlook, and no policy, the subject would be discounted in an evolving school situation and would be unable to sustain a strong presence. These points need to be noted by educational planners involved in developing new syllabi for South African Schools.

Hall goes on to examine the nature of the assumptions we make as Geography teachers by considering directly the problem of knowledge. Of three central epistemological positions examined by Hall, Empiricism has been the dominant influence in the development of Geography. This view sees knowledge as the product of experiences received through the senses and what is crucial in the generation of knowledge is the range and width of the input gathered by the senses of the mind. This has led to a situation where facts are overvalued when compared to real understanding.

Hall goes on to report that in the 1960's and early 1970's a conceptual revolution in the subject took place, marked by, for e.g. the demise of regional Geography and its replacement by models and the analysis of space using quantitative techniques - the

view point of Rationalism. this viewpoint sees knowledge as founded upon the innate power of the mind to generalise, to organise, interpret, anticipate and speculate about events. the external world is seen as confusing, ephemeral, even chaotic without the mind as a searchlight bringing order by means of active mental cognition. Reason, by its generation of ideas, theories and concepts, is the ultimate source of knowledge. Like empiricism rationalism can be seen as an active principle at work throughout the history of Geographical thought. Whereas Empiricism stressed facts, rationalism stressed concepts.

The third and last perspective reported on by Hall is that of Humanism. This perspective disclaims the assumption of both Empiricism and Rationalism that the subject should be separated from the object in the growth of knowledge, for that knowledge which is of greatest value is that derived from the relationship of the inner self to the world during the process of living. Humanism emphasises creativity, divergence, and contrary imagination.

Personal response is not validated but encouraged, along with an examination of the values and attitudes which accompany them. Insight into and comparisons with the responses of others, whether at first hand or from derived sources, is seen as integral to any activity. Humanism inevitably tends to move Geography as a subject away from the sciences and towards the humanities. With humanism the mind is neither filled (Empiricism) or moulded (Rationalism) by the teacher, it is nurtured by encouragement and mutual respect.

From the above brief resume of the knowledge perspectives of Empiricism, Rationalism, and Humanism Hall believes that it should now be possible to be more explicit about our own personal definition of Geography, in terms of educational function. Experience has shown that it is normal for there to sometimes be an oscillation between any two perspectives, and it is in the zones of overlap where we can recognise other so-called subject 'paradigms' with their more clearly defined modes of inquiry, methodologies, and supporting techniques as shown in Figure 6:

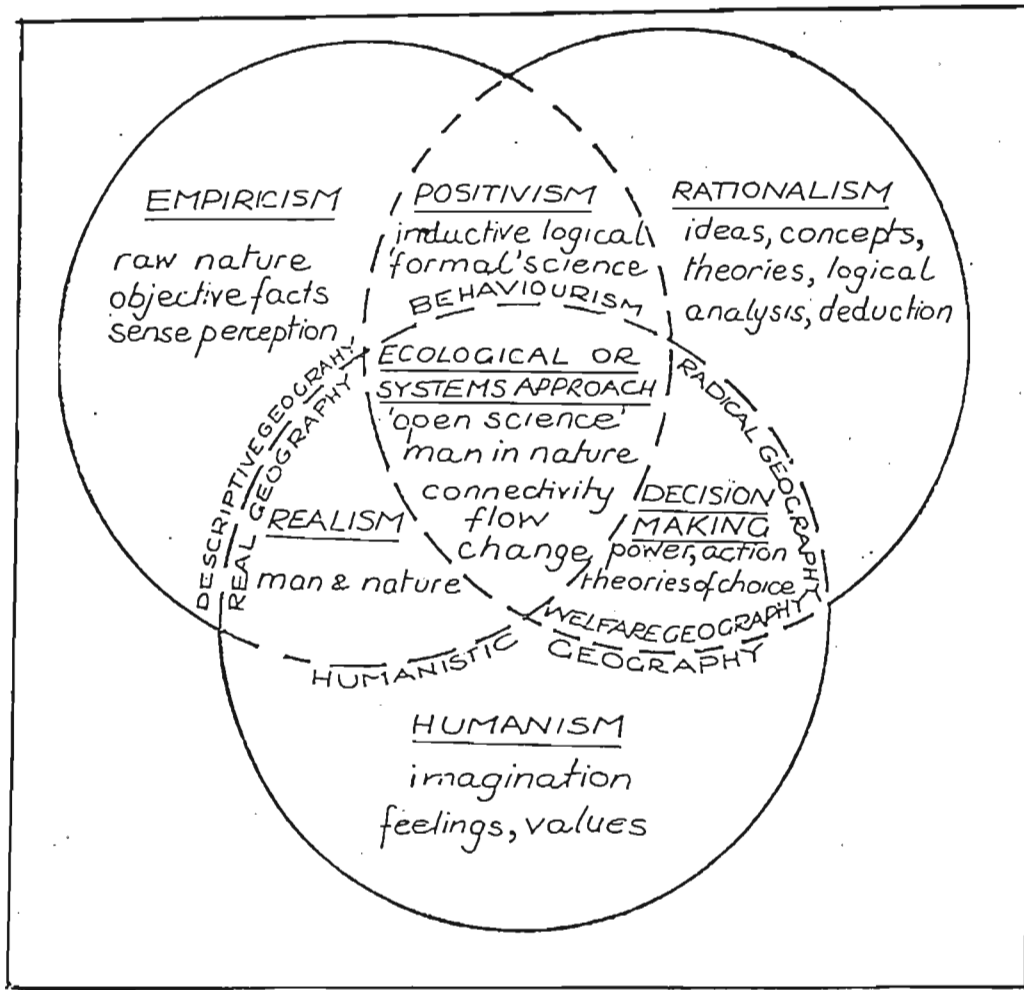


Figure 6: Knowledge and contemporary perspectives in Geography

Source: Hall, 1982, p.3

Hall then examines these other so-called subject 'paradigms' which reflect real differences in ideology and in views of the nature of Geography. Important ideological differences are revealed in the paradigms.

1. Real Geography. He states that the overlap between Humanism and Empiricism is of particular interest, because for decades it has saved the subject in many a school

from the excuses of factual description. Thus Geography is concerned with the actions and even feelings of people under circumstances of stress, fear or surprise e.g. volcanic eruptions or earthquake. The drawbacks to this approach are, in the absence of Rationalism, the minimal demands made upon the intellect. There is no search for order or regularity.

2. Scientific Geography is located in the areas of overlap between Empiricism and Rationalism. A scientific Geography would encourage both empirical/intuitive procedures (as in field work or data search), and the elaboration of ideas and models using deductive methods from the rational/analytic pole as mutually supportive of each other.
3. Humanistic Geography has emerged as a vigorous contemporary movement which finds a formal - scientific approach an inadequate philosophy and the reductionist implications of positivism (the attempt to apply to the affairs of man the methods and principles of the natural science) quite unacceptable.
4. Welfare Geography. although quantitative techniques and the analysis of space may be prominent the aim here is to use the results to raise issues of equity, justice and morality to conform the existing social order. The fundamental question asked is "who gets what, where and how?"
5. Radical Geography adopts a stronger line on issues when compared to Welfare Geography.
6. Behavioural Geography is scientific in that it focuses on stimuli and response behaviours. The drawing of mental maps is in activity which fits the require points related to this type of subject.
7. The Ecosystem Principle. This is the last but probably the most significant recent development in Geographical knowledge and perspectives. Strongly influenced by 'green' ideology (Randle 1992) the ecological approach adopts a system perspective and examines man's relationships with nature and includes a study of connectivities, flows and changes. The Ecosystem principle has been strongly incorporated in syllabi development. In some cases this principle has been adopted

as the underpinning rationale of whole syllabi. It is the contention of this study that environment in the form of E.E. should form the focus of any new Geography syllabi in South Africa. Such a focus on environmental concerns also needs to be linked with studies on development and sustainability.

Studies of the aims of school Geography syllabi in Britain when related to the various knowledge paradigms reveals that the coherence and structure of British school Geography is essentially provided by the ecological perspective. An analysis of the general statement of aims in the 1985 revised Geography syllabus for South African schools and the 1993 draft core syllabus reveals a close similarity with the stance taken by British Geographers in terms of the purpose of courses offered. The ecological perspective can thus be applied to the Geographical aims of South African schools. This point will be elaborated on in Chapter Seven of this study.

2.4 THE EDUCATIONAL SIGNIFICANCE AND CONTRIBUTION OF GEOGRAPHY

Much has been written on this subject over the years. The views of a selected number of writers in the field are presented to illustrate the place and value of Geography in the curriculum. These included Bailey (1974) Boden (1976) and Graves (1980, 1981, 1982). Bailey lists and briefly discusses the subject's contribution to education:

1. Geography grows from that part of the child's perception of his place in a world where spatial relationships are important.
2. The interpretation of landscapes is a very important part of the school Geography.
3. Pedagogically, it is sound practice to use total landscapes as the starting point for much Geographical work, and especially those landscapes which pupils can study first-hand. From this view of Geography as a distinctive way of ordering the pupils experience, a number of teaching principles may be deduced:

- 3.(a) Geographical learning and teaching will often begin with landscape interpretation, at an appropriate level.
- 3.(b) Geography courses will be designed to develop the pupils' understanding of spatial order.
- 3.(c) Their method will be to lead the pupils to order experience for themselves, not to present them with ready-made structures.
- 3.(d) In the early years of school, say up to age 13-14, Geography will be developed gradually out of general environmental interpretation.
- 3.(e) This will mean that Geographers will need to co-operate with other subject specialists.
- 3.(f) Teaching will normally proceed from the concrete to the abstract.
- 3.(g) General principals and ideas will be deduced from the study of examples.
- 3.(h) As the course develops, there will be a shift in emphasis from observation and description towards theory.
- 3.(i) The various systematic branches of the subject will be developed from general landscape studies. (Bailey, 1974, pp. 15-16)

It is the contention of this study that Bailey's views on the subject's contribution to education and its skills as listed above need to be incorporated by syllabus planners into the design of new syllabi in South Africa, as has occurred in, for example, the Nightingale syllabus to be discussed in Chapter Seven of this study.

They also affirm the right of the subject to contribute to any new curricula structures which may evolve. In this connection Bailey (op.cit.) states that the Geographer in schools has a responsibility to help to create, as far as anyone or any subject can, a sympathetic understanding of other peoples and places; and it is also his business as well as that of others to try to break down parochial attitudes wherever they are found.

Like Bailey (op.cit) Boden (1976) has examined the educational significance and contribution of Geography.

On examining types of learning in Geography Boden (op.cit.) believes that it is helpful to try to distinguish the major kinds of activity which occur in learning in general. According to Boden one way of bringing order to the many possible learning activities is to divide them into categories, based upon similarity of purpose. On this basis it is possible to distinguish three kinds of activity. There are those associated with the acquisitions of skills, those associated with the learning of different levels of knowledge, and those associated with the development of attitudes. (Bloom 1956, Krathwohl 1964). All three kinds of activity have been incorporated to various degrees in school Geography syllabi in South Africa and form the basis of certain recent syllabi drafts (e.g. the Nightingale syllabus) which have been forwarded in South Africa.

Boden examines how Geography is learnt. He states that formal learning in schools is built around activities by pupils, on the basis of studies prepared and organised by teachers. Approaching Geography in terms of pupil learning activities is useful, for teacher activity in itself cannot promote learning. Further, the effectiveness of pupil learning is the only real measure of successful teaching. Pupils are likely to be involved in a wide range of activities in Geography lessons. The role of the Geography teacher is to pick out and plan the use of these activities which will serve the learning of Geography most effectively.

Boden examines the question, "Where does Geography stand in the curriculum?"

He states that traditionally Geography has appeared in school timetables as one of a list of distinct subjects - this was once true of nearly all secondary schools as well as the upper forms in junior schools. Since the 1970's this is no longer the case, with a definite move towards incorporating the subject in combined studies with certain other subjects. In South Africa the proposed new curriculum 2005 sees the subject as a learning focus in the learning areas of Natural Sciences and Human and Social Sciences. Geography's unique influence can still be made within the requirements of the new learning programmes (syllabi).

As a general rule though it is the contention of this study that whereas integrated studies involving Geography may have value in the junior school years as well as in primary schools, the subject needs to be taught as a discrete, separate unit in the senior secondary school. The greater volume of content to be mastered by pupils and the greater emphasis on a specific methodology are two reasons to support this statement, viewed in the context of the time limitations and constraints of the school timetable. This study will primarily focus on the development of a new syllabus for secondary school Geography working on the premise that the subject either individually or as part of an integrated unit has a distinct allocation of time in the school timetable.

Boden responds to the question 'Why learn Geography?' by stating that Geography teachers have never been short of reasons why it is a good idea to study the subject. Listening to pupils' views on the purpose of studying Geography makes it apparent that the belief in the value of Geography as a school subject, which motivates some teachers, is by no means always matched by pupils' views. It would seem that an explicit clarification of aims can do nothing but bring teachers and pupils together. One of the significant trends in Geography teaching has involved trying to do just this. This is the result of a combination of factors, some relating to wide considerations of education as a process, and others relating to specific attempts to improve the quality of teaching. General aims of teaching Geography needs to be broken down into precisely attainable objectives, if successful teaching and learning are to take place.

An extensive examination of the relationship between Geography and Education has been undertaken by Graves (1980). In his book Graves reveals that the interconnection between education and environment is a complex one. One aspect of education which has always maintained close ties with the environment viz. Geographical education is examined by Graves. In Chapter Three of this study Renwick (1988) further examines the relationship between Geography and Environmental Education.

Graves states that Geography as a subject has been concerned with the environment within which human beings live. Graves believes that what this rather loose definition has been able to encompass has varied considerably through time. Part of the Geographer's task was to examine ideas about what

the proper field of Geography was. As has been stated before Geography as a subject has been concerned with the environment within which human beings live, ever since the Greeks named it as 'a description of the earth'. What this rather loose definition was able to encompass has varied considerably throughout historical times. It will be part of our task to examine briefly the way in which ideas about what is the proper field of Geography have evolved. It will be possible to argue that the division between regional and thematic (or systematic) Geography has ancient roots; that a philosopher such as Immanuel Kant saw Geography as one of the fundamental divisions of knowledge whilst a more recent worker in epistemology argues that Geography is in no way a part of the basic foundation of knowledge, but rather a superstructure built upon other more fundamental bricks.

Quoting Graves:

It will be shown that those writing Geography have erred between taking the Greeks definition literally (describing an area in great detail though perhaps to no great purpose), and writing what Varenius called 'general Geography', that is attempting to find general 'laws' which would describe and explain the relationships between man and his physical environment or even between man and his total environment. The polarization of such divergent views of Geography has been manifest in the decades following 1950 and forms part of the continuing debate within Geography (p.2).

The discussions like the above on the nature as well as the content of Geography as manifested in the writing of professional and practicing Geographers are but one strand in the web of Geographical education.

Graves believes that the nature of school Geography needs to be thoroughly examined and feels this might best be achieved by asking some fundamental questions:

What is the basis on which teachers may set themselves certain objectives in educating through Geography? If teaching the ideas or principles of Geography is not the end of Geographical education, what then are the alternative aims of such an education? What aspect of Geography contributes to these ultimate aims and which do not? In other words one is asking the question: 'What is worthwhile teaching in Geography and how do we know this?' A further question which also needs discussion concerns the curricular arrangements within

which these objectives are set. Is it necessary for the achievement of such objectives that Geography should be taught as a separate subject? Could these objectives be better achieved by not arranging a curriculum or part of a curriculum along traditional subject lines? If so, what should these curriculum arrangements be? Is it possible to put forward rational arguments for incorporating Geographical objectives within some integrated studies curriculum? Or, to go one stage back in the reasoning, is it possible to set forth any objectives of general validity, given the wide variations in individual perceptions and motivations? (p.3)

Graves believes that one of the main challenges facing developers of new syllabi in Geography is to attempt to find solutions to these questions. Indications are that such a step has not as a matter of course taken place in past syllabus revisions in South Africa (Nightingale 1985).

Further fundamental questions which need to be asked include:

Is it possible to evaluate curriculum development and measure progress in the learning of Geography? Can we with conviction point to someone and affirm that he has achieved a certain level of Geographical understanding? Have we the means whereby we can test children's comprehension of certain Geographical ideas and their ability to apply them in novel situations? If we have, how far may such testing encourage Geographers to become convergent thinkers and thereby limit the creative spark associated with divergent thinking? (Graves, 1980,p.6)

In a chapter entitled Geography in the Structure of Knowledge Graves traces the evolution and development of Geographical education over time and in so doing demonstrates knowledge as socially constructed. He focuses on one aspect of the development viz. that of the subject's status in the curriculum:

First it is clear that Geography has moved from being a low status subject taught only in elementary schools, to a higher status subject taught in secondary and higher education, though it has not yet achieved the prestige of mathematics or natural science. How this can be explained in terms of the power structure of society is more problematical. It might be argued that the rise of Geography may be associated with the influence of the merchant and military classes in society, especially the latter whose influence in the Royal Geographical Society in England was strong. Secondly, although Geography as a subject is equally accessible to low and high status pupils (with some exceptions), it is probably true that the kind of Geography taught in low status schools is very different from that taught in some of the

prestige schools. Social forces acting on the educational system do not ensure equality of opportunity to study modern intellectually stimulating Geography to all pupils. Thirdly, the extent to which Geography may be taught in an integrated curriculum or in a collection type of curriculum will depend on the status of the school or class within the school: the higher the status the more likely is Geography to be taught as a separate subject (p.70).

Certainly it is the contention of this study as stated earlier, that the subject, if it is best to achieve the aims and objectives discussed throughout this section of the chapter, ideally needs to be taught as a discreet separate entity in the timetable. Also, due to the established nature of the subject in the curriculum it can act as a vehicle for the introduction and development of E.E.

Graves continues his analysis by referring to the work of Hirst (1965) in the United Kingdom who argued fairly convincingly that knowledge may be subdivided into fundamental 'forms' independently of the ultimate use to which this knowledge is put. Regarding the position of Geography in these 'forms of knowledge', Graves states that Hirst omits the subject from the list because it does not have concepts of its own or characteristic tests for truth peculiar to itself. In one sense it is parasitic in that it borrows concepts from the forms of knowledge and uses the appropriate tests for truth. Concepts used in Geography are all borrowed from Geology, Meteorology, Economics, Psychology and so on. Also, the test for truth in say Geomorphology is different from a test for truth in Economic Geography. Hirst sees Geography as a compendium made up of much more fundamental forms of knowledge - a 'field of knowledge', a specially contrived assemblage of knowledge to deal with particular sets of problems in human experience. Geography is seen as a field where special concern is the problem of spatial organization. Graves examines Geography as a 'field of knowledge' which reveals the multi-form nature of the ideas used. Graves believes that overlapping between various forms and fields of knowledge occurs and Geography is the arch example of such an overlapping subject.

Graves concerns himself with an analysis of the aims and objectives of Geographical Education. Regarding aims in education Graves states that a Geography teacher may well ask how far what he is teaching is contributing to the 'general education' of his pupils or

students indicating thereby that he sees his activities as a step in the process of turning out an educated person.

Graves goes on to analyse Geography and the aims of education and states that:

It is important to bear in mind that the aims of Geography as a school subject have always been influenced by the prevailing 'philosophy' of education, by the prevailing economic climate and by the prevailing paradigm of Geography. The word paradigm is here used to mean the idea of Geography held by Geographers such as Geography as the study of man-land relationships. Sometimes these influences reinforced one another, sometimes they were opposed (Graves, 1980, pp 84-85).

Buidling on his earlier analysis (1980 and 1981) Graves continues his examination of Geographical education and teaching in the New Unesco Source Book for Geography Teaching (1982). Graves states that in most countries of the world, Geography is, in some form or other, part of the total curriculum from primary school to university and is recognized as an essential aspect of the education of children and adolescents. Over the years it has developed a privileged position in the different stages of education. However, the privilege of being an established subject resulted (in the early 1980s) in certain questions being asked of it. Firstly by those practising other sciences who asked: why should Geography continue to be taught even if this was once justified, has it not been overtaken by the development of other disciplines? Secondly, from within the subject itself an 'ageing' discipline must of necessity question its values and its content which may need renewal. Unfortunately the curriculum is often enshrined in institutional structures and a risk also exists in that too great a rift may develop between Geographical research in universities and Geography teaching in schools.

According to Graves two broad questions need therefore to be posed: What should be the nature of Geographical education in the last decade of the twentieth century, and what should contribute to the future education of students? What in other words, should be the aims and values of such teaching? All persons and organisations involved in syllabi development in the subject need to take cognisance of these questions.

Regarding changes in Geography teaching Graves believes these changes are closely associated with changes in the teaching environment, in the students and in Geographical

knowledge. These changes among other things make it necessary to teach the young to examine all information transmitted to them, from a variety of sources, as critically as possible, to get them to sort out facts from opinions, which can only be done through their having a wide cognitive perspective.

According to Graves Geographical education must be seen, therefore, as an integral part of the process of education, since such an education must make the student better able to understand life on earth by making evident spatial relations and the organisation of space by man. Geographical education needs to be made available to all students so as to allow them to operate competently in space, to develop the habit of looking at the spatial aspects of problems in order that they may better understand the environment in which they live.

In his analysis of the values of education Graves states that it is possible to look upon Geographical education as having:

1. absolute value, that is, values inherent in Geography as a discipline of mind, and
2. relative value, that is, values which reside in Geography's association with other disciplines, whether these are taught separately or in some integrated scheme of natural or social sciences. He goes on to examine these two points in further detail:
 - 1.(a) According to Graves learning Geography depends on the analysis of data, some of which are concentrated and visible, such as what is directly observable in the field or indirectly observable through maps and photographs. Geography can therefore be anchored in the reality of the student's environment. Geographical education's unique contribution is its concern with spatial matters and the skills it employs, such as quantitative methods, games and simulations and field techniques.
 - 1.(b) Geography may make students aware how complex the causes of events really are, it may show them that in the search for the explanation of phenomena, the interaction of various factors is the norm.
 - 1.(c) The learning of Geography contributes to the student's understanding of his habitat and of near and distant environments;

- 1.(d) In associating the concepts of time and space, Geography teaching can introduce young people to the idea that situations evolve over time, that is, they involve duration and trends.
- 1.(e) Geography can demonstrate that different civilizations have had different ways of structuring space, and that each way could be understood and therefore respected.
- 1.(f) Geography may also contribute to the understanding of the basic interdependence of all nations and the need for each individual to see himself as dependent also on neighbours near and far, to be conscious also of the differing levels of development in different regions, countries and continents.
2. Geographical analysis is of little use if it does not lead ultimately to an evaluation of the results of men's actions, since the objectives which lead to the peopling of certain areas and the exploitation of resources are an expression of certain values held by men. These include economic, social, ecological and spatial values.

It is the contention of this study that the values need to be incorporated into submissions which may or may not be required to substantiate the position of the subject in a new curriculum for South African schools and which will be discussed later in this study in Chapter Seven. Graves concludes:

The aims and values of Geographical education are not negligible even if they appear relatively simple. No inhabitant of this earth is truly educated, that is, he has not become an autonomous and responsible citizen until he has acquired a Geographical education, not to say Geographical 'reflexes' (Graves, 1982, p.14).

The views of Bailey (1974), Boden (1976) and Graves (1980, 1981, 1982) thus need to be incorporated in the deliberations which will take place to develop a new secondary school Geography syllabus in South Africa. Their contribution to the on-going debate concerning curriculum and syllabi development should not be underestimated. The important

contribution that Geography can make to a pupils educational experience has been stressed by these authors.

An analysis of the preceding review of literature on Geographical education and the teaching of Geography seems to reveal that at least ten basic principles exist which characterise 'good' teaching in the subject. These have been listed by Hurry (1987) as follows:

- * *totality* - the pupil is a "whole" person and must be taught in the light of his/her "total" biophysical and socio-cultural environment;
- * *the individuality* of each and every pupil. Individual differences in background and abilities must be considered and catered for in the teaching situation;
- * *development*, which recognises that the pupils develop through various stages as they mature physically and mentally;
- * *activity*, in which pupils are encouraged to learn by active involvement;
- * *motivation and interest*, which recognises that the pupils need to be motivated if they are to learn;
- * *observation and perception*, which recognises the fact that the pupil learns best by direct observation of phenomena (fieldwork, photographs, maps, pictures, models, samples, etc.);
- * *environmental teaching*, which stresses the fact that the pupil must be involved in learning experiences in the local environment;
- * *moving from the known to the unknown*, whereby children learn best by building on knowledge which they already have;
- * *moving from the simple to the complex*, whereby the child's knowledge is gradually built up through judiciously chosen examples;
- * *holistic teaching*, whereby the child learns about the whole while studying its parts. He/she is constantly aware of the whole they are studying (Hurry, 1987, p.12).

Hurry has distilled these ten basic principles into only three:

- * that stimulus materials be used judiciously to bring pupils into contact with reality (maps, photographs, models, etc.);

- * that the local environment be used as much as possible for teaching the pupils (fieldwork and/or practical work);
- * that a holistic approach be used whereby all relevant information about a topic is used to teach about that topic (Hurry, 1987, p.12).

Such basic principles could well form a foundation on which new Geography syllabi in South Africa are based. and are evident to various degrees in the Nightingale draft discussed in Chapter Seven of this study.

2.5 GEOGRAPHY IN SOUTH AFRICAN SECONDARY SCHOOLS

2.5.1 Historical Perspective

According to Ballantyne (1985) in Cowie (1993) Geography has been taught informally in South African schools from the eighteenth century. It was not until the nineteenth century, however, that the subject was formally included in the secondary school curriculum (Levy, 1984). First mention of Geography as a school subject in the Cape Colony was in 1835 when the astronomer Sir John Herschel mentioned Geographical content in a description of his ideal school curriculum. In 1838 Herschel sent a memorandum to Lord Glenelg, then Secretary of State for the Colonies in the British Government, recommending that political and physical Geography be taught in Cape schools (Levy, 1984).

With the establishment of an Education Department in the Cape Colony in 1839 Geography was introduced into the official school curriculum.

On the 23rd May, 1839, Colonel Bell issued, on the authority of the Governor of the Cape of Good Hope, a Memorandum on Education, setting out a new plan for aid to Government Schools. The curriculum for the elementary department was to include reading, writing and grammar, arithmetic, religious instruction, the rudiments of natural history and physical science, general history, linear drawing, and 'Descriptive Geography'.

This 'Descriptive Geography' would consist of conversational illustrations of the figure and motions of the earth and its chief physical appearances and problems on the terrestrial globe and construction of outline maps (Levy, 1984, p.54). Geography as a school subject spread steadily and by 1876 it was established in secondary schools in all areas which today form part of the Republic of South Africa.

In 1894 the first detailed Geography syllabus was published in the Cape Colony and it was not long before the Natal Colony and the two Boer Republics (The Transvaal and the Orange River Republic) followed suit. In terms of syllabus content and approach, Geography education in the Cape and Natal Colonies followed similar lines. Geography education in the two Boer Republics was, however, slightly different and tended to de-emphasize the role of the British and the colonies.

In 1910 the Union of South Africa came into being and the Cape, Natal, Transvaal and Orange Free State were united under one parliament. Although control of secondary school education was granted individually to the four provinces, Geography education followed much the same pattern throughout the country as the same core syllabus was used.

According to Ballantyne the development of South African school Geography since 1910 has been extensively covered by Levy (1984) and van der Merwe (1982). According to these researchers few changes of any note occurred in secondary school Geography education during this period despite the fact that the subject was apparently dropped from the South African curriculum between 1903 and 1918 (van der Merwe, 1982). Geography syllabuses were regularly revised in order to keep pace with academic developments in the subject although the revision of syllabuses prior to 1963 did not officially involve the universities and was undertaken by education departments (van der Merwe, 1982).

Geography education in schools between 1910 and 1945 was strongly influenced by British trends and the syllabuses of this period were marked by an emphasis on natural regions and topics in physical Geography. After 1945 an effort was made to move away from a purely British orientated Geography in terms of syllabus content, and African and South African topics were increasingly included in secondary school syllabuses (van der Merwe, 1982). Although Geographical content differed from that taught in Britain, it is important to note that the objectives and pedagogics of the subject continued to be greatly influenced by British trends and experience. This influence continues to the present day (Nicol, 1974).

Changes have occurred in Secondary School Geography Education since 1970. According to Ballantyne the control and structure of secondary school Geography education in South Africa has been determined in the past by the interaction between departments of education, the Joint Matriculation Board and the Committee of Heads of Education. These bodies had

the power to implement or retard change through their ability to control the syllabus and school leaving examinations as well as the employment and service conditions of Geography teachers. Since 1970 the JMB and CHE in particular have initiated both syllabus and examination changes at secondary school level. As a result many Geography teachers perceive the post 1970 period as one of rapid and appreciable change in the nature of South African secondary school Geography.

The role played by these bodies (the Joint Matriculation Board's function in this connection having been taken over by the Certification Council) in pending syllabus revision in South Africa will be followed with interest. A far more inclusive system is expected to be used in which the views and suggestions of a wide number of role-players will be taken into account.

The position of Geography in the Secondary School Curriculum is formulated by Ballantyne as follows: the relative importance of Geography in the South African senior secondary school curriculum may be evaluated in at least two ways, i.e., by pupil enrolment and by the subject's numerical status relative to alternative subject electives in the senior secondary school curriculum.

Regarding senior secondary school Geography pupil enrolment, the number of pupils taking the subject in the final year of schooling (standard 10) provides an indicator of Geography's growth. Statistics reflecting Geography pupil enrolment at standard 10 level are available from two sources, viz., Annual Reports of the Directors of Education and the Annual Reports of the Central Statistical Services. It should be noted that statistical information relating to education is often difficult to obtain. Problems encountered in this research resulted from:

- (i) the still segmented nature of the organisation of education in the country (18 departments of education, each controlling the education of secondary school pupils) even though officially they all now form part of one department of education.
- (ii) the political and organisational changes which have taken place in the education system since 1994 and which are still occurring.

(iii) the differing formats, presentation and organisation of data used by different departments.

Ballantyne's research regarding pupil enrolment revealed that Geography as a subject in South Africa between 1970 and 1980 had maintained its overall position in the South African secondary school curriculum. The potential for growth in the 1980's lay in the Black sector and provided a tremendous challenge to planners and educators alike. Syllabi of necessity would have to change in nature to become more relevant to the majority of pupils studying the subject in the schools.

On the topic Geography syllabus change Ballantyne states that the content of South African secondary school Geography has in the past been set out in the JMB core syllabuses. Since 1970, secondary school syllabuses have been revised three times viz., in 1973, 1983 and 1991. These revisions brought about marked change in Geography syllabus content, aims and objectives. In particular the 1973 revision affected syllabus content and that of 1983 focused on the aims and objectives of the subject. These changes need to be discussed in order to evaluate their effect upon teacher practice and the quality of Geography education experienced in schools.

Regarding syllabus content prior to 1967, Geography education at secondary school level was predominantly regional in its emphasis. Geography education was generally concerned with teaching pupils facts about regions of the world with little or no appreciation of the underlying processes involved in man-environment relationships (Levy, 1984).

The 1967 syllabus (which remained in use in senior secondary schools until 1973) consisted of three major sections which were taught over a two year period. These were:

Section A - The earth as a planet

- Atmosphere
- The earth's crust and land forms
- Cartography

Section B - South Africa.

Section C - Regional Geography (Europe, North America, Asia, Africa, South America and Australasia).

As can be seen above, this syllabus was largely physical and regional in content and clearly out of step with the academic thinking of the 1960's and early 1970's (Nightingale, 1985). Nicol (1974, p.105) commenting on Geography education in this period remarked that "school Geography, especially at the matriculation level, was burdened by an outmoded, fact-orientated syllabus which was a rote learner's dream".

As a result of agitation by academics, a general decree by the Minister of National Education called for a revision of school syllabuses in 1970. Subsequently the Inter-departmental Geography Syllabus Committee, after consultation with interested parties, revised the secondary school Geography core syllabuses during 1971 - 1972. The revised syllabuses were implemented in 1973 except in Cape Education Department schools, where they were introduced in 1974. Nicol (1974), a member of the Geography core syllabus committee, saw the major difference between the 1973 and 1967 syllabus which it replaced as:

- (i) a shift in emphasis from a concern with factual information towards an understanding of concepts.
- (ii) a reduced amount of regional content and an increase in systematic Geography.
- (iii) in the public examination of only the standard 10 year of the theory section of the syllabus, as opposed to the previous situation where two years of theory was examined.
- (iv) the introduction of a one hour practical examination at the end of the standard 10 year.

The syllabus change of 1973 brought South African secondary school Geography content into line with the 'new' approach to Geography being utilised by the universities at this time. According to Ballantyne (1986), academically, the 'new' Geography which replaced the 'old' regional Geography, contained three major trends. These were a theoretical approach which was conceptually based, a behavioural bias which linked Geography with the human

or social sciences, and the use of quantitative as opposed to descriptive methodologies. These trends, which were discussed in section 2.1 of this chapter by authors like Walford (1973) and Bailey (1974), are clearly seen in the South African secondary school Geography syllabuses of 1973 (Ballantyne 1986).

The 1973 Geography core syllabuses were generally welcomed by academics as they brought the subject at secondary school level into line with that taught in tertiary institutions. Teachers, on the other hand, while recognising the need for a new syllabus and approach to school Geography, were less enthusiastic in their praise (Earle, 1976). Teacher criticism of the 1973 syllabuses were generally related to:

- (i) a lack of guidance and the non-availability of supplementary material with regard to the teaching of new content sections (van der Merwe, 1982).
- (ii) the large amount of material which was included in the syllabus (in particular at the standard 10 level) which overburdened both teacher and pupil (Ledger, 1978).
- (iii) the degree of difficulty, which was too high for many of the pupils in both higher and standard grades (van der Merwe, 1982).
- (iv) the lack of integration of subject matter as a result of the new systematic nature of the syllabus (van der Merwe, 1982).

The 1973 syllabuses introduced a new approach to Geography education within the country. The move from a regional to a systematic approach reflected a change in the perception of the purpose of school Geography. In certain respects the shift in content moved the subject away from an emphasis on factual information about South Africa and the world, towards an appreciation of concepts relating to man-environment interaction as well as the development of Geographical skills.

Overall, the 1973 syllabuses were marked by an emphasis on the understanding of man-environment concepts and aimed to develop awareness of Geographical theory and skills as well as their applicability to the real world. Consequently the use of fieldwork and mapwork was emphasised (Levy, 1984). In-service courses run at this time also stressed

the need for teachers to develop pupils who were good citizens, able to empathise with those living in other parts of the world.

Between 1973 and 1983 secondary school Geography syllabus content remained unaltered except for minor departmental deletions. In 1983 the Inter-departmental Geography Syllabus Committee was reconstituted by the JMB and set about revising the secondary school core syllabuses. This work culminated in a revised core syllabus which was implemented and phased into secondary schools in 1985. The content of the 1983 JMB secondary school Geography core syllabuses encompassed four major academic traditions which feature prominently in the syllabus preamble. These are the man-land relationship, spatial perspective, regional viewpoint and earth-science traditions. Syllabus content attempted to reflect the nature of these traditions by creating a balance between physical and human Geography as well as emphasising the integration of man-environment relationships.

Ballantyne's analysis revealed that changes in content between the 1973 and 1983 core syllabuses were few and consisted largely of the exclusion or amendment of small sections of the 1973 syllabus. The following were the most obvious changes:

- (i) the standard 9 oceanography section is termed 'the significance of the oceans'. Pupils are expected to learn about oceans as major sources of food, the role of oceans in climate control, world trade and marine exploitation, as well as ocean management problems.
- (ii) the standard 10 rural settlement section has been enlarged to include the definition, function and depopulation of rural areas as well as the use of planning and development strategies.
- (iii) the standard 10 syllabus includes a new section termed 'Ecosystems, environmental balance and conservation' which deals with ecosystem concepts, ecological processes (energy flows, nutrient cycling, and self-regulation) and human impact on the ecosystems, (imbalance of ecosystems, environmental conservation and management) (Ballantyne, 1986, pp. 26-27).

Unfortunately the 1983 secondary school Geography syllabus change did not decrease the quantity of information to be assimilated by the pupils. Although certain sections were trimmed, e.g. regional Geography, this was more than compensated for by the inclusion of new content e.g. rural development and the inclusion of an E.E./biogeography component at the standard 10 level. The unfortunate result of this situation was that the large amount of content needing to be taught pressurised many teachers into using teaching practices

which promoted the rapid assimilation of knowledge rather than the development of concepts, skills and attitudes.

Between 1973 and 1983 Geography education within South Africa also experienced many of the changes which Graves (1981) postulates moved the subject towards a third phase status as briefly discussed in Chapter One and expanded on later in this chapter. In particular, the introduction in the 1970's of differentiated education at the secondary level changed the structure of education and emphasised the need for schooling to meet the needs of society and pupils. As Graves (1981) suggests, this change was accompanied by an expanding curriculum although, in this country, the incorporation of Geography into social study programmes occurred only at the primary and not at the lower secondary level of education. In South African society during this period there was an increasing appreciation of the need to emphasise not only man-environment but man-man relationships due to the physical, political and social problems facing the nation.

Regarding syllabus aims and objectives the 1973 JMB secondary school Geography core syllabus did not include any guidance for teachers regarding the aims and objectives of Geography education. Responding to this unsatisfactory state of affairs, certain departments of education set up committees to write general introductions to the syllabuses e.g., the Natal and Transvaal Education Departments. These introductions were short, generalised statements regarding the overall aims of Geography education rather than specific educational objectives relating to syllabus content. Other departments, however, such as the Cape Education Department, provided no teacher guide to the aims and objectives of the 1973 Geography secondary school syllabuses.

The 1983 core syllabus in contrast includes a comprehensive introduction setting out the general aims of Geography education as well as specific objectives regarding syllabus content. The aims and objectives are concise and teachers are left in no doubt that Geography as a subject should develop pupils' Geographical concepts, skills, attitudes and values.

The overriding goal of the syllabus was to develop the whole pupil and not merely impart Geographical knowledge. The syllabus guide stressed that education should develop pupils

with enquiring minds and eagerness for further study. The most important aims were for pupils to:

- (i) acquire and develop intellectual skills and abilities which will encourage on-going education.
- (ii) adjust to a society that is undergoing rapid and far-reaching social, economic and political change.
- (iii) enter the world-of-work that is becoming increasingly more technologically orientated.
- (iv) develop their moral and emotional (affective) attributes.

(JMB Core Syllabus Guide for Geography, Standard 8, 9 and 10. 1983, p. 2-3 in Ballantyne, 1986, p.28).

The general aims of the 1983 syllabuses made it clear that the subject was no longer solely concerned with teaching pupils facts about the world, providing them with knowledge and developing pride in their country and its peoples. These aims emphasised a move in South African Geography education towards a pupil-centred approach and an emphasis on conceptual development which aligned the subject with the approach in the universities at the time.

The specific objectives of the secondary school Geography syllabus were classified into four major categories, e.g., knowledge, skills, perception and appraisal. Knowledge presented to pupils had to be meaningful and useful and should not be taught as an academic exercise but applied to everyday situations. Pupils had to be made aware of the links that Geography had with other subjects and develop an appreciation of the unity of knowledge.

Geographical skills had to be taught in relation to the abilities and maturity of pupils. Skills had to be developed to help pupils organise knowledge and should be transferable to new situations.

Perception objectives concern the development of pupil awareness of the process of environmental perception and the development of resulting attitudes, values and behaviour. It is through the process of perception and cognition that pupils develop Geographical

concepts. In order to achieve these objectives pupils had to be actively involved in the learning process and teachers were encouraged to engage pupils in decision-making and problem-solving exercises.

In terms of appraisal, Geography teachers were expected to develop specific attitudes and values in pupils based upon Geographical and environmental concepts. In this regard teachers had to stimulate the pupil's affective domain in order to motivate the investigation of values and attitudes underlying Geographical patterns. Pupils had to develop an understanding of the interdependence between man and man, as well as man and environment. Accordingly, they should acquire caring, tolerant attitudes towards the environment and those with differing cultural, socio-economic and political outlooks from their own.

Together, both the aims and objectives of the 1983 secondary school syllabus emphasised that Geography content was to be taught in such a manner that the subject helped develop pupil's concepts, skills, attitudes and values. It was clear that teaching content information was not the major aim of the subject.

Regarding examinations Ballantyne (op.cit.) reports that in an analysis of the educational objectives of the JMB and Transvaal Secondary School Certificate examination papers between 1926 and 1980, Levy (1984) found that the secondary school Geography matriculation examination was unfortunately almost entirely orientated towards the factual testing of regional Geography content. Since 1975, however, there had been an improvement and the matriculation paper had shown a gradual incorporation of questions testing translation (restating knowledge in own words or giving a concrete example of an abstract idea); interpretation (giving reasons, showing cause-effect relationships, summarising or concluding from objects of evidence) and application (applying previous learning to new situations, applying abstract knowledge in a practical situation). Levy's (1984) analysis did not, however, find any questions which could be classified as testing the ability of pupils to analyse (distinguish fact from opinion and hypothesis; show interaction or relationships; infer purposes, points of view, thoughts and feelings), synthesise (formulate hypotheses) or evaluate (evaluate from evidence) - a worrying situation.

Although a move away from factual recall was encouraging, knowledge of specific syllabus content in the mid 1980's still remained the major requirement of the majority of Geography matriculation questions.

Translation and knowledge of specifics accounted for 70% of the required response from matriculation questions in the 1980 JMB and Transvaal Secondary School Geography examinations (Levy, 1984). Research on Cape Education Department Geography matriculation papers between 1980 and 1984 revealed much the same trend.

According to Ballantyne reasons for preoccupation of Geography matriculation questions with factual recall are difficult to establish with any degree of certainty.

It was felt however, that a major reason was implicit in the statement by Levy (1984 p. 107) "that there is a correlation between the content of the textbooks and the examination papers with regard to the educational objectives they are fulfilling". Perusal of Geography textbooks used in South African secondary schools indicated that they were largely filled with factual information with little or no stimulus material. This was because many still adopt the outdated philosophy that Geography was a content-based subject which developed good citizens by means of teaching facts about the country and the world. Textbooks generally do not endeavour to develop Geographical concepts, skills, attitudes or values in pupils. Discussions with examiners indicated that in certain instances their questions were influenced by the amount and type of material contained in standard 10 texts. Given such dependence upon textbooks it was not surprising to Ballantyne that a bias towards the use of factual recall questions existed.

Regarding Teaching Practice, Ballantyne states that changes in syllabus and examinations requirements have necessitated a need for teachers to employ teaching practice which fosters the development of pupils concepts, skills, attitudes and values. Accordingly, in-service courses since the 1970's have often focussed upon the use of pupil-centred teaching methodologies which actively involved pupils in problem solving and decision-making. These courses have introduced teachers to methodologies such as discovery worksheets, simulation games, role plays and the use of models, and encouraged the increased use of fieldwork, statistical diagrams and visual material. According to Ballantyne the adopting by teachers of pupil-centred methods of teaching has, however, been very slow. Generally in-

service courses have been more successful in improving content knowledge than improving the manner in which the subject is taught. In this regard Levy (1984, p. 211) states that:

"although content of the 'new' Geography has been accepted by teachers in South Africa, the methodology of the subject is not widely used. There are many teachers who still resist the use of the techniques of teaching associated with the new Geography".

The effect of teacher resistance to the use of pupil-centred practice frustrates efforts to improve the quality of Geography education in secondary schools. Teachers should be persuaded to treat pupils as active participants in learning experiences if they wish them to develop Geographical concepts, skills, attitudes and values.

An appreciation of the need to increase the use of pupil-centred methodologies in Geography education was clear from the 1983 syllabus which included a section setting out teaching guidelines for school Geography. This was the first time the then JMB had formally addressed itself to the problems of methodology choice in Geography education. In the guide (1983) teachers were given suggestions regarding teaching approaches to syllabus content and guidelines for the use of appropriate teaching methodologies.

Teaching techniques recommended were those which were enquiry-based and pupil-centred in nature. Most techniques related directly to the development of Geographical skills in pupils, e.g., use of aerial photographs, maps, satellite images, statistical diagrams, quantitative techniques, fieldwork and research techniques. The guide did not, however, recommend or discuss in detail the use of any particular pupil-centred teaching methodology, but the overall tone left teachers in no doubt that they should actively involve pupils in the learning experience.

2.5.2 South African Geography Education and the Graves Typology

This was referred to in Chapter One and warrants more detailed discussion at this point.

In 1981 Graves, noting the differing aims and content of secondary school Geography in the international sphere, proposed his so-called typology of Geography education. This typology provides a general framework which is used to identify the nature of Geography education within South Africa and compare it with that existing elsewhere. Graves noted

that Geography education in Western Europe and North America has passed through three phases each is characterised by different aims and content. According to Graves in phase one, Geography is concerned with information about the world which results in

an encyclopedic type of education in which students are judged to be cultured persons only if they are well informed on most subjects and most aspects of life on earth (Graves, 1981, p.84).

The second phase is closely identified with a man-environment paradigm and the study of regions. In this phase pupils learn geographical information which helps develop well-informed citizens, empathetic towards those living in other areas of the world. Geographical content is thus an important focus of education in this phase. Examples of countries characteristic of this phase are

found in southern Europe and Latin America, as well as in many African and Arab countries (Graves, 1981, p.85).

Phase three Geography education is concerned with the educational role of the subject where a shift occurs in the perception of the use of geographical content. Content knowledge becomes of secondary importance to the attainment of goals generally associated with pupil-centred education. There is a

modification in geographical education associated with a change in pedagogy that places greater value on process than on product (Graves, 1981, p.85).

Characteristics of third phase Geography education include:

- (i) the choice of Geography content for its educational rather than Geographical importance.
- (ii) the adoption of a non-directive teaching style which creates an informal classroom environment where pupil and teacher are perceived to be co-workers in the process of learning. The role of the teacher is one of manager and participant in the learning environment rather than an imparter of Geographical information.
- (iii) the predominant use of pupil-centred teaching methodologies which allow the pupil to participate actively in the learning of Geographical knowledge and development of concepts, skills, attitudes and values. Methodologies should

be varied and the most suitable chosen for their appropriateness in achieving lesson objectives.

As was stated earlier in Chapter One of this study every attempt must be made to achieve a third phase status for Geographical education in South African schools. This idea will be more fully discussed in Chapter Seven where a proposed syllabus has been forwarded which goes a long way to achieve a third phase status.

Although difficult to define exactly it is postulated that Geography education in the country was first phase in nature until 1876 when the subject was established in all secondary schools. (According to Graves (1981) this is the important change element preceding a move towards the second phase.) Between 1876 and 1910 the subject began to be characterised by second phase aims and content. Differences between Geography education in the Republics and Colonies at this time, particularly with regard to regional Geography, ensured that the nature of Geography education nationwide only attained second phase status with the Declaration of Union in 1910. Between 1910 and 1983 Geography education in South Africa, according to its aims and content, could be classified as second phase in nature.

The core syllabuses reflected, for the first time, an attempt by geographers to provide content relevant to pupils in a rapidly changing world. Consequently syllabus aims, content and practice are decidedly third phase in nature. There is an emphasis upon the development of geographical concepts, skills, attitudes and values rather than upon the learning of content knowledge per se. Teachers were also instructed to adopt a pupil-centred approach in their teaching practice. Notwithstanding this, it would be misleading and reflect a misunderstanding of the South African education system in general (and Geography education in particular) to conclude that Geography practice in most was in fact third phase in its nature.

The characteristics and extent of commitment to third phase Geography education at the time varied greatly from one department of education to another and from school to school. Many teachers, administrators and planners in the 'White' departments were ideologically committed to the teaching of the subject within a broad Christian National framework which aimed to engender a feeling of national pride - a characteristic of second phase

Geography education. The strong Calvinistic background of such teachers tended to lead them to adopt practice which was directive and teacher-centred in its approach. Accordingly secondary school Geography education was often dominated by rote learning and lack of cognitive skill (Rautenbach, 1983). Geography thus remained framed within the context of Christian National Education through which traditional cultural values were expressed. Furthermore, the subject continued to operate within a rigidly defined centralised authority structure, especially in 'Black' schools. The racial inequalities existing in South African education and the deprived nature of 'Coloured', 'Asian' and 'Black' education departments and schools, ensured that second phase Geography dominated due to a lack of teaching resources, large pupil numbers and unqualified and under-trained teachers. In many schools for black pupils for instance, Geography education was unlikely to see third phase aims achieved due to the use of inappropriate teaching practice (Magi, 1981). When considering the practice of Geography education in all departments of education in South Africa secondary school Geography at the time fitted most comfortably into phase two of the Graves typology. Although the 1983 syllabus aims were third phase in nature, Ballantyne believed they should be viewed as statements of intent, a mark towards which Geography education in the country was heading. Accordingly, the syllabus guide (common to both the junior and senior secondary levels) was in essence an expression of where the subject would like to be, rather than a statement of where it was.

One of the major reasons for the maintenance of second phase characteristics in South African Geography education is that the structure and control of education has in the recent past been firmly in the hands of politicians. Political control of education has been extensive and changes to the system were politically, rather than educationally, motivated (Hartshorne, 1986). A reason for this was the fundamental role played by the education in underpinning the Government's policy of apartheid and the perpetuation of Christian National ideology. Thus Government took a hard line and showed an unwillingness to negotiate with educators and pupils demanding educational reform. Major political reform has since occurred in South Africa and clearly the rate at which Geography education is characterised by third phase practices in South Africa will be influenced by further future political and demographic factors operating within the country. An important observation by Ballantyne is that third phase Geography education, with its emphasis on non-directive,

pupil-centred practice, normally occurs when well-qualified teachers work with small numbers of pupils. Demographic trends in South Africa, as represented by large increases in pupil numbers and subsequent shortages of qualified teachers are likely to work against the achievement of the desired third phase aims and practices.

Ballantyne (1986, p.50) stated that

different schools will proceed towards the attainment of third phase aims and practice at differing speeds should a non-racial, educational system be instituted. Until a single non-racial department of education is instituted and starts to rectify inequalities, Geography education in the country as a whole will not attain third phase status.

It is the contention of this study that now that a single non-racial department of education is in place every effort must be made to attain third place status for Geography. Ballantyne's concluding paragraph (op cit p.53-54) is as relevant now as it was then :

The challenge facing South African geographers wishing to move the subject towards the third phase, is to plan strategies which ensure that teachers adopt teaching practice which aids the achievement of present syllabus aims and objectives (Ballantyne, 1985). Teacher resistance to changes in teaching practice must be overcome if the third phase aims of the present syllabus are to be achieved. Although high pupil-teacher ratios, poor teacher qualifications and a lack of facilities helps explain the directive, teacher-centred practice found in many schools, much improvement is possible even within the present system. To effect change in teaching practice is no easy task but ignoring the need for it, is to continue with the mistakes of the past in which strategies designed to improve the quality of Geography education faltered at the level of classroom implementation.

Geography education seems to be firmly established in the South African secondary school curriculum. In terms of its ability to attract pupils at the senior secondary phase of education the subject seems to have performed well compared with other competing subject electives. Teachers, while taking comfort from Geography's role in the past, need to prepare themselves for future challenges to the position of the subject in the secondary school curriculum. Demographic and political changes occurring within the country, coupled with the 'Third World' nature of the majority of the society, are set to bring about a re-evaluation of the education system. As such it is likely that the role of Geography in the secondary school curriculum will be questioned. Much of the focus of this study is to address these issues and forward suggestions on the nature of a new Geography syllabus.

While Geography teachers in South Africa are capable of theoretically justifying the intrinsic worth of the subject in the secondary school curriculum of the future, Ballantyne believes that a more difficult task will be to ensure that the teaching of Geography lives up to its educational promises. It is an unfortunate fact that in South Africa the possibility of what Geography could achieve in terms of developing pupil concepts, skills, attitudes and values is not normally seen to occur in practice. Holmes (1976, p. 272 in Ballantyne op.cit.) in discussing the state of South African education, could have been referring specifically to Geography education when he states:

we tend to lose sight of objectives in our preoccupation with completing the syllabus and gaining distinctions in matriculation.

This situation of necessity needs to be urgently addressed by a new Geography syllabus in South Africa.

Although the years since 1970 have been marked by changes in syllabus and examinations, apparently little change has occurred in the manner in which Geography is taught. As a result the positive benefits of change have not been as marked as they might have been. Discussions with teachers revealed that most do not question the use of teacher-centred methodologies. This is particularly worrying, for if Geography is to maintain its position in the school curriculum of the future, it needs to be conceptually rather than factually based. Bailey (1985, p.50), discussing this issue and responses to change in British Geography education, notes that although the purposes for which schools exist in the eighties may not be all that clear, Geographers at least "know that we have to try to educate for adaptability and to teach our pupils to learn for themselves". Unless South African Geography teachers are prepared to echo these sentiments, and adopt teaching practice which encourages pupil development, it will become increasingly difficult to justify the subject's place in the secondary school curriculum and in the South Africa of the future. Geography education, to be of value to pupils in a rapidly changing environment, must promote the analysis and application of knowledge through problem solving, decision-making and social action. Those persons and organisations entrusted with the drawing up of new Geography syllabi in South Africa need to take these sentiments into account in their deliberations.

2.6 THE POSITION OF ENVIRONMENTAL EDUCATION IN THE CURRENT SOUTH AFRICAN SECONDARY SCHOOL GEOGRAPHY SYLLABUS

At various points in this study mention has been made of the potential for further inclusion of E.E. in secondary school Geography (and other) subject syllabi in South Africa (Hurry 1987).

An analysis of the position has revealed the inadequate situation as it exists and the potential for new integration in the future.

Various authors have argued the inclusion of E.E. in school subject syllabi, both locally and overseas (Preston-Whyte 1983, Meadows 1985, Gamble 1992, Fien 1985, Hall 1982, Huckle 1983). In the absence of relevant and suitable primary documentation on this section attention will be paid to various secondary sources.

One of the earliest papers written on this topic was that by Hurry (1979). In his paper consideration was given to the 1977 survey he undertook on behalf of the Wildlife Society of Southern Africa. The survey was related to formal education and the creation of conservation awareness amongst school pupils. A report on the survey entitled "Is conservation awareness one of the aims of formal education in South Africa? An assessment with special regard to Geography and Biology teaching" was published in 1978.

The answer to the question posed in the report revealed a qualified "no" and Hurry attempted to explain the qualification and to suggest ways in which Geography teachers could improve the situation.

His report lays much of the blame at the door of the formal education departments and the various personnel, (planners, inspectors, etc.) as well as teachers they employ. All relevant authorities need to give urgent attention and consideration to the creation of conservation awareness in the daily teaching of the subject.

The above position was finally realised in 1987 with the inclusion for the first time of an ecology section in Standard 10 Geography syllabus. In a report Hurry (1987) expressed the misgivings some Geography teachers had about the addition to the syllabus. On the one hand teachers felt that the syllabus was becoming overloaded while on the other there were teachers who felt unqualified to teach ecology. Hurry argues that the inclusion of ecology

into the Geography syllabus was necessary if the aims of the subject were to be achieved and that most if not all teachers were already well equipped to teach it.

Hurry's view on the suitability of Geography as a subject vehicle for teaching ecology and environmental concerns is supported by Gamble (1989) in a paper Ecological concepts in School Geography. She stresses Geography's unique role of teaching pupils and understanding of both abiotic and biotic elements and the holistic approach to ecosystem study.

Even allowing for the inclusion of ecology in the Standard 10 Geography syllabus Nightingale (unpublished paper) points out that none of the subjects taught in South African schools has E.E. as a primary aim, nor do official statements of the basic aims of education set out by the various education authorities make reference to providing environmental concerns as a major objective of study. As later reference to a Council for Environment guide for teachers entitled Teaching for Environmental Conservation shows, a subject entitled Environmental Studies is taught in standard one in primary schools but most environmentally orientated teaching occurs in the high school subjects like Geography and Biology and to a lesser extent in Agriculture, English and Art. Some ecology is also done in the General Science course in standard seven. As Nightingale points out, large numbers of pupils do not reach the fourth phase of schooling and so are denied adequate teaching in E.E.. Also, at this level, Biology and Geography are optional subjects which exacerbates the problems. Thus, although individual teachers may emphasise matters of environmental concern, it is apparent that most pupils receive relatively little E.E. in South African schools.

A detailed summary of existing school syllabi as vehicles for E.E. has been compiled in an edited document by L.B. Hurry who adapted his work from work originally done by W.M. Diepenveen (1987). The study shows the overwhelming contribution of only three subjects viz Science, biology and Geography to the development of E.E. in South Africa.

Preston-Whyte (1983) espouses the cause of environmentalism in Geography as the missing link in the subject. He directs attention towards the growing divergence in the subject as it is taught in South African schools and universities, especially the widening rift between environmental and other components of Geography and the effects of increasing

specialisation within the discipline. He saw the lack of a unifying paradigm as the fundamental cause of these problems. He urges the adoption of environmentalism as a core paradigm to unite the discipline in syllabus restructuring which urgently needed to take place. He suggests that this action will provide a more focussed Geographical training and will also demonstrate the utility of the subject to a wider public.

Preston-Whyte explores how the current core syllabus for Standards 8 - 10 (implemented at Std 8 level in 1985) is composed of systematic studies of population, economic and settlement Geography which are taught in separate years. (Figure 7):

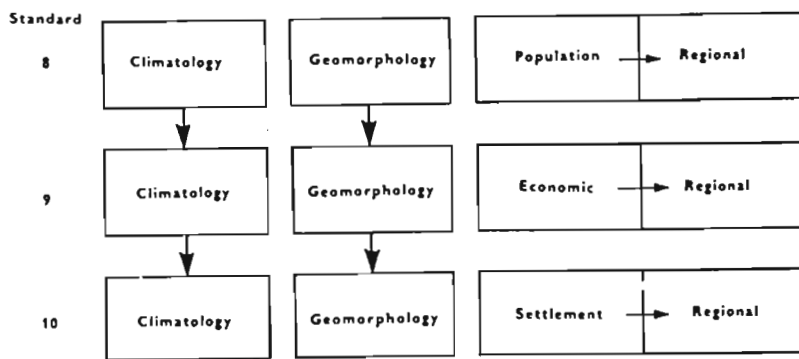


Figure 7: Structure of the Core Syllabus for Standards 8, 9 and 10 in White South African Schools

Source: Preston-Whyte, 1983, p.7

The systematic physical Geography sections of climatology and geomorphology are divorced from human Geography and indeed also from each other. The unfortunate split between the natural and social science components of Geography begins here. Preston-Whyte (op. cit.) believes that the major revision required for the Geography syllabus is concerned more with syllabus structure and internal coherence than with additional or even different syllabus content, a point which requires challenge in the 1990's as we prepare Geographers for life in the 21st century. This latter point will hopefully be clarified in the next chapter of this thesis. Preston-Whyte sees the three cornerstones of a school Geography syllabus as already existing in the form of a) climatology and geomorphology, b) systematic studies of population, economic and settlement Geography and c) regional Geography. Re-structuring the existing syllabus as shown in the figure below is but one

example of an attempt to provide the necessary coherence and to highlight the environmental aspects of the subject (Figure 8).

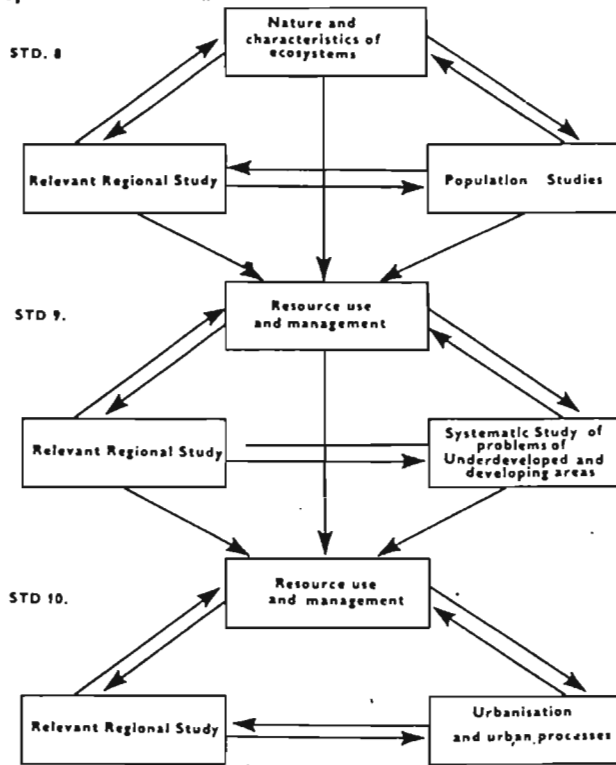


Figure 8: A Re-structured Geography Syllabus for Standards 8, 9 and 10.

Source: Preston-Whyte, 1983, p. 8.

What is required then is the adoption of environmentalism as a paradigm which unifies the environmental and locational components of the subject and forms a cornerstone of proposed future school syllabi (Figure 9):

MAN	ENVIRONMENTALISM	ENVIRONMENT
POSITIVISM	POLITICS	POSITIVISM
M eg A Urban Studies R Development Studies X Demography I Politico-Social S Geography M Quantitative techniques	E eg C Resource O management N techniques O Environmental M Impact I Assessment C S	C eg O Biogeography G N Climatology I T Geomorphology I O Quantitative N techniques

Figure 9: Environmentalism as a Paradigm

Source: Preston-Whyte, 1983, p. 9.

Discussion which follows in Chapter Seven of this study on the Nightingale Draft Syllabus shows the adoption of environmentalism as a unifying paradigm in the syllabus.

Meadows (1985) in her study of Biogeography as a field of study in modern Geography shows it to be an underdeveloped and neglected area which shows tremendous potential to act as an integrating mechanism, particularly through the use of the ecosystem concept. These sentiments thus support those of Preston-Whyte discussed above. Her study reveals Biogeography to be a broad discipline containing various themes which contribute to a coherent whole and can act as a unifying agent between physical and human Geography. In this connection Meadows picks up on work done by Preston-Whyte (as mentioned earlier):

✓ Preston-Whyte (1983) has alluded to the potential of 'new environmentalism' as a means of establishing a geographical identity, and it is argued here that not only can biogeography be one of what he calls (p. 5) the 'specialist fields' of such environmentalism, but that, by its very nature, biogeography is not necessarily specialist and may provide for the explanation and analysis of a variety of environmental phenomena. Biogeography *is* environmentalism. What began as a means of introducing scientific method and positivism into geography as part of the so-called "Quantitative Revolution" (see Stoddart, 1965), has now emerged as a field of study which successfully links a number of disciplines such as geology, climatology, pedology, geomorphology, botany, zoology and even human geography. South Africa must not be seen to lag behind in implementing teaching of those powerful integrative tools, since this country, perhaps more than most, with its array of environmental problems, needs to produce an awareness of the environment that the study of biogeography can bring. Biogeography can be Preston-Whyte's (1982) 'missing link'. (Meadows, 1985, p. 58)

✓ A more recent call for a greater emphasis on environmental concerns in school Geography syllabi has been made by Gamble (1992) in her Presidential address to the South African Geographical Society in 1991. She also highlights what she sees as the greatest strength of Geographers - the holistic, integrating and synthesising nature of the subject. Committing the Society to the promotion and support of Geographical education through involvement in various education department syllabus and curricula committees, Meadows reaffirms the strength of Geography as a mechanism to educate people about and for the environment, thus the need for E.E.

Various international writers also show support for the inclusion of a greater environmental bias in school Geography syllabi. The analysis of various British syllabi at the time revealed that many concepts important to an understanding of the environmental crisis were receiving insufficient attention from the compilers of various syllabi. This concern that many syllabi were putting a great stress on learning facts and content whereas important concepts and principles underlying them were being ignored is a point which will be highlighted in the next chapter. This call for a conceptual rather than fact or topic based approach in Geography teaching in all sections, but especially when teaching environmental issues is fully supported.

Internationally, a leading figure in the field of Geographical education is John Fien, an Australian Geographer. He sees one of the important goals is for students to become aware of the role of the environment in shaping their perceptions and feelings and how, in their turn, their environmental feelings, attitudes and consequent actions influence the environment. Unfortunately, his studies (1985) reveal that school (including Geography) syllabi tend to grossly neglect the effect of the environment as individual perceptions and attitudes but treat slightly better human effects on the environment. The separation of Geographical knowledge and environmental feelings in many school syllabi is regretted by Fien. Fien pleads for teachers to help their students get their knowledge back in touch with environmental experiences and feelings. It is a plea for the addition of the skills of looking and seeing, listening and reacting, feeling and sharing, and valuing and caring to the usual Geographical education goals of knowing, analyzing, thinking and writing. He calls for environmental feelings, attitudes, values and actions to become central features of school Geography syllabi. He calls for the goals of Geographical education to not be limited to examination success alone. He quotes Robin Hall (1980, in Fien, 1985) as having identified several benefits that can accrue from a concentrated study of the environment as it is experienced and known by students. These benefits include:

1. the contribution that can be made to the affective domain in education;
2. the way students can be helped to structure their perceptions of the environment, and see order and patterns in the environment;

3. the way students can be helped to discriminate intelligently between the desirable and the undesirable in the environment;
4. the deeper understanding of the role of culture as well as physical factors in landscape development that can be developed.

David Hall of Bristol University is another Geographer who sees the importance of the ecological/environmental approach in the development of the subject in the future. He examines the definitions of an ecosystem by Odeum (1963) as helpful:

any area of nature that includes living organisms and non-living substances interacting to produce an exchange of materials between the non living and living parts. (Hall, 1992, p. 7)

He points out that Odum's definition confirms with Geographical conventions in four ways:

- (i) a focus upon a defined area for study, and
- (ii) a range of scales from global ecosphere to local habitat.

It is nonetheless distinctive as a paradigm in its emphasis upon

- (iii) the continuity in methodology from areas where physical processes are dominant to others where human presence dwarfs the physical conditions, and
- (iv) the connectivity between phenomena and between organic and physical systems. (Hall, 1982, p. 7)

Hall points out that as both man and land relationships and the principle of interrelationships have dominated past Geographical thought, what needs to be emphasized here is that in the ecological (environmental) viewpoint they act as a descriptive framework within which scientific investigation can be undertaken. School Geography syllabi should thus be constructed around this as has been done in the Nightingale Draft Syllabus discussed in Chapter Seven of this study.

Huckle (1986) considers the implications for Geographical educators of the earth's ecological crisis. He sees E.E. as being an approach which has profound implications for the teaching of Geography at all levels for it suggests an integrated physical and human Geography which recognises the central role of social structure and human agency in

shaping the use and abuse of nature. Unfortunately school Geography teachers need to adapt their curriculum accordingly. Huckle clarifies:

Firstly, they have continued to see purely natural causes for such phenomena as desertification and the onset of the Ethiopian famine. Where this is clearly not possible, they have presented universal or social explanations. Environmental problems are portrayed as 'global' problems and attributed to such common causes as overpopulation, resource scarcity, inappropriate technology, overconsumption or overproduction. All such teaching fulfils an ideological role for it fails to relate issues to the different social settings in which they arise, and fails to explain to pupils how population, scarcity, technology, consumption and production, are structured by economic and political forces. Blame is effectively transferred; the crisis attributed to nature, the poor, or inappropriate values. Lessons which acknowledge environmental management and planning are too ready to consider this solely within the context of existing social relations. Such teaching denies pupils alternative views of conflict between capital, environmental activists and the state, fails to consider adequately the use and abuse of nature in other social contexts, and consequently renders them impotent as agents of social and environmental change. (Huckle, 1986, pp. 9-10)

Huckle appeals to Geography teachers to include more E.E. in their Geography teaching as it is important to inculcate in our pupils an environmental ethic. The importance of such an attitude or value in Geography syllabus development has already been highlighted in this chapter.

Based on the above analysis and calls for more E.E./ecology in our secondary school syllabus a simple listing would reveal the paucity of sections on the environment found in the existing core syllabus as identified by teachers at an ex Natal Education Department In-service Course for Fourth Phase Geography teachers held in Durban on 15 and 16 September 1994. The real challenge presented by this situation to syllabus planners is to attempt to make the syllabus as a whole as environmentally relevant to pupils as is possible. The Nightingale syllabus to be discussed in Chapter Seven of this study attempts to achieve this goal.

2.7 CONCLUSION

Preceding discussion in this chapter has attempted to present an international and local overview on the current state of Geographical education. Included in the discussion

has been consideration using a thematic approach of the nature and aims of the subject; its historical development; philosophical trends; educational significance and contribution; its position in schools and its relationship with E.E. in the South African secondary school Geography syllabus. This is now followed in the next chapter by a consideration of the current position of E.E. from an international and local perspective in order to identify relationships which may exist which will need to be explored and teased out in a future Geography syllabus in South Africa. The important potential role E.E. can play in the development of a future syllabus needs to be highlighted.

CHAPTER THREE

LITERATURE REVIEW : ENVIRONMENTAL EDUCATION

3.1 INTRODUCTION

The nature and extent of the concepts E.E., Development Education, Sustainability and the relationship between Geography and E.E. will now be discussed to prepare for later analysis of the role they should play in a restructured Geography syllabus for South African schools. In this chapter E.E. will be discussed thematically and the following topic areas will be discussed: historical development of E.E., a rationale for the development of E.E., definitions, nature and extent of E.E., Development, Sustainability and E.E., ideologies of E.E., educational significance and importance of E.E. and the position of E.E. in South Africa.

Before an examination of the various themes on E.E. listed above, brief consideration needs to be given to what is meant by the term 'environment'. A useful definition is provided by the Environmental Education Curriculum Guide of the Department of Education, Queensland in Australia (1993, p.3-4):

Our environment is our world. If we are to care for each part of it, we must have some understanding of the environment in its totality. The environment comprises:

- * the natural environment, which includes sun, air, water, earth; the physical cycles that support life (oxygen, nitrogen, carbon and water) and biological and ecological systems (living things and their interrelationships);
- * the social environment, which includes humans and the human-created world of buildings, farms, machines, governments, economies, arts, religions and cultures;
- * the personal environment, which includes the way a person thinks, feels and is. It is each individual's unique physical, intellectual, emotional, spiritual and ethical self.

These parts are interacting and interdependent; they should not be seen as separate or competing. We need to consider each part in the light of its interconnectedness with each other part and with the whole. The quality of these interrelationships defines the health and wellbeing of the total environment. With these ideas in mind focus can now shift to the historical development of E.E.

3.2 THE HISTORICAL DEVELOPMENT OF ENVIRONMENTAL EDUCATION

The modern concept of E.E. is thought to have originated in nineteenth century Europe in reaction to the negative environmental impacts caused by the Industrial Revolution. However, it is only since the 1960's that it came to be known by that name. This coincided with the first serious concerns about the above mentioned negative environmental impacts.

The concept of E.E. however, has developed in close relationship with the concept of the environment itself and the way in which it can be perceived. The understanding of the environment as made up of physical and biological aspects has expanded to a wider concept which also embraces economic and socio-cultural considerations, with the emphasis on the interaction between them. The modern view demands a more holistic educational approach.

In earlier communities, and even now in large areas of today's developing agricultural communities, the preparation of the youth for adulthood is accompanied by an intimate, practical experience of life. Early educational philosophers like Rousseau, Pestolozzi, Froebel and Emerson all emphasised the importance of practical education and concrete experience. Many modern syllabuses tend to emphasise abstract knowledge, but as a result of the environmental crisis the need for an education with an emphasis on a practical, holistic and environmentally orientated approach has become both urgent and imperative.

Prominence was given to E.E. in the formation of organisations such as the IUCN (1948), the W.W.F. (1961) and U.N.E.P. (1972) as well as through the publication of the World Conservation Strategy (1960).

Since the early seventies there has been a noticeable development in activities which promote E.E.. Concern about the environment had increased and widened with a more holistic view of the environment being adopted and the importance of an educational contribution was now more appreciated. People were starting to realise why they must protect their habitat and why short term solutions are often not the best solutions for problems.

The first important milestone in the 1970's was the International conference on the Human Environment held in 1972 in Stockholm, Sweden. At this occasion a decision was taken to promote environmental awareness among the world population.

The next important milestone was reached in the development of a world-wide strategy for E.E. with the holding of a UNESCO/UNEP conference in Belgrade, Yugoslavia in 1975. The delegates to this conference drew up a list of aims and principles for E.E. which have been subsequently accepted by the world community as basic guidelines for effective programmes. These aims are known as the Belgrade Charter. This Charter was a positive document, promoting E.E. as both a concern and a process that should permeate all facets of education, in formal settings and in society. The term 'environment' is considered in its broadest sense, clearly stressing that nature is only one part of it.

The next major conference in E.E., held in Tbilisi, USSR, in 1977 aimed to build on the Belgrade Charter through the formulation of specific actions which could be taken at national, regional and international levels to develop E.E. The conference identified many problems that would arise in instituting the goals of the Belgrade Charter, in particular the incorporation of an interdisciplinary subject into a formal education system that was disciplinary and thus fragmented, and institutional problems such as timetabling. The notion of a problem-oriented approach to E.E. was reinforced, and the imbalance in the emphasis on natural, as opposed to the social, environments in existing curriculum materials was noted. (Robottom, 1987, pp. 89-91). The Belgrade and Tbilisi conference outcomes provided the basis for the future development of E.E and will be further discussed in the next section of this chapter.

SA Regarding South Africa, E.E. first came to the country in a meaningful way in the 1970's. As reported by Irwin (1990) prior to this efforts had been concentrated very largely on educating about soil erosion, and what was termed until the late seventies 'conservation education' as a movement tended to concentrate on 'conservation as the wise use of (mainly) natural resources' and basic ecology, and seldom concerned itself with the political, social or even the built environmental conservation education today continues to constitute a significant and integral part of environmental education, but it is clearly only a part of it. *

Another concept which, until 1980, was confused with environmental education was that of 'outdoor education' an essentially conservative view of E.E. which incorporated education about and in the environment approaches to E.E. (Robottom 1987). According to Irwin (op cit) the two ideas do overlap to some extent, as illustrated in the figure below, but are addressed by entirely different theoretical perspectives. (Figure 10):

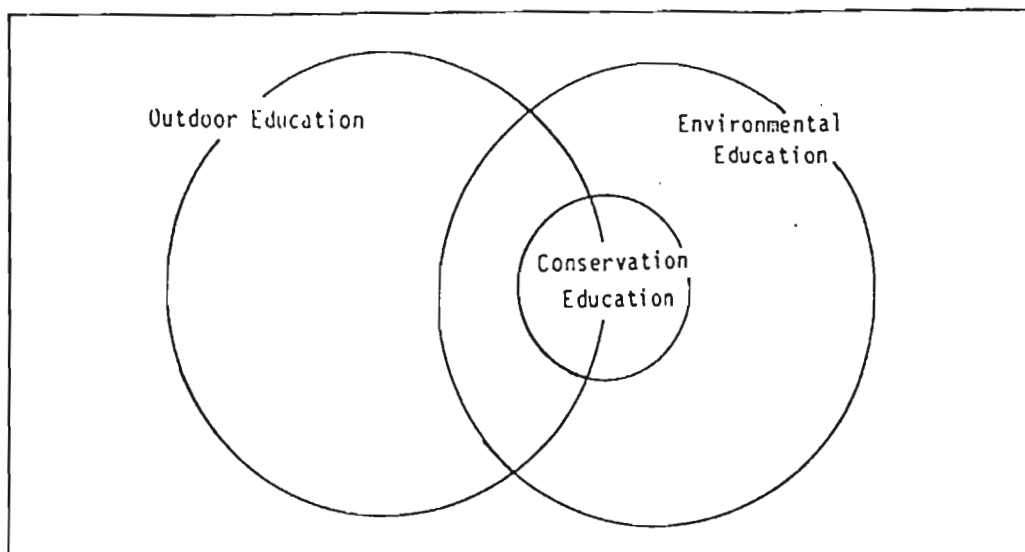


Figure 10: The Relationship between Environmental Education, Conservation Education and Outdoor Education.

Source: Irwin 1990, p.5

The first International Conference on Environmental Education in South Africa took place in 1982 at Treverton College, Mooi River in Natal. This conference was a landmark in South African environmental education. The conference also saw the foundation of the Environmental Education Association of Southern Africa (EEASA). The important catalytic, developmental and co-ordinating role played by EEASA over the years must not be underestimated.

In 1984, a workshop aimed at establishing a national policy on environmental education was held at the Midmar Dam, under the auspices of the Committee for Environmental

Education of the Council for the Environment. It was attended by people who were involved in education of any kind whatsoever. Being a response to a need expressed by the community for some form of official status for environmental education, the Midmar Workshop turned out to be the genesis of an official policy on environmental education. A document was subsequently drafted by the Department of Environmental Affairs and distributed for comment to relevant parties. This draft eventually led to the foundation of the White Paper on Environmental Education approved by Government in September 1988 and tabled and accepted by Parliament in April 1989.

A pioneering role in the practice of environmental education in South Africa has been played by nongovernment conservation organisations (NGO's) and state conservation agencies. Organisations such as the Wilderness Leadership School, the Wildlife Society of Southern Africa spring to mind at this point. The Wildlife Society's Umgeni Valley Project, started in Natal in 1973 has played a major and innovative role in the development of environmental education in South Africa. Its success can be partly attributed to the support and co-operation of the Natal Parks Board and Natal Education Department as well as the other education departments in the Province.

However, it has been in the black rural areas of the country that environmental education programmes have often been most successful at the grassroots level, two of the most successful, based on current documentation being those in Bophuthatswana and the Natural Environmental Awareness Council (NEAC) in Soweto. The Universities of Bophuthatswana (as well as the college of education) and Rhodes are the country's leading tertiary educational institutions in E.E. studies.

In April 1989 a Government White Paper on Environmental Education was tabled in Parliament. For this the Department of Environmental Affairs and the Council for the Environment deserve most of the credit. This document unequivocally embraces the 'Tbilisi Principles' and the internationally accepted concept of E.E. It represented a potentially powerful tool for promoting environmental education and needed to be used as the basis for a new environmental policy in South Africa. Unfortunately, however, like all Government documentation at the time, it was compiled/formulated/planned in the absence of a large representative group such as the Mass Democratic Movement and other groups

and as a result will require re-formulation of a new White Paper needs to come about which has been broadly accepted and planned by the whole community and, in particular, the education community.

Over and above what was happening in South Africa we also need to be aware of the innovative and viable environmental education programmes operating in some of South Africa's neighbouring countries such as Swaziland, Botswana and Zimbabwe. Some of this work will be reported on in Chapter Four of this study.

Today, environmental education as a concept and approach is now poised to play a meaningful role in any attempts which our society might make to deal with the environmental crises which we are facing. The role of environmental education will be examined in further detail in Chapter Seven of this study.

3.3 A RATIONALE FOR THE DEVELOPMENT OF ENVIRONMENTAL EDUCATION

The development of E.E. is increasingly being seen as a response to the Environment crisis. We live in a time when the world's population is increasing alarmingly every year. In some countries population density is estimated to be more than 250 people per square kilometre. In South Africa we are still fortunate in having to accommodate only an estimated 18 people per square kilometre. But the tempo of population growth is phenomenal. By the end of the century there will be three people for every two that there were in 1975.

All these people have certain basic requirements which must come from sources in the world environment. The world and its atmosphere, in other words the biosphere, is actually a closed system. That means that we cannot rely on assistance from without, and this is the world environment which must sustain all life. As resources are used up, they cannot be replaced and mankind faces an environmental crisis. With the present population increase, and the advanced technology used to exploit resources, it is disquieting to contemplate reports on, for instance, existing sources of minerals and energy. Unfortunately there is, at the same time, far too much injudicious use or waste of resources (Cowie 1988).

If current trends are continued, the world which we know will be changed into one which is overpopulated, more polluted, ecologically more unstable and more vulnerable. It is clear

that the future will bring serious pressure with regard to population, resources and the environment. Problems regarding conservation and carrying capacity are already acute and at hand. There are no easy answers or simple solutions. The solutions to the problems of population, resources and the environment are complex and can only be solved in the long term. They are inextricably bound up with some of the most complicated and intractable questions in the world. New and imaginative ideas, and a willingness to persevere are essential. E.E. is thus essential to eventually ensure an environmentally literate population who would be able to solve these problems.

Janse van Rensburg and Shongwe (1994) examine the emergence and development of E.E. as a response to the environmental crisis. Since its emergence, E.E. has promoted various solutions to the crisis. The focus of the solutions has changed over time, as our understanding of the issues involved has grown. With an increasing awareness of environmental problems environmental movements began to develop, particularly in the West in the 1960's. In the 1970's to 1980's, however, most scientists took a fairly neutral approach to describing environmental problems and their solutions. The bio-physical environment was focussed on and proposed solutions often centred on preservation of natural areas, like wilderness areas, nature reserves and parks which had been fenced off.

It became to be realised, however, that such areas were not really natural any more (due to being fenced in) and so the solution to environmental problems came to be seen as the conservation and management of protected areas. Concern about environments outside nature reserves also increased, and hence there were also calls for the conservation and management of what came to be seen as natural resources, such as soil, energy and water.

The World Conservation Strategy (WCS) of 1980, which was developed by IUCN/UNEP/WWF was a response to this.

Janse van Rensburg and Shongwe point out that as awareness of environmental problems grew among non-scientists and in the non-Western world, developers and communities pointed out that conservation could not take place without taking human development needs into account. The United Nations then appointed the World Commission on Environment and Development, which published the so-called Brundlandt report, *Our Common Future*, in 1987. This report introduced the concept of sustainable development

as a solution to the environment crisis. The idea was that conservation and development do not have to be in conflict with each other. However, the report did not see fit to re-think economic growth as the only feasible form of development, and so the concept of sustainable development led to much confusion.

A fundamental rethinking and reframing of concepts contained in the WCS produced *Caring for the Earth* (1990), a document which broadened the solution to the environment crisis through the concept *sustainable living*.

Note must be made of the historical shifts in proposed solutions to the environment crisis, from preservation to conservation, through resource management and sustainable development, to sustainable living. This latest concept allows the possibility of many, small and diverse solutions at a local level to problems which affect people in the area. These solutions are not passed on but are developed together (co-constructed) between scientists and other experts, and ordinary people.

The environmental crisis offers a great challenge and an overwhelming responsibility for all teachers in South Africa to make their pupils aware of the crisis so that they will be in a position to see it in perspective, both in their own country and in the world. (Pupils must be taught to think globally, but to act locally). They must strive to find political, economic and ethical solutions and then to translate words into action. They must take into account the problems of poverty, injustice, materialism and human rights.

3.4 DEFINITIONS, NATURE AND EXTENT OF ENVIRONMENTAL EDUCATION

One gets a sense of the nature and extent of E.E. by comparing various international definitions provided by the IUCN (1975) Martin (1975) and Huckle (1991). There are some similarities between these definitions, in that they all refer to the interactions between people and their environments, and the importance of knowledge/understanding. They are also different. For example, they reflect a different view of the problems and the solutions, and of the agents which should develop and/or implement the necessary solutions.

The IUCN (1971) defines E.E. as:

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

Martin (1975) argued that E.E. does not ultimately have validity unless it also involves educating to change the human environment for the better by understanding on the one hand the political processes by which this can be done as participating citizens; and on the other hand, as noticed by conservationists and other environmentalists, by acquiring an environmental ethic and a knowledge of the ecological basis of life, on which value judgements about the environment can be based.

Huckle (1991) sees E.E. as education for the environment which should be a shared speculation with the pupils and those forms of technology and social organisation which can enable people to live in harmony with one another and with the natural world.

Janse van Rensburg and Shongwe (1994) interpret these definitions by stating that the IUCN definition views the problem as a lack of knowledge, poor decision-making skills and an inappropriate code of behaviour. The proposed solution is to recognise the "right" values, to practice decision-making and to change behaviour. The agents to develop and implement solutions are individuals ("man" as individual). In other IUCN documents (e.g. WCS) we see that the belief is that scientists can develop the solutions, which other people should implement.

Martin also thinks that we need to develop a better understanding of the environment on which to base value judgements, but he emphasises that the environment should be changed by citizens who need to understand political processes. He thus recognizes the role of political processes in environmental problems and solutions, which the IUCN did not emphasise. Martin sees solutions being developed by both participating citizens and experts.

In Huckle's definition there is an even greater emphasis on the role of social structures in environmental problems and solutions and no mention of individual behaviour values.

Huckle believes that social systems and technology are the main areas to address in seeking solutions, and he thinks that teachers and learners should work out such solutions together.

According to the Environmental Education Curriculum Guide of the Department of Education in Queensland, Australia (1993, p.5):

Put simply, environmental education is all about learning how to care for the Earth, other people and ourselves. The wellbeing of each of these three parts of our total environment is inextricably connected with the others.

Learning how to care for our environment involves understanding concepts about the environment, developing sensitivities through the environment and fostering values that commit us to acting for the environment. This last aspect is perhaps the most important; knowledge about and experience of the environment have limited value unless they are accompanied by a desire to actively care for the Earth, other people and ourselves.

Two further definitions of E.E. are provided for consideration:

Environmental education is an across-the-curriculum approach to learning which helps individuals and groups to understand the environment with the ultimate aim of developing caring and committed attitudes that will foster the desire and ability to act responsibly in the environment. Environmental education is concerned not only with knowledge, but also with feelings, attitudes, skills and social action.

Australian Association for Environmental Education (1993)

Environmental education is the preparation of people for their lives as members of the biosphere. It is learning to understand, appreciate, work with, and sustain environmental systems in their totality ... Environmental education is fundamentally education in problem-solving - but problem-solving from a philosophical basis of holism, sustainability, enhancement, and stewardship ... The goal is not just to solve a problem with a narrow focus that makes another problem worse, ... (n)ot just to make a correction and restore the status quo, but to make things better.

Meadows (1989).

The definitions of E.E. presented above suggest that its purpose is to promote effective learning and teaching, helping students to acquire the understanding, skills and values that will enable them to participate as active and informed citizens in the development and maintenance of an ecologically sustainable, socially just and democratic society.

ledge - to help individuals and social groups to gain a basic understanding of the environment as a whole as well as of its associated risks, and of mankind's critical and responsible presence and role in it.

Ability - to help individuals and social groups to develop social values and the ability to make sound choices while they themselves become more aware of environmental issues.

Skills - to help individuals and social groups to acquire the skills necessary to deal with environmental problems.

Environmental awareness - to help individuals and social groups to evaluate environmental attitudes and E.E. programmes in terms of ecological, economic, social and educational considerations.

Environmental action - to help individuals and social groups to take the steps necessary to solve environmental problems.

These objectives serve as the foundation for all E.E. programmes and are based on the following definition of E.E.:

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

(Education and the Environment, Papers of the Nevada Conference of 1970 and the Tbilisi Conference of December 1971. IUCN Publication New Series, Morges.)

The Tbilisi Conference adopted a set of eleven directive or guiding principles for E.E. which were drawn up and introduced as the Tbilisi Declaration.

The principles suggest that E.E. should:

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

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

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

- * 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 at 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 and learning about and from the environment with due stress on practical activities and first-hand experience. (UNEP 1977 Tbilisi Conference Considers E.E., UNITERRA, Vol. 2:9 pp. 1-8).

The above principles are still widely promoted today, possibly because they reflect a very broad, relevant and all encompassing stance on environmental issues. These principles need to be noted by persons and organisations involved in incorporating E.E. into primary and secondary school subject syllabi.

The guiding principles have formed the basis of many different formulations of the aims and objectives of E.E. One such example is the contribution of the Department of Education in Queensland, Australia referred to in section 3.1 of this chapter.

- * 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 at 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 and learning about and from the environment with due stress on practical activities and first-hand experience. (UNEP 1977 Tbilisi Conference Considers E.E., UNITERRA, Vol. 2:9 pp. 1-8).

The above principles are still widely promoted today, possibly because they reflect a very broad, relevant and all encompassing stance on environmental issues. These principles need to be noted by persons and organisations involved in incorporating E.E. into primary and secondary school subject syllabi.

The guiding principles have formed the basis of many different formulations of the aims and objectives of E.E. One such example is the contribution of the Department of Education in Queensland, Australia referred to in section 3.1 of this chapter.

In 1987 the Intergovernmental Conference on E.E. was held in Moscow to review progress since Tbilisi and draw up priorities for E.E. in the 1990s. The period 1990 to 2000 was designated as the World Decade for Environmental Education.

In 1992 the International Workshop on E.E. was held in Rio de Janeiro in Brazil as part of the United Nations Conference on Education and Development. At the workshop the current status of and problems facing E.E. were discussed as well as ways of promoting International E.E.

A few extracts from Some principles for E.E. for equitable and sustainable societies, from the NGO Forum at the Earth Summit, 1992 are relevant at this point:

- * Education is the right of all; we are all learners and educators.
- * E.E. whether formal, non-formal or informal, should be grounded in critical and innovative thinking in any place or time, promoting the transformation and construction of society.
- * E.E. should treat critical global issues, their causes and inter-relationships in a systemic approach and within their social and historical context. Fundamental issues in relation to development and the environment such as population, health, peace, human rights, democracy, hunger, degradation of flora and fauna, should be perceived in this manner.
- * E.E. must facilitate equal partnerships in the processes of decision-making at all levels and stages.
- * E.E. must be designed to enable people to manage conflicts in just and humane ways (Van Rensburg and Shongwe, 1994, p.12).

The above principles were based on a critical view of current socio-ecological conditions as they existed at the time.

More recently important conferences and workshops on E.E. in the Commonwealth and in Small Island Developing States were held in 1993 and 1994 respectively with another major conference on E.E. planned for 1995 in the United Kingdom and 1996 in Rio de Janeiro.

Such conferences and workshops continue to explore the nature and extent of E.E. and contribute towards an all encompassing definition of the concept.

3.5 DEVELOPMENT, SUSTAINABILITY AND ENVIRONMENTAL EDUCATION

Attention will now focus on certain concepts which relate closely to E.E. and which impact with E.E. on the proposed draft syllabus for secondary schools in South Africa discussed in Chapter Seven of this study. The concepts which will be discussed include development, sustainability and the effect of these on education and E.E.

More and more attention is currently being paid to the relationship between the terms environment and development. The two terms have, in fact, become so interlinked that one cannot really refer to any one of the two without referring to the other. The relationship between the two terms is discussed by Professor P L Irwin in an unpublished paper (1988) entitled "Modern trends in the concept of environmental education". He refers to what, in United Nations Education Programme circles, has become known as 'realconserve' - the idea that environmental education in developing countries must address real issues - those causing the local people day to day hardship and death. The 'realconserve' perspective has gained considerable momentum over the past 10 years and now forms the cornerstone of E.E. workshops, conferences, policies and programmes in many developing areas, including various rural parts of South Africa.

On 15 and 16 August 1990 such a workshop on Development Studies was held under the auspices of the Deved Trust in Johannesburg. According to Hurry the purpose of the workshop was to clarify thinking about the nature of development studies, particularly as it may apply to the secondary school student, and to consider the feasibility and/or desirability of developing a curriculum for an appropriate part of the secondary school phase. (For example, within Geography syllabi.)

Although the original target group for the workshop was junior secondary school students in Ka Ngwane (a largely rural community), we would like to consider a core curriculum that would suit all schools in South Africa. At the outset the workshop participants saw development studies (DS) as a subject that would have the short term aim of encouraging environmentally aware students who have the knowledge, motivation and the commitment to benefit from further environmental education programmes and the medium to long term aim of working towards producing an adult population that would participate constructively at appropriate levels and stages within regional development plans.

According to Hurry:

- 1) Environmental education is a process aimed at developing a world population that is aware of, and concerned about, the total environment and its associated problems; and which has the knowledge, attitudes, motivations, commitments and skills to work individually or collectively towards the solution of current problems and the prevention of new ones.
- 2) The concern of environmental education is that the social, economic and other actions and activities of people should not adversely affect the life support capability and capacity of the environment. Environmental education is also aimed at improving this capability and capacity.
- 3) Environmental education is concerned with the total human environment. It is not concerned only with the management of so-called natural systems or wildlife, but with all places where the influence of people is to be found. The global environment provides the backdrop against which local or regional environments can be studied.
- 4) Most educationists agree that environmental education should not be a separate subject in formal education systems, but should rather form part of the overall warp and weave of all subjects.
- 5) Ecology and principles of town and regional planning are two important topics in environmental education. Practical learning experiences are an integral part of effective environmental education and learners are encouraged to participate in the development of their learning programmes.

Moving to a discussion on the concept 'development', Hurry identifies three goals of development:

- 1) To ensure that individuals or communities have equal access to material and non-material resources.

- 2) To enable individuals to develop their full potential and capacity in terms of knowledge, aptitudes, attitudes, skills and interests so that they can participate freely in the economy of the country.
- 3) To ensure that individuals are enabled to choose freely which sector of the economy they will enter.

Three further points on development made by Hurry at the workshop were that:

- 1) Development is focused on the economic, social and other needs of individuals and communities.
- 2) The goals of development are achieved through appropriate and relevant programmes of training and education. Literacy training, technological education, vocational guidance and the development of management skills are some of the important fields of training or education that lead to development.
- 3) It is generally agreed that education or training for development should be given as early as possible in the formal education system. Where it has not, appropriate "catchup" programmes should be introduced. In South Africa literacy programmes are usually the first step in a general catchup programme of development.

Hurry then goes on to discuss the concept of development education. Whereas environmental education is focused on conservation practices that are concerned with the long-term survival of the environment as a life support system, development is focused on the needs of individuals and communities.

Since the long-term survival of individuals and communities and the long-term life-support capability of the environment are interlinked and interdependent, there is a need to link development with environmental education so that the goals of each are in harmony with one another. According to Hurry there is, therefore, a need for Development Education (studies) in the school curriculum.

Hurry states that development education is a coordinating process that equips people to participate effectively in the development process through effective and relevant training

and education programmes; while at the same time ensuring that the same individuals and communities have sufficient knowledge of their environments, and are committed to actions and activities that will ensure its long-term life support capability.

Hurry believes the process of development education must incorporate the following points:

- 1) Training and/or education programmes that are oriented towards development must include elements of environmental education.
- 2) Environmental education programmes must take into account the development needs of the learners, and all environmental education programmes should be developed against the backdrop of the development needs of people.

Developing his ideas further, Hurry (1992), writing in the Environmental Education Bulletin no 6 (August 1992), expresses concern at the mismatch between the work of development agencies on the one hand, and the work of environmental educationalists on the other. He believes the problem stems from the fact that environmental problem solving and sustainability are not always issues with development agencies. Also environmental programmes, on the other hand, are most often concerned with enabling people to solve problems and contribute to environmental sustainability. For them the environment provides the backdrop for their activities. They are not always concerned with the development needs of the people with whom they are working (p30).

Hurry continues:

While it may be true that some agencies are engaged in programmes that are directed at both development and environmental education, the number is small, and there may be a need for developers and environmental educationalists alike to reexamine their goals, to reconsider their strategies and to move their operations closer together (p30).

In this context Hurry sees the role of E.E in the following light:

IUCN and other international definitions accepted, E.E. is seen as a process involving both training and education that enables people to solve environmental problems (for example health problems, sanitation, pollution and soil erosion); encourages them to be environmentally

responsible (whatever this may mean in the local context); and which is directed at environmental sustainability (Hurry, 1992, p31).

According to Hurry future discussions and debate on sustainable development will therefore have to accommodate all sectors of South African society, and the place and function of "development education" will have to be determined through active participation by players from the both "developed" communities as well as from communities seeking 'development'.

Hurry concludes by stating that much future debate and concept clarification covering all aspects of 'development' and 'environmental education' is required. He continues by stating that discussion and debate may, in the short term, raise more questions than answers, but if environmental education specialists want to participate in an enabling process that is both acceptable and sustainable, then every and all concepts, structures and processes may need to be reexamined and reassessed.

A key term which has been mentioned already in this study and which constitutes a crucial link between environment and development is sustainability. In simple terms sustainable development can be defined as "development without destruction" of environmental resources. Sustainable development provides a lasting and secure livelihood that minimizes resources depletion and environmental degradation, without causing cultural disruption and social instability. It is an interaction among biological systems, resource systems, and social systems. It seeks to maximize the achievement of goals across all these systems through prudent decisions and actions.

It involves the satisfaction of basic human needs for food, clean water, fuel, shelter, health and education, freedom from pollutants and disease, and maintenance of the biological systems which provide the basics for all life.

At this point consideration needs to be given to the important work which has been done in the field of sustainability by organisations like the IUCN (The World Conservation Union), UNEP (United Nations Environment Programme) and WWF (World Wide Fund for Nature), especially the World Conservation Strategy published in 1980 and the Caring for the Earth, A Strategy for Sustainable Living document published in 1991. A brief listing of the World Conservation Strategy and the events leading up to the Caring for the Earth

document are provided on page 1 of the Caring for the Earth Summary report. *The World Conservation Strategy* was published in 1980. It emphasised that humanity, which exists as a part of nature, has no future unless nature and natural resources are conserved. It asserted that conservation cannot be achieved without development to alleviate the poverty and misery of hundreds of millions of people. Stressing the interdependence of conservation and development, the WCS first gave currency to the term "sustainable development".

The foreword of the Caring for the Earth, A Strategy for Sustainable Living Summary document stated that this strategy was founded on the conviction that people could alter their behaviour when they see that it will make things better, and could work together when they needed to. It was aimed at change because values, economics and societies different from most that prevail at the time were needed if we were to care for the Earth and build a better quality of life for all.

The *World Conservation Strategy* thus stated a new message: that conservation is *not* the opposite of development. It emphasised that conservation includes both protection and the rational use of natural resources, and is essential if people are to achieve a life of dignity and if the welfare of present and future generations is to be assured. It drew attention to the almost limitless capacity of people both to build and destroy. It called for globally coordinated efforts to increase human well-being and halt the destruction of Earth's capacity to support life.

In the Caring for the Earth document broad principles are set out, as well as an array of consequent actions, upon which it is believed the future of our society depends. The document had been prepared through a wider process of consultation than had been possible when the *World Conservation Strategy* was written a decade earlier. It was intended to re-state current thinking about conservation and development in a way that would inform and encourage those who believed that people and nature were worth caring about and that their futures were intertwined. It was also intended to persuade people at all levels that they could do something, or help cause something to be done, that would lead to better care for the Earth.

Discussion of the concepts sustainable development, sustainability and sustainable living prompt further examination of what these concepts mean.

The question may be asked: What is sustainable development? The Concise Oxford Dictionary defines development in a rather exciting way as a 'gradual unfolding, fuller working out, growth', and to sustain is to 'keep from failing'. The challenge, particularly in South Africa's rural areas is to transform them from centres of poverty into flourishing communities. This will require a national commitment to production, empowerment and conservation. Only by combining these three aspects in a rural development policy based on human and natural resources will we progress towards sustainable development. Conservation of natural resources is seen by the International Conservation Strategy of the World Wide Fund for Nature as the logical result of sustainable use by people on the environment. If resources and people are inextricably linked, a programme of sustainable rural development will require reconciling different perspectives. The key lies in seeing the approaches as part of a continuum with differing time frames. The perspectives also vary from more technology-centred to more people-centred approaches. The figure below locates each of the four approaches in terms of their time horizon (long term vs short term) and their human orientation (technology-centred vs people-centred).

Within such a continuum, national food self sufficiency is, in itself, a short term priority with mainly technological solutions. The equitable distribution of resources is an equally short term but more people-centred imperative. Traditional conservation has been distant from people although more long term in its time horizon. The resolution of the three perspectives requires a movement towards sustainable agriculture in a sustainable development context. The push is towards sound long term systems that are people-centred and people-driven.

According to Auerbach sustainable agriculture should be the objective of all three perspectives, reconciling the short term needs of the moment with the longer term needs of the nation. Technology has a role to play but local people must control and use it without sacrificing their independence. Systems based on the needs of our thin and fragile soil-skin must be developed with local people. This knowledge must form the basis for national policy.

Sustainable development has a long term environment-with-development orientation while being people-centred. Ecotourism represents a very good example of sustainable development in action - rural production can occur with enjoyment of the natural environment.

A fairly recent contribution to the issue of development and sustainability has emanated from the Australian Association for Environmental Education (1994). In their publication Teaching for a Sustainable World aspects of development and sustainability are identified. Clear insight into the nature of these key areas is shown by the Australian Association, under the leadership of Professor John Fien (ed.) (1993). The word 'development' is seen as a process of change. Some ideas are provided on this:

- * Development is helping others to help themselves.
- * Development is the process by which all humanity moves to live with dignity and a just share in the world's resources.
- * Development is progress towards a high standard of living for every person in a region or nation.
- * Development is a form of imperialism whereby the rich nations exploit the poor.
- * Development is the attempt to ensure that, as nations change and increase their production per head, there is a better distribution of wealth, so that every person has his/her basic needs met and as many as possible of his/her wants satisfied.
- * Development is the growing capacity of a society to incorporate change.
- * Development is sharing the world's wealth more equitably. It is sharing our world.
- * Development is economic growth measured in terms of the improvement in national product.
- * Development is the satisfaction of mass needs by packaged solutions.

According to Fien (ed.), (1993) although a complete definition of sustainability would include all of the following aspects, some definitions may only include only one or two:

1. Economic sustainability

Economic sustainability means that development does is economically efficient and that the benefits of such development are distributed between generations. Economic efficiency means that processes and projects undertaken must give the greatest output per unit of input.

2. Social sustainability

Social sustainability requires that development does not cause social conflict. In practice this means that development should increase people's control over their lives - that all social groups should have the opportunity to participate in decision making.

3. Cultural sustainability

Cultural sustainability requires that any development should take into account the values of the people affected by it. In addition, the range of cultural groups should be maintained and encouraged, and the value of their heritage and traditions recognised.

4. Ecological sustainability

Ecological sustainability means that development should take into account the maintenance of ecological processes, biological diversity and biological resources. To achieve this, our society needs to recognise that the survival and well-being of other species are also important.

It is the contention of this study that Fien's ideas on development and sustainability represent a broadly acceptable basis for inclusion in a new Geography syllabus to be discussed later in Chapter Seven.

A recent local development in the debate on the nature of development education is a paper by O'Donoghue (1994) entitled Environment and Development Education which examines some of the issues raised in the current debate on these concepts, viz. 1) The environment crisis 2) Historical trends in environmental education 3) The environment and environmental education and 4) Socially constructed ideas on the topics that need to be examined. A brief consideration will now be given to each of these areas.

a) The Environment Crisis

According to O'Donoghue modernist tendencies to reduce the earth's escalating environmental degradation problems to a single concern and that the idea that the

solution still lies in sustained economic growth are at last being questioned. Integrated, holistic approaches are required to tackle the problems and provide solutions.

b) Historical trends in Environmental Education

Regarding historical trends in E.E., O'Donoghue examines how E.E. seems to have developed from nature experience approaches to current approaches which show a concern for social processes that shape and reshape the way we see the world. E.E. is increasingly being viewed as diverse critical social processes of change.

The narrowness of the early approaches to E.E. led to some of them being softened and to E.E. increasingly being treated as a broad approach. In more recent years there has been more and more diverse approaches to E.E., many of which have not been well thought through in terms of their assumption about the environment and theories of teaching and learning.

According to O'Donoghue (op.cit.) a shift has also occurred from a sole concern for economic growth to the empowerment of people to improve their quality of life. A recent tension within this is an emerging economic policy that calls for sustained development rather than sustainable development or sustainable living.

c) The Environment and Environmental Education

According to O'Donoghue early E.E. assumed that the environment was there to be discovered through direct experience. O'Donoghue believes that the environment is socially constructed and that E.E. involves interactions with historical ideas and pressing issues through special processes involving touch, talk and thinking.

d) Socially constructed ideas that need to be re-examined

As in all fields, the socially held assumptions of the past come to be questioned as the field develops. According to O'Donoghue this is particularly necessary in environment and development education as many of the strongly held

assumptions about teaching and learning are doubtful and can cause confusion and problems. O'Donoghue examines five of these assumptions viz.

- * E.E. is a holistic methodology primarily concerned with the affective domain (values)
- * Free experiential immersion through use of the senses is E.E. at its best.
- * That indigenous wisdom from a past when people lived in conscious harmony in nature needs to be reawakened in people for an image of true sustainable living.
- * The shift from the outside expert planning for the people to the same outside expert now planning 'with' the people has not been sufficiently scrutinised.
- * The whole question of evaluation of development programmes needs to be looked at.

O'Donoghue concludes that many orientations and assumptions like the above which exist have been and still are core principles in environment and development programmes. He believes these need to be more closely studied before they can be easily implemented in school subject syllabi.

The concept of Education linked to Sustainable Living will now be examined and provides another aspect or facet to the concept of sustainability and sustainable development.

Regarding education for sustainable living, the Brundtland Report of the World Commission on Environment and Development (1987) argued that the world's teachers had a crucial role to play to bring about the extensive social changes needed for sustainable development. The 1980 World Conservation Strategy was quite explicit about the role of education in bringing about such changes. It argued that:

Ultimately, the behaviour of entire societies towards the biosphere must be transformed if the achievement of conservation objectives is to be assured. A new ethic, embracing plants and animals as well as people is required for human

societies to live in harmony with the natural world on which they depend for survival and wellbeing. The long term task of environmental education is to foster or reinforce attitudes and behaviour compatible with this new ethic. (IUCN, UNEP and WWF 1980: Section 13)

This message was repeated in *Caring for the Earth: A Strategy for Sustainable Living* which was prepared as the World Conservation Strategy for the 1990's (IUCN, UNEP and WWF 1991). *Caring for the Earth* argues that education has a vital role to play in ensuring that people learn, accept and live by the principle that

living sustainable depends on accepting a duty to seek harmony with other people and with nature (p.8):

Sustainable living must be the new pattern for all levels: individuals, communities, nations and the world. To adopt the new pattern will require a significant change in the attitudes and practices of many people. We will need to ensure that education programmes reflect the importance of an ethic for living sustainably. (IUCN, UNEP and WWF, 1991, p.5)

Agenda 21 is the internationally agreed report of the United Nations Conference on Environment and Development or "Earth Summit" which was held in Rio de Janeiro in June 1992. *Agenda 21* devoted a whole chapter to the role of E.E. in relation to sustainability:

Education is critical for promoting sustainable development and improving the capacity of the people to address environment and development issues....It is critical for achieving environmental and ethical awareness, values and attitudes, skills and behaviour consistent with sustainable development and for effective public participation in decision-making. (UNCED 1992, Chapter 36, P.2)

The theme of ecologically sustainable development which is central to all these calls for E.E. is also central to the vision of a desirable society held by many people today. However, the whole issue of education for sustainable living has not been readily addressed by educationalists. The whole issue of environment and sustainable development poses important questions for the future of human society and for those who teach for a just and sustainable future and those who are involved in the education of such teachers.

The social, economic, political and ecological imperatives of the concept and processes of sustainable development outlined in this section have established a renewed agenda

for E.E. which links it very closely with development education. The World Conservation Union (IUCN) has described this new direction for E.E. as 'education for sustainable living.' To obtain a clear definition of education for sustainable living, it is helpful to further define E.E. and development education and to uncover the links between them:

According to Stevenson (1987, p. 69), E.E. involves:

...the intellectual tasks of critical appraisal of environmental (and political) situations and the formulation of a moral code concerning such issues as well as the development of a commitment to act on one's values by providing opportunities to participate actively in environmental improvement.

A 1975 UN definition of development education states that the objective of development education is to enable people to participate in the development of their community, their nation and the world as a whole. Such participation implies a critical awareness of local, national and international processes.

Development education is concerned with issues of human rights, dignity, self-reliance and social justice in both developed and developing countries. It is concerned with the causes of under-development and the promotion of an understanding of what is involved in development, of how different countries go about undertaking development, and of the reasons for and ways of achieving a new international economic and social order.

There are strong similarities between these two definitions and, together, they may be seen as the core of education for sustainable living. Education for sustainable living is defined by the IUCN Commission on Education and Communication (1993) as a process which:

....develops human capacity and creativity to participate in determining the future, encourage technical progress as well as fostering the cultural conditions favouring social and economic change to improve the quality of life and more equitable economic growth while living within the carrying capacity of supporting ecosystems to maintain life indefinitely (p.6).

Many aspects of traditional approaches to E.E. contribute to education for sustainable living. For example, the UNESCO - UNEP International Environmental Education

Programme has often sought to integrate issues of ecological sustainability and social justice. Also, the preamble to The Belgrade Charter (UNESCO - UNEP 1976) concerned itself with directing E.E. at solving the social and environmental problems that flow from poverty, hunger and exploitation:

Inequality between the poor and the rich among nations and within nations is growing and there is evidence of increasing deterioration of the physical environment in some forms on a world-wide scale...

What is being called for is the eradication of the basic causes of poverty, hunger, illiteracy, pollution, exploitation and domination. The previous pattern of dealing with these crucial problems on a fragmentary basis is no longer workable...

It is absolutely vital that the world's citizens insist upon measures that will support the kind of economic growth which will not have harmful repercussions on people; that will not in any way diminish the environment and their living conditions...

We need nothing more than a new global ethic - an ethic which espouses attitudes and behaviour for individuals and societies which are consonant with humanity's place within the biosphere...

It is within this context that the foundations must be laid for a world-wide environmental education programme that will make it possible to develop new knowledge and skills, values and attitudes, in a drive towards a better quality of environment and, indeed, towards a high quality of life for the present and future generations living within that environment (UNESCO-UNEP 1976, pp. 1-2).

However, education for sustainable living requires a reconceptualisation of some aspects of E.E. and some of the assumptions upon which it has often been based. Technocentric approaches to environmentalism which favour initiating young people into the concepts and skills needed for finding scientific and technological solutions to environmental problems without addressing their root social, political and economic causes (eg. see Huckle 1983, Fien 1992 b) need to be re-examined.

It is the contention of this study that E.E. and E.E. programmes in teacher education need to reflect alternative approaches which value diverse ways of knowing, identifies with the people and communities they purport to serve, and respect community-based approaches to social change. Education for sustainable living is one such

reconceptualisation of E.E. and is compatible with the education for the environment approach to E.E. discussed earlier .

The relevance and applicability of the concepts E.E., development education, sustainability and education for sustainable living to a new secondary school Geography syllabus in South Africa cannot be questioned and careful consideration will be required to optimise the value of these concepts in the syllabus.

3.6 IDEOLOGIES OF ENVIRONMENTAL EDUCATION

Arising out of the various definitions of E.E. referred to in section 3.4 of this chapter are three distinct approaches (ideologies) to E.E. which will now be discussed. The three broad paradigms which are frequently cited in the literature are education in, for and about the environment (Robottom 1987). Each paradigm represents varying ideologies, descriptions of the nature of environmental problems, and solutions (Huckle, 1983). The following table summarises each of these approaches to E.E.:

Education about the Environment

- * Provides understanding of how natural systems work
- * Provides understanding of the impact of human activities upon them
- * Develops environmental investigation and thinking skills
- *

Education in the Environment

- * Gives reality, relevance and practical experience to learning through direct contact with the environment
- * Develop important skills for data gathering and field investigations
- * Develop aesthetic appreciation
- * Fosters environmental awareness and concern

Education for the Environment

- * Builds on education in and about the environment

- * Develops an informed concern and sense of responsibility for the environment
- * Develops an environmental ethic
- * Develops the motivation and skill to participate in environmental improvement
- * Promotes a willingness and ability to adopt lifestyles compatible with the wise use of environmental resources.

Table 6: Approaches to Environmental Education

Source: Fein (ed.), 1993, p.1.13

The following table lists seven objectives of E.E. and differentiates which objectives are covered in, for and about the environment (Table 7):

Seven Objectives of Environmental Education

1. Information about the environment
2. Studies of humans and the environment
3. Skills to investigate the environment
4. Positive attitudes to the environment
5. Investigating and clarifying environmental viewpoints and values
6. Environmental problem-solving
7. Taking environmental action

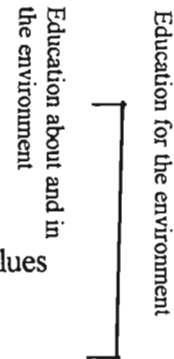


Table 7: Seven Objectives of Environmental Education

Source: Fein (ed.), 1993, p.1.14

Education in the environment is a pedagogical technique that uses the environment as a context for conventional studies. According to Robottom (1987) the underlying objectives of such activities is to increase environmental awareness through experience in mostly natural settings. Activities in the environment tend to be learner-centred and may include such skills as observation, use of photographs and use of scientific measuring instruments. Education in the environment can make a meaningful contribution to E.E., if taught by persons who are familiar and comfortable with its attendant philosophies, and if it is balanced with other forms of E.E.

Education about the environment is essentially a conservative pedagogical practice (Huckle, 1983). It incorporates applied ecology and empirical data to plan and manage the environment. At its most conservative level, education about the environment promotes

environmental study based on the technical rationality of the natural sciences, especially ecology, biology and botany. More liberal approaches involving enquiry - based investigations may be found in subjects such as Geography and environmental studies. Education about the environment presents opportunities for the collection of data, which may assist those acting for the environment.

Education for the environment incorporates elements of the previously described paradigms to promote the active conservation of the environment. The ideology underlying this approach is radical environmentalism, which views environmental problems as symptomatic of modern industrial society (Huckle, 1983). Education for the environment investigates environmental problems with the aim of resolving them. Students develop in them an informed concern for the environment. Additionally, they are taught skills that will assist their participation in environmental politics. Education for the environment faces several criticisms. One of these is that it suggests that humans understand what is good for the environment rather than that humans should learn to live with environments.

Another criticism is that it places insufficient emphasis on values clarification.

Whilst such criticisms are useful in helping educators to refine their teaching, Huckle (1993) states that only education for the environment offers teachers the theory and practice with which to make a genuine contribution to environmental well-being. He also acknowledges that it is highly unlikely that the E.E. found in any school will be a pure reflection of any one of the three forms of E.E. Fien (1992) has argued that education in and about the environment is limited to the skills and knowledge which can be supplied to support the intentions of education for the environment.

Based on these assertions it would seem appropriate that policies focussing on the incorporation of E.E. into the South African educational system be based on an education for the environment approach.

The sets of principles of E.E. developed by Huckle (op.cit.) and Fien (op.cit.) are worth further consideration at this point as they both espouse an education for the environment approach.

- a) Huckle's (1991) "socially critical" principles of E.E. which are more specific and radical and introduce the idea of a 'new social order'; an influence flowing from an interest in critical theory. These ideas suggest a link with the education for the environment approach to E.E. referred to earlier in this chapter and discussed in more detail in the next section of this study. Relevant extracts from Huckle's characteristics of socially critical pedagogy (1991) now follow:
- (i) learning is active and experiential
 - (ii) classroom dialogue introduces elements of critical theory and encourages pupils to think critically
 - (iii) pupils reflect on the structural and ideological forces that influence and restrict their lives and on democratic alternatives
 - (iv) pupils are taught how to act democratically with others to build a new social order (Van Rensburg and Shongwe, 1994, pp. 11-12)
- b) Fein's Core values for Environmental Education which reflects the historical shift towards recognizing the role of human rights and democracy in matters of the environment. Fein sees social justice and ecological sustainability as two sides of the same coin.

Fein's Core Democratic Values:

People and nature : Ecological sustainability

- * interdependence
- * biodiversity
- * living lightly on the earth
- * interspecies equity

People and people: Social justice

- * basic human needs
- * inter-generational equity

- * human rights
- * participation

Fien's ideas also suggest a compatibility with an education for the environment approach with his emphasis on sustainability, environmental ethics and social justice.

Thus we see that a broader and perhaps more productive understanding of what E.E. is about has come through interaction between the understandings of environmental activists, scientists, developers and educators. There is an increasing move towards including the understandings of "ordinary people" in an inclusive process of co-constructing solutions to environmental problems.

The work contributed by Fien, Rowbottom and others displays the development which has occurred in Australia in the field of E.E as has already been mentioned. Much sound work has been achieved by the Department of Education in Queensland in the development of E.E. Importantly, they see the stress in effective E.E. programmes as being on skills, attitudes and values and knowledge, in that order. Work has also been done on appropriate teaching styles for E.E.

An important contribution to this debate has been made in discussions of 'green' education. In exploring 'green' education Randle (1992) has also concerned himself with these three different approaches to E.E. He believes that young people growing up today are trying to make the best of their lives among deepening crises on several fronts including the ecological crisis which brings threats via species-loss, land-loss, human food-supply loss, and the poisoning of their planet. Many thousands of educators, in the U.K. and around the world, have been deciding that the sensible response for them in their work is a 'green' one, or one incorporating a lot of 'green' philosophy. People need to co-operate with, and care for, the earth.

The 'green' position emphasises education for, rather than from or about the environment. Much education in and about the environment was and still is about naming things and lip service has been paid to learning to act for the environment without really trying to have a deep effect on the pupils as whole people. E.E.'s primary aim is to change people, such that their impact on the environment is radically

different as a result of having undergone its programmes. Education is regarded as one way of bringing about a transition to new forms of economy and society with changed relations between society and nature. E.E. which claims to be for the environment need to clarify certain issues. According to Randle (1992 p.16):

Yes, economic production and development must be ecologically sustainable and natural elements have a significant contribution to make to people's environmental well-being. But, if we are to provide a relevant education for the environment, we must deal with the everyday environmental realities which face most of our pupils and the means by which they might be transformed. This means putting human ecology in a wider context than many greens are prepared to acknowledge. It means redefining the meaning of environment to include the economic, political and social environment, and giving greater attention to those special processes which shape the world we live in.

He continues (p.18)

Education for the environment of ordinary people is then about revealing how the world works and how it might be changed. It is about critically examining the economic and political processes shaping the social use of nature within different, but inter-related societies and helping pupils recognise the struggles or those working for greater democracy and an improved environment. Much more difficult than attacking growth, industrialism, consumerism, etc. ..., but ultimately much more rewarding.

Randle believes that (p.23):

The battle for democracy in education does however continue, and green teachers should realise that education for the environment can only succeed if the power of examination boards, publishers, inspectors, local authorities, professional associations, and others are reduced and the powers of parents, teachers and communities increased. The struggle for democracy and socially useful production in schools resembles that in the wider world.

'Green' teachers, Randle believes, can make a more realistic contribution to environmental well-being, and the transition to a just and ecologically sustainable society, if they change their understanding of environment, society and politics. They must ensure that their teaching materials and approaches are more realistic and central to the key political debates taking place in education and society.

3.7 EDUCATIONAL SIGNIFICANCE AND IMPORTANCE OF ENVIRONMENTAL EDUCATION

Cowie (1988) stated that it is only comparatively recently that the concept of E.E. has made its appearance in the curriculum. More and more people are realising that it is urgently necessary to give greater attention to the conservation and responsible utilization of the environment. E.E. is the consequence of this, and it is gradually acquiring a very important, indeed fundamental, place in the curriculum of schools throughout the world.

It is the contention of this study that E.E. should really not be regarded as an ordinary "subject" like Science, History and the rest with a specific syllabus. It is much more interdisciplinary by nature and is really an approach to education and, as such should be integrated into as many subjects as possible. This should be done by planning and implementing E.E. programmes with a holistic approach so that most, indeed all, school subjects can be involved.

E.E. is thus essentially an enrichment programme with specific aims to which all pupils should be exposed. At the same time, it offers an outstanding opportunity for children with exceptional needs to satisfy their specific requirements.

E.E. deals with mankind and the environment. It is not limited to any particular phase of education; it is for everybody, both old and young. In this study, however, we will be focusing on the school-going child.

The aim of E.E. is to make people more aware of the importance of their relationship with the environment. Awareness must lead to concern, so that the problems related to man and his environment can be appreciated. By acquiring greater knowledge of the environment and by developing skills, the right attitudes and motivation can be developed towards the solution of existing problems and the prevention of new ones.

Knowledge of the environment, skills in dealing with problems, and right values can contribute towards cultivating a responsible lifestyle in harmony with the total environment.

Similar ideas on E.E. are contained in an article titled E + E = A B C in the April 1986 edition of Conserva which sees the purpose of E.E. as to provide planned learning

programmes which impart knowledge, skills and values to participants, in order to develop in them responsible lifestyles that will be in harmony with the total environment. A planned learning programme is then required which needs to concern itself equally with the three inter-related aspects of learning - knowledge, skills and values. The articles lists six principles which should be incorporated in E.E. 1) E.E. is a life-long process beginning at pre-school level and continuing through all formal, informal and non-formal states of education. 2) E.E. must consider the environment in its totality and not focus on any one aspect of it. 3) E.E. must be inter-disciplinary in approach. It is not the preserve of any one subject in the curriculum. 4) E.E. must encourage active participation by learners. 5) E.E. must be relevant to the learner's immediate surroundings and culture. 6) E.E. programmes must stress individual responsibility towards the environment. These six principles of E.E. should have an influence on all E.E. in South Africa and can help make E.E. the A B C of South African education. Certainly their incorporation in school based E.E. programmes will go a long way towards achieving their desired success and need to be noted by all concerned educationists.

Problems of acceptance have been experienced by E.E. in many school curricula in different countries. Despite its great potential as a tool of raising awareness for sustainable social, political and economic development, E.E. has not yet been widely accepted and implemented in schools, especially in developing countries. Today, there is a large gap between the level of the use of E.E. in the curricula in the industrialized countries on the one hand, and in developing countries on the other. The latter are lagging far behind and the main reasons for this are summarised by Muyanda-Mutedi and Yiga Matovu (eds.) (1993):

1. Lack of Official Recognition

Globally, less than a quarter of the nations have effectively implemented E.E. strategy in school curricula. Most of the world's developing and least developed countries are among the remaining 3/4 that have not implemented E.E.

2. Lack of Funds

This problem which is persistent in developing and least developed countries presents a major hurdle to the development of E.E. Normally no special allocations exists. As a result of this, the purchase of teaching materials and the execution of field work become quite difficult.

3. Lack of Infrastructure and Resources

There is an acute lack of infrastructure and resources to support and sustain the development of E.E. in these countries. While, for example, resources such as audio visual materials, textbooks, teaching resources and the packs are plentiful in North America and many Western European countries, they are largely unavailable in the majority of developing nations, let alone the least developed countries.

The factors summarised above are not exhaustive and a number of other problems can be identified and included. One such problem is the lack of adequately trained personnel, especially in developing countries like South Africa where most teachers have not have any formal training in E.E.

Largely due to a lack of this training, they are reluctant to teach a wide range of environmental topics in schools. They also hesitate to embark on a field of study where they might be required to respond to questions they are incapable of handling. However, in some African countries some commendable progress has been made. Only a few examples will be cited here as a more detailed discussion on this occurs in a later chapter of this study.

In general, in African countries where E.E. has gained a position in school curricula, it is taught either as an integrated dimension of other subjects like social studies, Geography, science, agriculture, or as a distinct discipline. In Botswana the Junior Secondary school syllabus provides a good example where E.E. is taught as an integrated dimension of another subject. Other countries with a similar approach include, for example, Tanzania and Kenya. Muyanda-Mutedi (1993) referred to earlier is a Kenyan social scientist who argues that E.E. best fits into a social studies course in the curriculum. In Zimbabwe, however, E.E. is taught as a separate subject in the primary schools. Chapter Four of this study will discuss further the position of E.E. in the school syllabi of selected African countries.

3.8 THE POSITION OF ENVIRONMENTAL EDUCATION IN SOUTH AFRICA

Focus will occur in this section on the position of E.E. in South Africa as represented by formal structures of the establishment. The important contribution of the non-formal sector is not considered at this point.

Much work has also been done by the South African Department of the Environment and its Council of the Environment on formulating objectives, principles, aims and goals of E.E. The Council for the Environment (1989) in a document titled An Approach to a National Environmental Policy and Strategy for South Africa identified certain objectives and principles for E.E. in South Africa

According to the document objectives of E.E. are to:

- * develop by means of a continuous learning process responsible lifestyles in harmony with the environment in its totality and
- * create the awareness that an acceptable quality of life is dependent on wise utilization of the environment.

Principles for E.E. include:

- * considering the environment in its totality
- * accept E.E. as a continuous lifelong process beginning at pre-school level and continuing in formal, informal and non-formal education
- * include an inter-disciplinary approach
- * examining major environmental issues
- * stressing both individual and collective involvement and the importance of public participation.

The aims, objectives and principles of E.E. as identified by the Council appear in an Extract from the Council for the Environment Annual Report in 1989:

The aim of E.E. is to stimulate education processes that develop responsible life-styles in harmony with the environment as a whole, on the part of the inhabitants of the Republic of South Africa, and that make them aware of the fact that an acceptable quality of life is dependent on their judicious utilization of the environment.

The objectives are to make the population aware of the various elements of the environment and their inter-relationships, and the need for a healthy environment for the survival of mankind, and to motivate people to accept responsibility for the environment and to cultivate the necessary knowledge and values in order that solutions may be found.

Regarding principles E.E. should -

- * consider the environment in its totality; natural and manmade phenomena, their interdependence and the ecological, socio-economic and cultural processes that effect them, that is, all elements that have a bearing on human lives and the relationships between these elements;
- * be a continuous lifelong process; it should commence at pre-school level and continue in the formal, informal and non-formal education sectors;
- * be interdisciplinary in approach, characterised by a balanced outlook that emphasises the complexity of the inter-relationships and problems of the environment;
- * encourage active participation in learners of all ages by using diverse learning environments, a broad spectrum of education approaches and all the available teaching aids to prevent and solve environmental problems;
- * examine major environmental issues by focussing on current and potential situations and on the learner's immediate surroundings and culture and relating topics under discussion to provincial, regional, national and international issues and perspectives; and
- * stress individual responsibility towards the environment by emphasising both individual and collective involvement and the importance of public participation

Further principles identified by the Council are:

- * E.E. should be applied on the formal, non-formal and informal educational levels.
- * Formal E.E. should be interdisciplinary in its approach and should be accommodated in all existing subjects.
- * Education, where applicable, should be approached from a conservation perspective.
- * E.E. programmes should be designed in such a way that the needs of different target audiences are met.
- * E.E. should emphasise the compatibility of protection and development.

The Department of the Environment has also provided the following suggestions on how one could take part in E.E. activities and programmes:

Through -

- participating in outdoor education
- undertaking educational tours and excursions
- utilisation of hiking trails
- visits to museums, nature reserves and national parks
- membership of conservation and cultural organisations and hiking clubs
- participating in environmental competitions
- formation of conservation clubs/organisations
- participating in local conservation actions
- beautification of school premises
- participating in National Arbor Day (2nd Friday in August)
- participating in Environment Week and World Environment Day (5 June)
- participating in National Marine Day (1st Friday in December)
- consulting your local library/reading on environmental matters
- implementing environmentally orientated subject instruction
- applying conservation principles in everyday life , e.g. by preventing littering,

water wastage, excessive electricity consumption.

These activities as well as earlier stated objectives and principles reflect a rather conservative view of E.E. on the part of both the Department and Council of the Environment. Green thinking, for example, would not disapprove but would advocate a programme which would go much further.

The contribution made by the Department and the Council over the years needs to be acknowledged. However, it would seem that the particular view of E.E. held by the Department and the Council was essentially a conservative one, embracing the principle of E.E. included in education about and in the environment discussed earlier by Robottom (1987). A greater emphasis on education for the environment principles may well have increased the effectiveness of the Department and Council's work in South Africa.

The Department and Council have also played a role in helping to formulate the position of E.E. in the formal curriculum in South Africa. It has already been emphasised (Cowie 1988) that E.E. will have to be given an increasing priority in education to ensure both the quality of life of mankind, and perhaps even its continued existence. According to the Council of the Environment (1989) Teachers must ensure that:

1. all pupils are exposed to enrichment programmes which have E.E. as a basis during their school careers.
2. the programmes are well planned and co-ordinated to meet the requirements of the pupils.
3. the aims and guidelines discussed earlier are applied. The environmental ethic, in particular, can easily be overlooked, and is indeed presently lacking in many environmental studies.

The Council of the Environment states that E.E. can be included in the curriculum in various ways:

1. by ensuring that E.E. filters through to the different branches of the school curriculum as well as the extra-mural activities of all schools. This involves not only the teaching of specific themes from the environment, but also the exploitation of "teachable

moments" in the curriculum which the teacher can use to make pupils aware of the importance of the environment and the necessity of using it with care.

2. It is unnecessary to offer E.E. as a separate subject. Application across the curriculum requires, however, that teachers themselves should be environmentally aware. It demands, further, a clear school policy towards E.E. and thus the wholehearted support of the principals and their management teams.
3. by making adaptations to the syllabi of different subjects to include appropriate additions dealing with E.E. A few subjects have already done this.

The implementation of this requires that members of subject committees and education authorities must be convinced of the necessity of including relevant topics dealing with environmental affairs and E.E.

4. by offering interdisciplinary enrichment and extension programmes based on E.E. There are a host of themes from which to choose. Activities can meet the basic requirements of enrichment and extension education and at the same time satisfy the aims of E.E.

Carrying this out requires knowledge of curriculum development for enrichment and extension, knowledge of the principles on which E.E. is based, and an organized programme in the school so that all children can profit thereby.

5. by offering E.E. as a "short course". In some education departments, short, specialized courses are offered in different subject areas which do not normally appear in the curriculum. Such a "short course" in the form of a module could be offered, for instance, for one lesson a week for a period from six weeks to a term. Usually it is not examinable, and pupils have a choice between different modules. A proposed syllabus and hints on its implementation is provided by the Council. To implement this, the school programme needs to be set up to incorporate a modular system.

According to the Council of the Environment the primary focus of E.E. must be on attitude formation, value judgements and the development of skills in order to cultivate individual and group lifestyles which are in harmony with the environment. Sensitivity towards the

environment can only develop from knowledge of it. Knowledge and sensitivity lead to concern. One must strive to cultivate the right values in children. The aim must be to cultivate rational and positive attitudes towards the environment, so that people can realize that everyone has a personal and social responsibility for their behaviour towards it.

These sentiments are admirable as has been the already mentioned contribution over the years of the Department of the Environment and its Council for the Environment. However, the efforts of these bodies have been constrained by the essentially conservative political policies of the National Party Government and the meagre allocation of funds allocated to them.

3.9 THE RELATIONSHIP BETWEEN GEOGRAPHY AND ENVIRONMENTAL EDUCATION

A brief consideration now needs to be afforded to the relationship which exists between the two 'subjects' dealt with in this and the previous chapter, viz. Geography and environmental education.

According to Bailey (1994) Geography is an environmental study par excellence. Maps are an important tool used by Geographers and represent, on paper, all kinds of environmental relationships, past and present, direct and indirect. They also offer rich sources of raw materials for E.E.

Data-gathering skills used by Geographers also seek out and interpret environmental information. Places and themes are also important aspects of Geographical study. Places are environments and the study of Geography allows environmental issues to be discussed constructively. All aspects of Geography draw together under the heading of Environmental Studies and one is reminded that human actions are inescapably related to the well-being of the natural world. Geography and E.E. teach us that human beings must learn to understand and moderate their interventions in the natural world if the human race is to survive. Earth is neither an inexhaustible or an indestructible resource.

Renwick (1988) also provides a meaningful paper on the relationship between Geography and E.E. He states that many of the concerns of E.E. coincide closely with those of Geography. Of prime importance to both are the interactions between people and the

physical, built and biological environments. Central to both environmental education and Geography is the desire to encourage an interest in the environment and to build up knowledge and understanding of the processes shaping it.

A study of the aims of Geography shows that the subject is concerned with helping pupils make sense of their surroundings; it helps them to gain a better appreciation and understanding of the variety of human conditions on the earth's surface. It is particularly concerned with the character of places and the role modifying, creating and interacting with environments. Whilst the most significant contributions are likely to be in the human and social area, the subject is also concerned with the understanding of natural environments and the physical processes which lead to environmental stability or change. Without an understanding of the processes operating in natural systems such as landforms, weather and climate, vegetation and soils, pupils will be unable to make sense of the relationship between people and environments.

As has been seen in the earlier analysis of geographical studies, they help pupils:

- * to appreciate the importance of geographical location in human affairs and to understand how activities and places are linked by movements of people, materials and information and by complex economical, social, political and physical relationships;
- * to construct a framework of knowledge and understanding of their home area, their own country and other parts of the world, which will enable them to place information within appropriate geographical contexts.

Geography, of course, is not unique as a subject in its attempts to build up an awareness, knowledge and understanding of the world in which we live. It does have a particular role to play in its emphasis on the importance of place, space and scale in the organisation of human activities.

Also, most environmental problems have a spatial dimension and it is this which makes the geographical perspective so important. In its concern for place, space and scale, a school Geography course ensures that study of the environment takes place at a variety of levels (local, regional, national, continental and global) and in a variety of contexts. By the careful

selection of examples, an understanding is built up, albeit from a particular perspective, of the patterns and forms, processes and relationships found within particular environments; the spatial interaction within and between these are explored. In this way it is hoped that pupils will become "sensitive to the richness and variety of the earth's diversity".

Geographical education, however, as has already been stated, is not now seen merely in terms of knowledge and understanding.

This recognises that important topics in the subject have obvious social and political dimensions. They cannot be properly understood without taking into account the attitudes and values of those involved in making decisions about the management of environments and the use of terrestrial space. In this way school Geography increasingly addresses itself to the moral response to environments which inevitably leads to judgements of what is right and wrong. It awakens concern and care for the quality of present and future environments, natural and people-made, local and global. One cannot encourage informed concern for the environment without making efforts to arouse responses to the experience of environments. The importance of sensory experiences, emotional responses and the need to encourage the importance of form, texture, colour, detail and patterns as prerequisites of aesthetic development are all evident by the frequent inclusion in fieldwork of perception exercises and landscape evaluation. In this respect Geography plays its part in the ethical purpose of environmental education. Hopefully the outcome of this response to, and concern for, the environment will be reflected in action - considerate behaviour, practical improvement work and positive participation in decision-making processes.

In this way, Geographical studies in schools have an important part to play in the education of young people by making a significant contribution to their response to, understanding of, and concern for the environment. All three elements should be covered in the Geography syllabus - from infant to upper secondary - although probably in different proportions. In the early years, responding to direct experience of the local environment is likely to predominate, but not to the total exclusion of understanding and concern. For older pupils the scale will be extended to include regional, national and global issues with greater emphasis placed upon understanding and concern.

If Geography is to maximise its contribution to environmental education, the choice of content of the syllabus should reflect the need for:

- a) a balanced development of knowledge and understanding about four important themes:
 - (i) people, populations and their activities;
 - (ii) resources and materials, their use and misuse;
 - (iii) places, landforms, the processes forming them
 - (iv) and their use;
 - (v) living things, ecosystems, their manipulation,
 - (vi) modification and use;
- b) a study of environments at a variety of scales - local to global;
- c) a choice of themes and environments that:
 - (i) demonstrate environmentally important concepts, generalisations and laws;
 - (ii) give opportunities for involvement in making value judgements, dealing with issues and decision making;
 - (iii) allow for the progressive development of environmentally related skills.

This is essentially an ecological approach to the subject which makes contemporary people/environment issues at various levels of scale the focus of course construction. This point was stated in the previous chapter of this study and will be discussed further in Chapter Seven. A study of such issues involves not only a grasp of the mechanics of environmental processes, but also of one's own and other people's stances in relation to an issue, and the processes of negotiation and decision-making which may occur. This is the perspective adopted by the Geography 16 -19 Project in the United Kingdom, but many other courses have shown that such an approach can be handled by pupils from the beginning of their formal geographical studies if they are presented at the appropriate level.

Geography will only play its full part in E.E. and achieve the aims and objectives outlined above if it adopts teaching/learning processes which recognise young people as active rather than passive participants. If the emphasis is placed on the problem-solving and enquiry-based method described below, pupils will be given adequate opportunities to carry out practical investigations, to explore and express ideas, to apply ideas and skills to new situations, to interpret, analyse and evaluate information, and to reflect their own and other people's attitudes and values.

The teacher 'manages' this learning situation - carefully balancing what pupils can find out and do for themselves against what they need to have their attention drawn to and providing opportunities for them to acquire any additional skills they may require. In addition suitably designed role-play games and simulations can help pupils examine environmental decision making and the attitudes and values which influence these.

Of necessity, and as has already been stated, the success of future Geography teaching in South Africa will depend too a large degree on the extent to which the characteristics discussed above are implemented.

Geography in schools can make important contributions to E.E.. It has a vital role to play, ideally as a separate subject or in an interdisciplinary situation, in:

- (a) influencing the choice of issue or problem;
- (b) emphasising spatial considerations;
- (c) seeking to establish as exactly as possible the inter-relationships of societies and environments;
- (d) employing as profitably as it can the full range of geographical concepts and skills.

By doing so it is believed we should achieve the fullest understanding of the environments people create and of the links behind those environments to the natural world. We may also ensure that the environments of tomorrow will be better than those of today. It is the contention of this study that this should constitute the central focus of any new school Geography syllabus in South Africa.

3.10 CONCLUSION

This and the previous chapter has attempted a review of literature both past and present in the fields of Geographical education, E.E., and secondary school curricula/syllabi. The overview has been accomplished through mainly secondary archival and documentary research and will provide a background to a more detailed and specific analysis which follows in later chapters of this study. (e.g. Chapter Six where primary documentary research on important documentation on E.E. in South Africa has been undertaken).

Broadly speaking the main issues that Chapter Two raises are the process orientation and dynamism of current theories in Geographical education, the strong emphasis on Humanism and the combination of inductive and deductive strategies, the relevance of the subject to vocational training and an increasing emphasis on the experiential aspect of Geographical education. In this chapter, regarding E.E., trends to emerge were the growing prominence of this approach to education as well as the acceptance for a more encompassing notion of what the approach is all about. The study of development concerns and sustainability revealed a close affinity to the ideals of E.E. programmes. The international as well as local perspectives on the areas covered as well as the relationship which exists between the component areas considered in this and the previous chapter, provides insight into what should be included in a new Geography syllabus in a future South Africa.

CHAPTER FOUR

LITERATURE REVIEW : ENVIRONMENTAL EDUCATION IN THE SECONDARY SCHOOL SYLLABI OF SELECTED COUNTRIES - AN EXAMINATION

4.1 INTRODUCTION

This chapter represents an extension of the literature review chapters and will attempt using both primary and secondary documentary sources a spatial overview of the state of E.E. in the syllabi of a selected number of countries, both 'developed' and 'developing'. Focus will be placed where possible specifically on the Geography syllabi of the countries concerned. A brief study of the United Kingdom, Australia and Sweden provides a Euro-centric perspective. An arbitrary decision has been taken concerning the selection of these three particular countries but a review of available literature reveals the advanced nature of E.E. programmes operating in these countries as well as the fact that most of the literature emanating from them is in English and therefore easily incorporated in this study. In contrast a study of E.E. in three African countries viz. Namibia, Zimbabwe and Kenya provides an African perspective, which this study suggests may provide a better model for South Africa. Once again a fairly arbitrary decision has been taken of the African countries selected, although current literature would seem a relatively more advanced state of E.E. programmes within their borders.

4.2 GEOGRAPHY AS A VEHICLE FOR E.E. IN BRITISH, AUSTRALIAN AND SWEDISH SCHOOLS

Geography, as taught in British, Australian and Swedish schools provides a good vehicle among the existing school subjects to promote education for the environment. A brief consideration of the situation in these countries provides an interesting comparison with the position in various African countries as well as South Africa, which was dealt with in a historical way in Chapter Two.

In January 1984 the Secretary of State for Education and Science in Britain called for an explicit definition of the objectives of each phase and of each subject area of education. The British Geographical Association established a working party to consider teacher

expectations of pupils in the Geography curriculum at age 7+, 11+, 14+ and 16+. The working party stated at the outset that there were a number of difficulties inherent in expressing statements about what is expected from pupils. First, whilst the working party acknowledged the Secretary of State's desire for teachers to have high expectations of their pupils, attention was paid to varying levels of pupil ability. Also, it was found to be helpful to define expectations in terms of the experience that pupils should have undergone leaving it implicit that pupils would develop their potential to the best of their ability within the opportunities created through those experiences. Secondly, the working group were aware of the diversity of curriculum frameworks that exist in different schools and between different phases of education. Much work in the primary phase is closely related to the acquisition of broader concepts and skills, for example in language, number and problem-solving. The brief statements of expectations in Geography at this phase reflects this. At each phase, some of the statements refer to experiences as described above, whilst others refer to specific skills or knowledge. Others refer to the attitudes and values about people and places which children should be developing as they mature. The statements are not in any order of importance. No attempt was made to establish 'criteria' for assessment.

The list provided in Appendix III represents a number of broad statements about what was thought was reasonable to expect of children in their Geography course. It was recognised however, that local constraints (including those on resources) may make some of the expectations unreasonable. There is clear evidence of 'progression', but in the time available to the working group it was not possible to articulate more carefully the ways in which pupil learning might advance with each successive phase of schooling. It was emphasised that in order to make a worthwhile contribution to the development of children's understanding of the world, these expectations should be seen as referring to a continuous course or courses throughout the 5 - 16 curriculum. At each phase there should be clear agreement between teachers about the elements of preceding and succeeding phases in order to minimise unnecessary repetition or gaps and to maximise reinforcement or earlier learning.

A review of national curriculum Geography reveals that environmental Geography appears as a separate course at AT5 level. A call is made for Geography teachers to be more aware of the

environmental Geography they teach and enable them to revise their curriculum content in ways which promote education for sustainability.

In Australia progress is being made in the implementation of E.E. into the school curriculum. An important step was the publication in 1993 of a curriculum guidelines document on E.E. by the Queensland Department of Education. The document was aimed at helping teachers incorporate E.E. in their teaching and professional practice. The document sees E.E. as helping to promote learning experiences that are consonant with the students' intellectual, physical and emotional capacities and graded according to their previous experiences. The document identifies characteristics of students at different stages of schooling, the implications of each characteristic for the different stages of schooling, and sample activities. Such information provides a useful start in the quest to develop appropriate school-based syllabi for E.E. Currently no formal E.E. syllabus exists in Queensland Secondary Education and the informal nature of the subject remains unregulated in schools. This is a situation which, it is hoped, will be rectified shortly.

E.E. has relevance in all curriculum areas, so many opportunities exist for its inclusion in current as well as future programmes in Australia. A study of the relevant documentation reveals that the following ideas have been formulated by the Department of Education in Queensland in its Guide on Environmental Education (1993, pp.15-16):

The national curriculum has sought to organise learning and teaching in schools into eight curriculum areas. These are Studies of Society and Environment (SSE), Science, Health, Technology, English, Arts, Languages Other Than English (LOTE) and Mathematics. Each of these areas spans the P-12 range.

Environmental education is a cross-curriculum area of learning. Four of the above-mentioned areas, namely SSE, Science, Health and Technology, have been identified as essential areas with which to incorporate environmental education. However, English, Arts, LOTE and Mathematics can also incorporate environmental education by using environmental contexts for developing skills in these areas.

The area known as **Studies of Society and Environment** encompasses the broad range of learning and subjects in social education and environmental education. These learnings and subjects include numerous integrated, single-disciplinary and multidisciplinary courses of study, such as Social Studies; Social Education; Study of Society; Citizenship Education;

Political, Legal, Business, Religious, Tourism and Marine Studies; History, Geography; and Economics.

Incorporation of environmental education with this area is evident when investigating, for example:

- * the diverse ways in which different cultures and societies and their subgroups respond to, use and value the environment;
- * The social and environmental implications of energy use in the past, present and future;
- * The rights and responsibilities of individual citizens, social and business organisations and governments regarding practices that affect the environment;
- * The interconnectedness of ecological, social, political, legal and economic systems, such as the way that policy relating to one system affects all other systems (including not only the air, soil and water but also the people and other living things that constitute these systems);
- * the impact of such developments as tourism, agriculture and urbanisation on marine and terrestrial environments;
- * the cultural and religious significance of the Earth to indigenous peoples, including, in Australia, Aboriginal people and Torres Strait Islander people;
- * the concepts of ecologically sustainable development, stewardship and conservation and their contested nature;
- * the role of values in conflicts about environmental and developmental issues;
- * the ethical implications of political, social and economic decisions affecting the environment.

According to Martin (1993) schools and higher education institutions in Sweden have developed a wide range of innovative and demanding curricula to meet the objectives of Sweden's environmental policy. E.E. in state schools is taught principally through biological science, although social studies are beginning to occupy a substantial component of the environmental curriculum. Upper secondary schools offer more opportunities to develop environmental awareness, understanding and practical skills than comparable sixth form and post-secondary colleges in England. In Sweden there is a strong emphasis on practical work developed through projects based on contemporary environmental issues and their resolution. The development of E.E. has

been well supported by a substantial input of new resources, especially materials developed by the Swedish Environmental Protection Agency and Industry. Universities have also begun to adopt new organisational structures to help develop inter-disciplinary teaching and research teams. Several universities are experimenting with 'common core' courses, parts of which comprise environmental elements. Some universities have introduced new organisational structures to help promote the inter-disciplinary research and teaching that is necessary in the development of E.E. in higher education. The curriculum for initial and in-service teacher training is also taking on a more dominant environmental dimension. Special environmental electives are provided for trainee teachers including appropriate practice at schools with a proven record of environmental and ecological teaching. Also, various government agencies, notably the National Environmental Protection Agency, offer an excellent range of support to in-service training as well as helping to find a national network of specialised environmental teachers who schools can draw on.

4.3 THE POSITION OF E.E. IN THE SCHOOL SYLLABI OF SELECTED AFRICAN COUNTRIES

A review of both primary and secondary documentation on secondary school syllabi in various Southern African countries reveals varying commitments to E.E. and provides a useful backdrop to the situation in South Africa. A South African Development Community Workshop on E.E. was held in Windhoek, Namibia, in March 1994. Most of the information discussed in this chapter has been obtained from documentary reports of the workshop proceedings as well as documentation which was made available to the delegates.

Focus will be placed on the experiences of Namibia and Zimbabwe, two neighbouring countries which have fairly recently undergone political changes not unlike those through which South Africa is presently going. The implications of both the Namibian and Zimbabwean experiences for the transforming South African educational system and Geography secondary school education in particular, are important. The experiences of Kenya, a country not represented at the SADC workshop referred to

above will also be briefly considered, for here we find a country which has a strong emphasis on E.E. in the secondary school Geography syllabus.

4.3.1 Environmental Education in Namibia

Background

The growth and development of E.E. in Namibia has progressed since Independence in 1990. Pre-Independence constraints, including the constrictions of the apartheid system, have been largely overturned, and the reconstruction efforts of the new government, supported by considerable foreign input, have resulted in an increase in the number, as well as an expansion in the scope of E.E. programmes and activities offered in Namibia.

These developments have taken place on ministerial and non-governmental level. E.E. has become a prominent feature of the aims and objectives of at least two ministries, namely Education and Culture and Wildlife, Conservation and Tourism, as well as within the non-formal sector. The formal education system will obviously be concentrated on in this study.

Shortly after Independence in March 1990, the new government to Namibia, supported by international agencies, proceeded to reconstruct the existing Cape Education system. The scope of this reform was significant, directly influencing the philosophical, theoretical and practical components of the curriculum. The primary aim of the new curriculum was to provide a relevant and appropriate education system in line with Namibian circumstances, and a Namibian way of life. It was designed to meet the basic learning needs of all the children, youth and adults of Namibia (Curriculum Guide p.3).

Philosophy of the Formal Education System

According to the proceedings of the Southern African Development Conference Workshop (1994 b), the main focus of the new curriculum is a didactic shift from a deterministic, teacher-centred methodology to a more constructivist, learner-centred approach. In line with recent post-modernistic trends, this implies a participatory,

rather than a top-down, or strictly hierarchical approach. New directives encourage teacher-educators (an indication of the new focus) to develop in learners curious and enquiring minds, which can respond to community and national concerns, and are versed in problem-solving techniques. Learners are to be encouraged to be open-minded and critical in their approach to knowledge. The new curriculum calls for a holistic approach, with the emphasis on discovery-based activities, community interaction and the local environment. As a result, the practical component of the new curriculum has been upgraded, and the school is seen as an interactive unit of the local community.

Implicit in the new philosophy are important pedagogical considerations for teachers. In the first instance, they are no longer perceived to be the sole proprietors of knowledge. If learners are to be encouraged to be critical in their approach to knowledge, and the accent is placed on discovery-based activities, then they can be expected to provide considerable inputs into the day-to-day teaching experience. A large percentage of this input will depend on the life experiences of the learners i.e. knowledge for which there is no textbook. It might also fall outside the scope of learning and experience of the teachers, and consequently they will be obliged to find alternative teaching methods to cope with it. In the same vein, regular interaction with the community would bring the teacher (and learners) into contact with the socio-economic, socio-political, traditional and cultural activities of the community, of which he or she might have little previous knowledge or experience.

Lastly, the emphasis on the environment necessitates at least a basic knowledge of relevant ecosystems and ecological processes.

In essence then, the new curriculum has placed significant demands on the teacher. These include adaptation to a participatory teaching style, an emphasis on practical activities - and the ability to resource reference materials which will be required as a result of these activities - as well as the development of considerable communication and social skills.

It is the contention of this thesis that changes like those stated above are required in the South African educational system in order to increase its relevance to the vast

majority of the school going population in South Africa. Such changes need to be reflected in new Geography syllabi and are to be found in the Nightingale draft syllabus to be discussed in Chapter Seven of this study

Structure of the Formal Education System

The proceedings of the SADC Workshop (op. cit.) dealt with the structure of the formal education system. According to the proceedings, the Constitution of the Republic of Namibia has made it the responsibility of the government to provide education, including compulsory primary education as a right to all persons. The Ministry of Education and Culture (MEC) thus provides ten years of Basic Education which shall be equitable and equally accessible to all learners. This forms the major part of the educational programme. Basic Education has three phases namely, lower primary phase, which spans the first five years of the schooling of a child, upper primary phase (Formal Basic Education - Grades 1 - 10), and the junior secondary which span three years each. The last two years of schooling are the senior secondary years which prepares learners for the IGCSE or HIGCSE examinations (Formal Sector Secondary Education Phase - Grades 11 and 12).

After Independence in 1990 the Ministry was anxious to start with educational reform because of the extent to which the old system was disempowering the majority of the learners of the country. It was thought to start with the reform in the phase in which it would cause the least disruption. It was for this reason that the reform started in the junior secondary phase.

Initial reform action has thus focussed on Grades 8 to 10. The former curriculum for these grades has been rearranged, to the extent that material has been discarded from existing syllabi and new components added. New subjects such as Life Science and Physical Science have also been included into the curriculum.

Reform thus started in grade 8 in 1991. At the end of 1993 the first national examination in grade 10 was written.

In the primary phase the reform started in grade 4 in 1993 with the implementation of a new syllabus for Mathematics as well as implementation of teaching of Mathematics in the medium of English. It continued in 1994 with a new syllabus in Natural Science and Health Education as well as changing over to the medium of English in this subject. In 1995 this change over to the new system in upper primary will be complete when a new syllabus for Social Studies is implemented and the upper primary phase will be then have finally changed over to instruction in the medium of English. The reform in grade 1 will start in 1995. At this level teaching will be conducted in the mother tongue.

The reform in the senior secondary phase started in 1994 and was fully implemented in 1995 when the first IGCSE and HIGCSE examinations were written. In 1998 the reform will be fully implemented.

It can be seen that E.E. features prominently throughout these school phases.

Theoretical Implications for Environmental Education

General ministerial policy of the Department of Education and Culture and the aims, objectives and strategies of specific subjects as set out in the various curricula are evidence of the Ministry's intention to include the environment in all phases of the new education system.

As has been mentioned above, the initial reform process was started in the Junior Secondary phase. The syllabi of several existing subjects (e.g. Agriculture and Geography grade 9) have been adjusted to include environmental components, and new subjects have been introduced. It is the content and approach of these new subjects, especially Life Science (a combination of Biology, Ecology and Agriculture) and Physical Science, which will make a significant contribution to environmental awareness in the broad curriculum.

They are based on various redesigned syllabi developed by SWAPO during the conflict years and contain a significant number of components which focus directly on environmental issues.

Considerable medium to long-term foreign aid, in the form of human and material resources, has accelerated the integration of these subjects into the formal education system. During the course of several workshops, teachers have been provided with relevant materials, and received training with regard to the new approach to be utilised in teaching these subjects.

Although these subjects have been introduced at a time of general reform and consequent disruption, and to teachers (many of whom do not possess formal teaching certificates), who have no formal training in the subjects, the overall response, notwithstanding these difficulties, has been positive (Life Science Evaluation report).

The development of the Basic Education Phase has been influenced to a large degree by the introduction of Life Science and Physical Science into the curriculum, as the initial developers of these subjects have had considerable input in the drafting of the new curricula. As can be seen from the syllabus content, not only the proposed new teaching techniques, but also the content provide significant scope for direct environmental interaction.

The inclusion of this discussion on the Life Science subject is justified by the fact that in the existing South African educational system much of the content which is environmental by nature is found in the Geography (as well as Biology) syllabus.

In the broad IGCSE curriculum (grades 11 and 12) where pupils are completing their secondary school studies, several subjects have relevance to E.E. Three of these are subjects traditionally related to E.E. activities, namely Biology, Geography and Agriculture. The fourth subject, Natural Economy, is however generally considered to be the natural successor to Life Science. Specifically designed for this purpose, it is said that Prince Phillip himself initiated its development and insisted on it being placed in the IGCSE curriculum. As can be seen from the curriculum content, Natural Economy might just as easily be termed Environmental Studies, although the economic component provides an appropriate balance to the syllabus.

Environmental Education Across the Curriculum

In a subject like English, E.E. does not appear directly in the syllabus, but the development of materials and the selection of materials from other countries definitely take E.E. into account.

When materials are being developed by the Ministry different issues like health, population education, development of national pride as well as E.E. have to be included as education without these would be lacking.

In the new curricula that are being developed it is also advocated that subject barriers be crossed in order for a more holistic education to develop. It is also recognised that E.E. is a good vehicle to facilitate teaching that spans the whole curriculum or at least parts of it. The educational policy of the government also encourages the community to play an active part in the education of their children. This stimulates the teachers to take their children out of the classrooms and address real issues that affect their community.

In other subjects like Art, the Environment becomes an important subject to be reflected upon and portrayed, but in a country like Namibia where much of the art is wood carving, it is also important for this subject to look into sustaining this art by making sure that the wood will always be available.

Government Policy on Environmental Education

The Namibian Constitution is one of the few which addresses the sustainable use of the country's natural resources for the benefit of the people. An environmental clause is entrenched in the country's constitution and provides the overall guideline for environmental policy in Namibia.

Article 95 (1) of the Constitution says:

The State shall actively promote and maintain the welfare of the people by adopting...policies aimed at:

maintenance of ecosystems, essential ecological processes and bio-diversity of Namibia and utilisation of living natural resources on a sustainable basis for the benefit of all Namibians, both present and future.

Cabinet has given the Ministry of Wildlife, Conservation and Tourism, broad responsibility for the Namibian environment. The Ministry's mission statement closely follows the constitution and provides the foundation on which the Ministry's policies are built:

To maintain and rehabilitate essential ecological processes and life-support systems, to conserve biological diversity and to ensure that the utilisation of natural resources is sustainable for the benefit of all Namibians, both present and future, as well as for the international community.

Both the constitution and the Ministry's Mission statement link environmental protection and the use of natural resources to the welfare and benefit of people. This is an important thread which runs through all the country's policies for environmental protection and sustainable development.

During the course of the early part of 1992, the Ministry of Wildlife, Conservation and Tourism prepared a Green Plan for Namibia. The Ministry of Education and Culture was invited to contribute to this Green Plan. The inclusion of this contribution in the overall plan for sustainable development in Namibia is significant for two reasons. Firstly, it is an indication of inter-ministerial liaison which has taken place and is critical if the Green Plan is to have broad perspectives, and to be generally accepted, and secondly, it might be regarded as a declaration of intent by the ministry to not only promote activities, but also to actively support the efforts of other individuals, non-governmental organisations and ministries in the national interest. Guidelines exist as to ministerial thinking, objectives and proposed strategies in this connection.

The commitment of Government to the concepts of sustainable development and E.E., two important cornerstones in the development of new syllabi in South Africa can be better illustrated by a consideration of the Namibian Green Plan through documents of the Directorate of Environmental Affairs in the Ministry of Wildlife, Conservation and Tourism. The plan covers a wide range of topics with major sections on: Life's Three Essentials - Clean Air, Water and Land; Sustaining our Renewable Resources; Our Special Spaces and Species; Namibia's Unique Stewardship - the Namib Desert; The

Importance of Wetlands Management in Arid Regions; The Threat of Desertification, Global Environmental Security and Environmentally Responsible Decision-Making.

The plan contains a chapter titled 'Preparing for the future : Education and Sustainable Development', which sets as a national goal the increase of awareness and knowledge and the development of skills and attitudes amongst young Namibians conducive to a harmonious relationship with the environment.

The Green Plan recognises education as an important vehicle in trying to achieve the aim of sustainable use of natural resources. The chapter commits the Ministry of Education to ensuring that environmental issues and the link between environment and development are woven throughout the fabric of formal education.

The broad topics to be covered in the curriculum include ecological knowledge, people-environment relationships, ethics, politics, socio-biology and public participation in decision-making.

The chapter also sets out various actions needed to achieve the incorporation of E.E. in the curriculum, as well as a national strategy for the Ministry of Education and Culture.

A chapter on Environmental Citizenship complements that on education, and sets the goal of developing an environmentally literate society in which citizens have the knowledge, skills and values necessary for appropriate action.

It recognises that for sustainable development to be achieved, Namibians at all levels of society must become involved in making decisions about environmental issues and must participate in ensuring a healthy environment. To do this successfully they need access to information about the environment and need to develop the motivation to take action.

The government commits itself to a free flow of environmental information, to developing a system of National Environmental Accounting and State of the Environment Reporting, and to facilitating access to E.E. by all Namibians, not just the school-going youth.

E.E. is seen as one of the essential instruments for empowering individuals and communities to take meaningful action and positively shape the future of their own environment.

The Green Plan is not meant to be prescriptive. It identifies issues that Government Ministries, the private Sector, NGOs, individuals and communities need to think about and act upon. It aims to create the enabling environment in which these issues can be addressed in a participatory and democratic manner.

What is required in South Africa is a fresh Government initiative which, like the Green Plan, clearly spells out the links between environment and development. A document is required which sets out policies and strategies for securing for present and future generations a safe and healthy environment. It is the contention of this author that the school system and its related curriculum and syllabi can play a positive role in the achievement of the goals of such a plan. A Geography syllabus based on E.E. and sustainable development as discussed in Chapter Seven of this study can go a long way in the achievement of this goal.

Problems of Implementation

Problems which have emerged during the practical implementation of E.E. in Namibian schools and which need to be noted by education authorities in South Africa are reported in documents of the Workshop proceedings (1994 b) and include:

- (i) The Ministry of Education and Culture has priorities (many of which have been inherited) such as a shortage of schools, schools which lack basic facilities (e.g. water, electricity) and under-qualified teachers. As a result all available resources are channelled in these directions, and E.E. is not regarded as being of immediate importance.
- (ii) is a relatively new concept, and teachers are not adequately trained to take full advantage of their surroundings and integrate them into their daily training strategies.

(iii) As a result of the lack of funds, a position cannot be created for the appointment of an E.E. co-ordinator with the MEC. Although someone has been appointed to care for this portfolio, he also has many other tasks to which he has to attend.

(iv) The lack of appropriate facilities and relevant materials is a serious constraint to the rapid integration of E.E. into the core curriculum. This problem is complicated by the diverse nature of the Namibian environment and its people, and the isolated localities of many communities.

These problems are not dissimilar to the position in South Africa and solutions utilised in Namibia could be applied to South Africa.

Notwithstanding the above constraints, the Ministry of Education and Culture has, within the scope of its present priorities, taken definite steps to promote the integration of E.E. into the existing curriculum. A draft curriculum for the Basic Education Teachers Diploma, for students who wish to become primary school teachers, has been introduced. A significant percentage of the curriculum content for first year students is directly related to the development of knowledge of the environment and skills to be acquired for dealing with environmental concerns.

Course leaders have established links with the Ministry of Wildlife, Conservation and Tourism and other environmentalists, with regard to the development and use of materials and appropriate facilities. The diploma will enable successful participants to teach to the level of grade 10.

Materials developed as textbooks and workbooks for Life Science and Physical Science (grades 8 - 10), contain activities related specifically to the environment, as well as considerable reference material. The developers of this material are at present negotiating with a non-governmental organisation to explore the possibility of providing printing facilities and expertise which could enable teachers to design reference materials according to their own preference and relevant to their specific localities.

The Ministry of Education and Culture has declared its intention to maintain close links with the Ministry of Wildlife, Conservation and Tourism with regard to the utilisation of the E.E. centres being developed by the ministry (Namibia's Green Plan p.101). It is hoped that these centres will provide teachers and learners with access to the natural environment and additional expertise.

Regarding NGOs and other organisations the Ministry of Education and Culture has a formal agreement with the Enviroteach organisation to develop teaching material for teachers. Presently the ministry is pleased with these materials as they provide valuable background as well as good suggestions for activities. The Enviroteach materials also seem to be very popular with the teacher trainers. Co-operation with other NGOs is at a much more informal level. These NGOs also focus on learners but they often have agreements with the principals of schools or they engage the learners after school hours. Environmental clubs have been established by at least two of these NGOs.

Teacher training in E.E. occurs in the form of the Basic Education Teacher Diploma. Many people that are involved in E.E. feel that teachers should be trained to become confident in E.E. as they are the greatest multipliers. Therefore most of the resources and attention should be focused on the training of teachers. For this reason E.E. has become part of the national teacher training programme, called Basic Education Teacher Diploma (BETD). The broad curriculum for the Basic Education Teacher Diploma has many aims that can be achieved by E.E. One, though, makes direct reference to E.E. It states that it enables the teacher to promote environmental awareness and sustainable management of natural resources in the school and the community.

It is also stated in the Broad Curriculum for Basic Education document that Environmental Awareness will be studied in a cross-curricular fashion and it will be promoted in Integrated Natural Science, Social Studies and Education Theory and practice.

E.E. is reflected in most of the syllabi, especially Art in Culture, Social Studies, Agriculture, Educational Theory and practice and Integrated Natural Science.

Integrated Natural Science (INS) can be regarded as one of the carrier subjects of E.E.

It would thus be relevant to elaborate on this subject to give you an idea as to the content and depth of E.E. in the training of teachers.

In the rationale of Integrated Natural Science the importance of E.E. is stated clearly that it is of increasing importance to acquire sufficient knowledge, understanding, skills and attitudes within the Integrated Natural Science areas to become a confident citizen in a technological world that brings applied natural Science to everybody's life but also confronts people with health and environmental problems. Some of these problems are related to the way people live and to their work, the others are related to the utilisation of renewable resources and non-renewable resources. Many environmental problems do not respect the boundaries between countries and call for the attention of all citizens on earth and should therefore be dealt with at the Basic Education level.

The Republic of Namibia utilises a number of renewable and non-renewable resources. The country is by nature a land of agriculture, fishery and forestry only if the land is used in a manner that ensures a sustainable yield.

A sustainable management of natural resources and a general understanding of good health are therefore - from a national and international point of view - basic areas of learning for all Namibians.

Most of the aims of INS can be reached through E.E., but the following two particularly target E.E. These are:

- * to empower teachers to provide a teaching environment which can promote a positive attitude towards nature and enjoyment in the natural sciences and their methods of enquiry;
- * to develop a holistic understanding of the environment and the human relationship with the environment, so as to enable teachers to facilitate among learners an environmental awareness and a basic understanding of sustainable management of natural resources.

In this subject area curriculum document E.E. is presented as part of the curriculum content of the subject area, but it is also strongly promoted as a cross-curricular theme that will span the subject areas and address real problems that are encountered in the community. Hopefully, teachers that have been trained through this programme will be able to teach E.E. in the subjects of which they are part, but also in a cross-curricular way.

Conclusion

The emphasis on sustainable development in the syllabi of subjects taught in Namibian schools provides a possible and viable direction to what is required from South African governmental and educational authorities. As has been pointed out in document analysis referred to earlier:

For sustainable development to take place within any country, there clearly needs to be an appropriate policy framework at national level.

Through policy statements governments make clear their commitment to achieving a particular goal and signal the broad approach for achieving this goal.

National policies can be restrictive, limiting the scope of individuals and non-government organisations to act and entrenching initiative and control with government.

On the other hand, national policies can be enabling, providing direction for activities of all sectors without being prescriptive.

In order to achieve sustainable development, government policies for the most part need to be enabling. They need to make provision for people, either at individual or community level, to take responsibility for natural resource management themselves and to gain access to the information and technology for wise decision-making. National policies for sustainable development need to ensure that resource users are fully involved in the planning, decision-making and implementation necessary for natural resource management.

In developing its policies for sustainable development as well as for E.E., the Namibian Government has tried to be enabling and not prescriptive. It has tried to create a climate in which government, NGOs, the private sector and communities and individuals can work in partnership towards a common goal, albeit in different ways and using different approaches. (Proceedings, 1994b).

Clear policy directives are required from South African authorities. In the short term the position is not encouraging as the following magazine and newspaper articles illustrate:

The ANC led government 'makes a mockery' of the environment claims Thami Sokutu, head of the ANC's Environment desk, publicly questioning its commitment to pre-election promises on national environmental priorities.

Sokutu says the Department of Environment (DEA) continues operating as it did under the old regime, and remains as weak as ever. The DEA has legitimised the existing Council for the Environment, giving this white male dominated, apartheid relic the task of calling a conference on the RDP and the environment.

According to Sokutu the DEA has not read the section of the RDP calling for transparency, public participation and the formation of an independent commission on the environment.

The allocation of R73 million for conservation of flora and fauna, R25 million for Antarctic research, and only R1 million for pollution of the human environment in the pre-election budget reflects the continuity of the status quo.

"Not only does present policy support polluters, the externalisation of these costs impacts negatively on the health and well being of the poorest."

The head of the ANC's Environmental Desk says the illegitimate and unrepresentative Council for the Environment cannot lead the process of formulating national environmental policy. This process must be led by a forum including NGOs, labour, churches, communities and other interested and affected Parties.

"From my meetings I see that the ministers accept the status quo and the weakness of their department. If only they could shout, they would be surprised at how many people support them," says Sokutu.

Environment Justice Networker

Source: New Ground - Spring ,1994, p.51

JOHANNESBURG - The ANC yesterday called on Environmental Affairs Minister Dawie de Villiers to convene a national conference to discuss environmental policy issues and priorities in South Africa.

ANC environment spokesman Thami Sokutu said few changes had taken place in the Government's environmental policy and in its priorities.

"The Budget remains dominated by 'wildlife' concerns and very little (is) allocated to issues like environmental education and human living environment in terms of population control," Mr Sokutu said.

Source: The Natal Mercury, Monday 23 January, 1995, p.3

Very little if any recent action by the ANC government on E.E. directives have been forthcoming. It may well be up to educationists to take the initiative by formulating syllabi based on sustainable development as has been formulated in a Senior Secondary School syllabus forwarded by Mr Singleton - Nightingale of Natal and which will be discussed in Chapter Seven of this study. Much lobbying may be required before syllabi are taken seriously by government authorities.

4.3.2 Environmental Education in Zimbabwe

E.E. is an important component of all Geographical education in Zimbabwe. A study of the various syllabi being taught in schools as well as various other projects and schemes in operation attest to the concern various authorities in the country have for the environment.

Background

Since its independence, Zimbabwe's educational system has expanded tremendously. From 1980 to 1991, primary enrolment has tripled and secondary enrolment has grown tenfold, while vast expansion of teacher training activities have also been realised. There is now nearly universal primary education. Primary education consists of grades 1 - 7. In grade 7 there is an examination in English, Mathematics and a General Paper (Religious and Moral Education (28%), Social Studies (32%), and Agricultural and Environmental Science (40%). The government's main concern is to consolidate and improve the quality of primary education.

In 1990, there was a 66% transition rate from primary to secondary school. Secondary school, for most eligible children, consists of ZJC (year 1 and 2) and O-

level (year 3 and 4). About 7-8% of the O-level leavers go to A-level (years 5 and 6).

About half of secondary schools are poorly resourced and learning achievements are low. About half of the teachers are not properly qualified. There is a general move to make the secondary curriculum more relevant and practical for the Zimbabwean situation.

The great expansion of the school system, of course, carries with it a variety of problems including the following:

1. The teachers, if qualified, have not always had a very good training in either the various subject matters, or in teaching methodology. The body of teachers is therefore not very flexible in the sense that changes in the contents of syllabi and especially changes required in the approach to teaching and the use of more interactive and child-centred approaches are difficult to realise.
2. Education is (more or less) free, but there is a shortage of funds for textbooks and for equipment. Teachers rely heavily on the syllabi documents as sources of lesson material and have little other background material to give their lessons more relevance, interest or depth.
3. Class-sizes are about 35-45 (or even larger). Conditions are therefore not easily geared towards child-centred and active learning.
4. Teachers themselves have mostly experienced a rote-learning approach in their own primary and secondary education and mostly also in their teacher training. This rote-learning and teacher-centred approach is then also followed by the (student) teachers themselves, when they start teaching in their primary or secondary classrooms. This approach to learning tends towards the theoretical, and creates a body of factual knowledge that is disconnected from daily-life and is solely exam-motivated.

These problems are not dissimilar to those experienced in Namibia and will obviously act to hinder the promotion of the ideals of E.E. and need to be accounted for by policy planners. South African educational planners and policy makers should be only too well aware of similar problems in many of our schools.

Environmental Education in Zimbabwean Schools

In 1974 a visiting committee of education experts recommended that a subject called Environmental Studies be introduced in schools. The committee believed that such a subject would better promote the ideals of E.E. than had been the case up to that point. The committee identified that the subject would consist of 2 branches viz the physical environment and the social environment. Separate programmes were drawn up for environmental science and for social studies. The developers of these programmes kept in close touch with each other, leading to their eventual integration. For the first time curriculum developers from both the Ministry of Education and the University of Zimbabwe had joined forces on a national curriculum development project in Zimbabwe. By 1978 a working party was formed to develop an Environmental Science syllabus specifically for primary schools. The core of its terms of reference stated that through the course the child must appreciate his dependence upon the environment, identify those elements that contribute to its well-being and begin to accept responsibility for their conservation and improvement.

The challenge to this committee as well as others working on other aspects of the education system was that radical political change was taking place. This meant that the syllabus would be one of the first to be developed for all schools in Zimbabwe but also for racially integrated schools. A social and environmental syllabus for grades 1 to 7 was developed for Zimbabwe's primary and junior secondary schools and includes topics like Resources, Forestry, Farming, Agricultural production, Soils, Vegetation, Water etc. - all areas covered in the Geography syllabus in South Africa. Regarding the aims of this syllabus, children's interest levels were taken into consideration and teachers were urged to develop the following skills in their pupils:

1. Curiosity and thinking techniques through observing and questioning.

2. An ability to sort and discriminate from collections of material.
3. Effective recording using pictorial, graphical or written representation.
4. An ability to research through experiments or reading.

A much greater emphasis on aims like these needs to be placed on restructured school syllabi in South Africa, as is discussed in the following chapter of this study where syllabus recommendations are made which focus on pupil skills as a cornerstone of a new syllabus.

Environmental Education in the Secondary School Curriculum

Overview

E.E. has only recently been introduced into secondary schools in Zimbabwe. The introduction is done through the use of existing syllabi. In Agriculture, Geography and in Science additions of a more or less E.E. character have been made. The disadvantage of spreading E.E. over the three subjects is that some topics are dealt with in two subjects and are therefore doubled. This can lead to confusion both for the students and the teachers. Furthermore teachers are tempted to leave for the teacher of the other subject (and vice versa) that which appears double in the two syllabi.

The character of the E.E. topics is mostly of a descriptive kind; not much attention is given to problem-solving or project activities outside the classroom. E.E. is rather compartmentalised and fragmented, being spread over the three subject areas.

Another problem with incorporating E.E. into existing syllabi is that these syllabi in themselves are often quite large. Teachers mostly will indicate that the syllabi as they are, already present a challenge in the attempt to cover all areas. Adding E.E. (few teachers want to take anything out of the syllabus to make room for E.E.) will only make teaching the syllabi more difficult to cover.

At the moment there is a development of a topic called "Population Education in Geography". This will address the issue of population growth and its effect on the environment, resources and economic development. It is initiated by the Ministry of Finance to help control the population growth in Zimbabwe. Again, this topic will have to

be incorporated into the existing Geography syllabus. Teachers and the Curriculum Development Unit of the Ministry of Education and Culture are not in clear agreement as to whether there is enough room for the inclusion of Population Education in the Geography syllabus.

As for primary education, the same requirements regarding the teaching approach for effective E.E. are valid here. Again, the present teaching is teacher-centred, factual, rote-learning based, theoretical and often too disconnected from daily-life situations and problems.

Textbooks available for the three subjects in which E.E. is incorporated make some attempts at presenting genuine E.E. But again, it remains with the teachers how in the end the E.E. topics are dealt with in the practice of the classroom.

Concluding, it appears that the attempts to introduce E.E. into secondary education have concentrated on adding a few facets of an E.E. character to existing subjects. There does not seem to really be a policy that addresses the issue of E.E. in a fundamental way.

The Syllabus

As has been mentioned earlier, at secondary school level aspects of E.E. are taught in essentially two subjects viz. Geography and Agriculture. A brief examination of these two subjects will now occur followed by a slightly more detailed examination of the structure of the secondary school curriculum. The following documentation on the Zimbabwe school syllabi were supplied to me by Mrs R Heath, a Senior Lecturer in the Department of Geography at the University of Zimbabwe:

Geography syllabus

Aims

Among other things, the Geography syllabus aims at:

- giving pupils knowledge and understanding of some of the major issues which arise from a person's relationship with the environment;

- encouraging pupils to respect the environment and to use the resources wisely.

Content

Among other topics, pupils are taught the following topics which relate directly to the environment:

- Weather studies and climate
- The physical environment
- Geographical themes like: water; energy; farming; industry; transport; people and settlement.

The Agriculture syllabus

The syllabus is designed to provide a course of study culminating in the Zimbabwe Junior Certificate and the 'O' level examination.

Aims

The course tries to achieve several objectives some of which relate directly to the environment. For example, the course is designed to:

- develop positive attitudes towards agriculture;
- foster the correct attitudes towards conservation;
- help pupils learn basic conservation principles and apply them;
- encourage active participation by pupils in conservation projects within the school and in the community.

Content

The syllabus covers a wide range of topics out of which the following relate directly to the environment:

- Natural farming regions
 - * Agro-ecological zones
 - * Types of agricultural activities
 - * Natural factors (weather, soil and vegetation)
- Methods of propagating plants
- Plant protection
- Plant nutrition sources
- Forestry
 - * Importance of trees
 - * Rural Forestation and National Tree Day programmes
 - * Tree management
 - * Veld management
- The farm animal
- The soil and soil conservation
- Water
- Legislation
 - * Stream bank cultivation
 - * Fire prevention
 - * Water Act
 - * Use of agricultural chemicals
- Fish farming

Structure

Regarding the Secondary school, three syllabi are currently in use in Zimbabwe:

1. Zimbabwe Junior Certificate - written after two years of secondary schooling; the equivalent of Std 8 in South Africa. This is a local examination.
2. Cambridge School Certificate 'O' Level - written after four years of secondary schooling; the equivalent of 1st year matric in South Africa. This is a local examination, but supervised by the Cambridge Examinations Board, U.K.
3. Cambridge School Certificate 'A' Level - written after six years of secondary education; the equivalent of a post-matric year or 1st year at University in South Africa.

This is an overseas examination, set and marked by the Cambridge Examinations Board, U.K.

A study of these syllabus documents reveals that substantial environmental components occur in each of these syllabi:

3. The Zimbabwe Junior Certificate (ZJC). An examination of the aims of this course reveals a focus on the importance of the environment as revealed by aims B (ii) and C.
 1. To help pupils acquire a range of relevant geographical concepts and skills.
 2. To give pupils a knowledge and understanding of:
 - the Geography of their locality, of Zimbabwe and of the SADCC countries and
 - some of the major issues which arise from man's relationship with his environment.
 3. To encourage pupils to respect the environment and to use the resources wisely.
 4. To provide pupils with a background suitable for further education and at the same time to meet the needs of those pupils who may leave school.

An examination of the content of the 2 year course reveals the importance of adopting an environmental theme when studying the work.

The following geographical topics are included in the

Two Year Course.

1. Mapping and atlas work
2. Weather studies and climate
3. The physical environment
4. Population studies
5. Geographical themes:

Water	as related to Zimbabwe with
Energy	selected examples or case
Farming	studies chosen, for comparison
Industry	from the world.
Transport	Reference should be made to
People, Settlement	relevant current affairs including the various conservation aspects related to the preservation of Zimbabwe's natural resources and its environment.

In table form the Geography course appears so:

Suggested Sequence and Time Allocation for Topics:

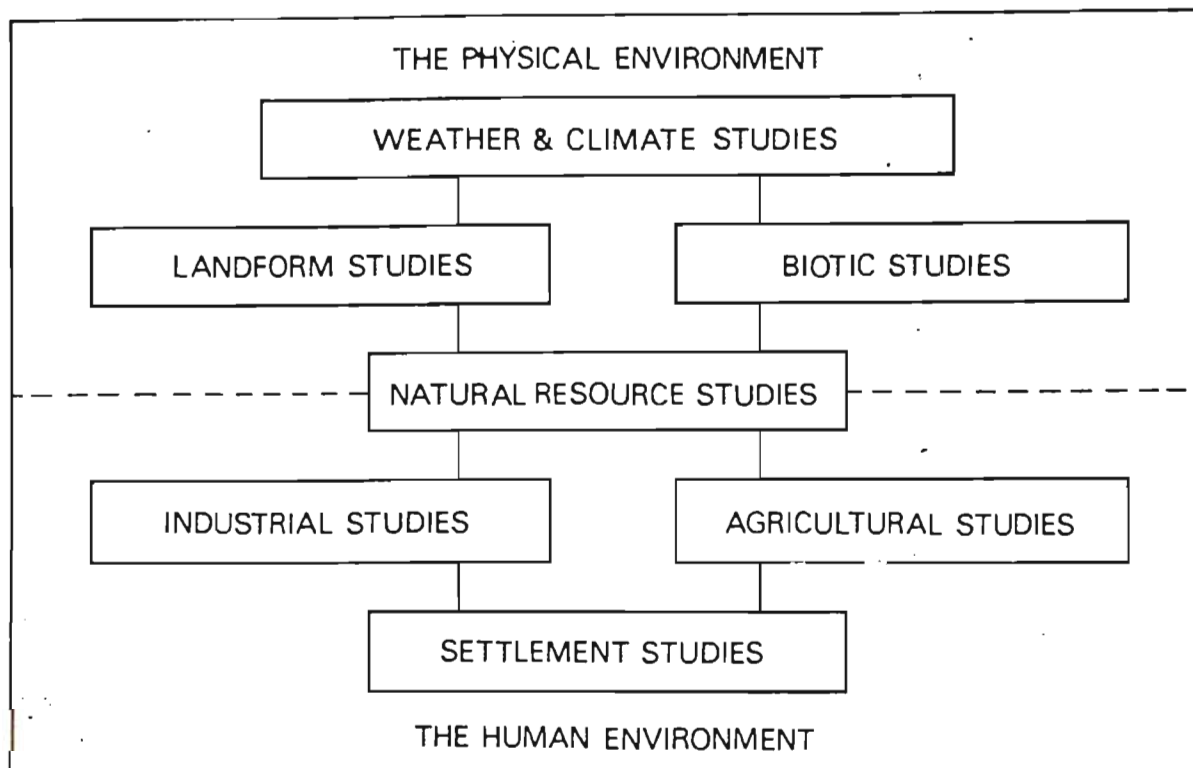
	TERM	TOPICS	WEEKS	WEEKLY PERIODS	TOTAL WEEKLY PERIODS
1	FORM I	Mapping and Atlas work	8	3	24
		Weather	2	3	6
		Physical Environment	6	3	18
2		Population Studies	4	3	12
		Weather	5	3	15
3		Climate	2	3	6
		Themes:			
		Water	3	3	9
1	FORM II	Themes:			
		Energy) Farming) Industry)	10	3	30
2		Themes:			
		Transport) People and Settlement)	8	3	24
		Mapping	2	3	6
3		Mapping continued Revision and Examination	10	3	30
Current Affairs and Conservation Education where relevant and appropriate throughout the course					

Table 8: Zimbabwe Junior Certificate Geography Course Outline

Source: Zimbabwe Ministry of Education and Culture document

- Cambridge School Certificate 'O' Level has in its preamble the fact that the syllabus is designed, among other things to:
 - 1.4 promote environmental awareness through studying physical and human Geography. Among the aims of the syllabus is to:
 - 2.1 encourage an appreciation and sensitive awareness of the environment on a local, national and world scale.
 - 2.5 promote in pupils an awareness of spatial and environmental patterns and relationships in the real world, and the dynamic nature of

these patterns and relationships. 2.6 encourage pupils to use spatial concepts and apply principles on a range of scales in a variety of environments. The following diagram illustrates the content areas of the syllabus (Figure 11):



Within each of these parts there are a number of "studies". While these may be taught as separate topics, teachers are recommended to show the links between them wherever appropriate.

Teachers are recommended to teach the general principles of each section of the syllabus. They should plan to teach two parts of each section in greater depth, viz

TWO from Weather and Climate, Landforms, Biotic (Section A Topics 5.2 to 5.4);

TWO from Natural Resources, Agriculture, Industry (Section B Topics 5.5 to 5.7);

TWO from Settlement and Population, Transport and Trade (Section C Topics 5.8 to 5.9).

Figure 11: Cambridge School Certificate 'O' Level Geography Course Outline

Source: Zimbabwe Ministry of Education and Culture Document

An examination of the content areas reveals a major area titled Biotic Studies which forms part of the Physical Environment section of the syllabus as well as a section on Natural Resources. Both these sections have an environmental focus and concern themselves with

the study of ecosystems, resource types, resources, population, resource development and conservation of resources.

3. Cambridge School Certificate 'A' Level. In the rationale for this syllabus a focus once more occurs on the environment:
 1. To introduce students to the main *components* of physical and human Geography (climate, water, landforms, vegetation, soil, the Geography of population and settlement, and of primary, secondary and tertiary activities) and to show interrelationships between these components (e.g. climate and landforms, vegetation and soil, the physical environment and agriculture, industrial and urban Geography).
 2. To introduce students to the principal *processes* operative in physical and human Geography (e.g. evapotranspiration, fluvial erosion and transport, slope transport, soil formation, growth of population and migration, urban growth and internal specialisation of cities).
 3. To introduce students to appropriate *spatial* models of human behaviour (e.g. central place theory, von Thunen's theory of agricultural location) and to demonstrate the assumptions, processes, implications and limitations of such models. Detailed studies of the theories are not required.
 4. To increase the student's awareness of *problems* inherent in physical Geography (e.g. the difficulty of interpreting geomorphological evidence, problems of measuring processes in the physical environment).
 5. To increase the student's awareness of the relevance of their studies in human Geography to current social, economic and ecological *problems* (e.g. conservation and pollution, the problem of increasing agricultural production in less developed countries, the problems of inner cities and shanty towns).
 6. To demonstrate to students the role of *change* in the physical and human environment, both at the present and in the past (e.g. climatic change and its

repercussions, changes of sea-level, evolution of landforms, modification of natural vegetation, the evolution of rural and urban settlement, the impact of technological change on Geographical distributions, such as in industrial location or transport systems).

7. To illustrate to students the importance of *scale* in physical and human Geography (e.g. regional versus local climates, morphogenetic regions versus small-scale landform development, the distribution of population at various scales, factors affecting agricultural geography).
8. To demonstrate to students *selected techniques* appropriate to the greater understanding and interpretation of the facts and relationships in physical and human geography (e.g. the interpretation of topographical maps, representation of statistics on maps and diagrams, the collection and interpretation of data).
9. To place an appropriate emphasis on the environment with which students are most *familiar*. In practice this will mean an emphasis on tropical environments. However, it is essential that the students' view is not too inward-looking, and that they have in some measure a 'world view' of physical and human geography.

An examination of the syllabus content reveals various areas which lend themselves to study from an E.E. approach and in particular a topic entitled 'Conservation, exploitation and pollution of reserves' in the Human Geography section:

Conservation, exploitation and pollution resources

Content	Concepts
Factors leading to the deterioration and/or pollution of the environment with special reference to mining, soils, water and vegetation, and including forest and marine resources.	The concept of renewable and non-renewable resources

Problems and methods of conservation
of resources, including soils, water
supplies, forests and fisheries.
Pollution in urban environments

The Role of Schools in Environmental and Conservation Education

Besides what is achieved through the teaching of environmental concepts in the various school syllabi, much can still be done in schools to foster the message of E.E. Such a call has been made by among others S.J. Makuku, an ecologist with the Zimbabwean Department of Natural Resources in a report titled 'The Role of the Schools in Conservation', presented at the Geographical Association of Zimbabwe's Conference on 'Global Environmental Issues with Special Reference to Zimbabwe'.

This document presented a petition to the Geography teachers in Zimbabwean schools to help to propagate the message of E.E. Geography teachers are seen to have an important role to play in making Zimbabwe forge ahead along the correct environmental path. The document is centred on the role of the school in E.E. and discusses various ways in which E.E. can be encouraged in schools.

The Curriculum

The document sees the important role of schools as being to impel us to question the nature and content of the Geography school syllabus, especially the inclusion of E.E.

The report states that it is both timely and important for E.E. to be emphasised in teaching in schools as the pupils are themselves active destroyers of the environment. At the same time, for E.E. to be able to reach all levels of the population, government departments such as the Department of Natural Resources need to teach the parents. This will help Zimbabwe to achieve a population which is environmentally conscious.

Development of a Culture

A culture of concern for the environment is required, one which seeks to strike a balance between development and the environment. A new paradigm is required and the report

believes the answer lies in the concept of sustainable development which has been discussed in Chapter Two and three and will feature again in Chapter Seven. According to the report this concept can only be spread rapidly if teachers continually expound these ideas to their pupils. According to the report, the teaching of this new approach, as has been noted by educationalists like Bloom 1972 and Bodin 1976, involves three major activities:

- * the imparting of important information and knowledge about the existing environmental problems which include deforestation, global warming, desertification, soil erosion processes in the reduction of land productivity, etc;
- * the imparting of skills about how to rehabilitate or upgrade the environment, such as reforestation, gully reclamation techniques, efficient resource usage, improvement of croplands and rangelands and land management skills; and
- * the changing of pupils' attitudes, in order to improve and create a friendly relationship between man and nature.

These ideas forwarded in the report support the contention of this study that the concept of sustainable development be a central theme of a new Geography syllabus which also focusses on pupils' knowledge, skills and attitudes.

The report continues by stating that a culture of conservation assists E.E. in intuitively alerting every individual about what is right or wrong. It teaches good habits of conserving and utilising resources on a sustainable basis. When one is a faithful follower of this culture, it becomes taboo to cut trees ruthlessly and to cultivate in upland areas or streambanks, where soil is very vulnerable to soil erosion processes. In addition, a conservation culture helps to make our society less resistant to new conservation ideas. Instead, people become more receptive and more eager to participate in conservation activities. There are many countries in the world, particularly the developed nations, which have seriously adopted the conservation culture. Schools are the most important places where this culture can be initiated and instilled into our children.

The report sees Geography clubs and schools' competitions as playing an important role in furthering the aims of E.E.

Weaknesses in the Curriculum.

The report has identified various weaknesses in the curriculum which mitigate against the achievement of E.E. goals. These concerns are also voiced by Makuku (1992) and reflect closely with those raised by Jones for Namibia (Proceedings 1994b) earlier in the chapter:

Whilst the Geography syllabuses in our schools today sufficiently state the current environmental problems and narrate their causes, they are characterised by one major weakness, that of insufficient information about how to carry out certain conservation activities. For example, there is a large information gap when teaching pupils about methods of harvesting forestry produce or of water harvesting techniques. All that is done in the schools is the creation of awareness, in order to alert students about the various problems occurring within their areas. The teaching of the requisite skills is still seriously lacking.

We need to probe more into the practise and teaching of real skills in the field of conservation education, in order to actually include the techniques, methods and dimensional aspects of conservation activities. For example, when teaching aspects of forestry management or the management of indigenous forests, as one method of resuscitating the forests, we need to cover such aspects as pruning techniques, pollarding and proper harvesting techniques. Very often we talk about 'vocationalisation of the curriculum' and conservation education is one area where we can really 'vocalise'.

One way to do this is to have conservation projects at the schools. The school grounds are a big 'world' within which a teacher may undertake many practical projects, experimenting or demonstrating how certain conservation procedures may be adopted. Information on how to carry out certain activities is lacking and this problem is appreciated. However, this is not an excuse for not tackling conservation subjects in this manner.

If conservation education is treated in a practical manner, the subject will become more interesting to teach. The teaching of new skills also adds to the number of basic skills that we are presently teaching our pupils, such as those of enabling students to use the correct geographical tools of maps, photographs, graphs, charts, diagrams and methods of recording information.

If we aim to produce a more qualified group to deal with the environment, we need to venture into the teaching of these new skills which enable our students to correct and upgrade our degraded environment. Finally, it must be noted that geographers have an important role to play in maintaining our environment with habitable limits. As noted by Boden (1976):

"Geographers had a part to play in the explorers' world of the past, they are playing a part in the exploited world of the present, and they must play a part in the educated world of the future." (p.122)

Geography teachers have an important role to play in our schools, in teaching conservation culture to our pupils and improving the content of the Geography curriculum to make it more 'problem solving' by including practical skills for solving conservation problems. (Makuku, 1992, p.33)

Makuku's suggestions above have much relevance to the situation in South Africa and are incorporated in the analysis in Chapter Seven of this study where discussion occurs on a new syllabus for Geography in South Africa, which includes E.E..

Environmental Education at Teacher Training Level in Zimbabwe

In the Teacher Training Colleges (T.T.C.) which provide mainly for the primary schools, there is no separate course of an E.E. character. There is one exception of a college where indeed a course is started aiming at the creation of environment awareness and knowledge. But this course appears to rely heavily on foreign input and is threatened with discontinuation if it has not actually stopped by now. Also at the secondary T.T.C.'s there is no specific course of an E.E. character. E.E. only features where it is needed for the preparation of the secondary school curriculum. Various courses for teachers are also available at the University of Zimbabwe.

The above situation reflects a similar situation in South Africa where a relative dearth of courses exist for trainee teachers.

Conclusion

Document analysis has revealed that much good work has been achieved in Zimbabwe in the furtherance of the aims of E.E., but it is worth noting that several factors exist which militate against environmental protection in Zimbabwe:

1. Poverty

Because people are poor, they will do anything, including engaging in activities detrimental to the environment, to meet their daily needs for survival. There is need therefore to introduce alternative economic activities for the rural population.

2. Ownership of Land

In the communal areas, land is communally owned. There is therefore little or no direct incentive for individuals to think in terms of the long term consequences of their practices on the environment.

3. Political Interference

Whilst there are statutes governing natural resources, environment and land use, these are not always implemented. Because some of the legislation may seem unpopular with the electorate, politicians always discourage the implementing agencies from applying the rules to the letter for fear of losing 'votes' in the next election. Colonial policies focused on regulation whilst the post-independence policies switched to extension and education.

4. Overlap of Environmental Legislation

There is a lack of hierarchy, i.e. no one Act supersedes others in protecting the environment. The legislation is sectoralised and overlaps which leads to confusion in control.

Such problems cannot easily be overcome and demonstrate the urgent need for the implementation of further E.E. programmes. Lessons for South African educational

authorities are relevant here too with many similarities in the two situations. The need, as identified in government documentation and by writers like Mutimba (1994) is to increase an awareness of the situation at several levels :

1. At policy-making level particularly in the Ministry of Finance
2. Awareness for Industrialists
3. Awareness for Farmers
4. Awareness to the Communal Land Population
5. Awareness to other Decision-makers, Researchers and Planners

The achievement of such an awareness it is believed will greatly facilitate the achievement of E.E. goals in Zimbabwe.

A study of the documents comprising Kuiper's report (1994) to the Workshop on Research Issues in E.E. in East and Southern Africa held in Nairobi, Kenya, between 29 August and 2 September 1993 represents the type of analysis which needs to confront educational authorities in South Africa, who need to be challenged by the need to incorporate E.E. into school syllabi to a greater extent.

Kuiper's report identified the following:

3. Research needs for E.E. at Primary and Secondary Level in Zimbabwe

1. First of all, the existing curriculum needs to be analysed in greater depth and a discussion has to be started to see whether it satisfactorily reflects desired E.E. activities. The issue of E.E. then needs to be addressed in a fundamental way. The approach should try to move away from adding some E.E. activities to the existing curriculum towards developing a fundamental E.E. strategy that either integrates E.E. over the whole curriculum or creates separate activities.
2. Further, there is a need to research on students' present awareness and conceptual understanding on environment issues as well as on existing indigenous beliefs and knowledge structures concerning the environment and its management. The results of such research will enhance the production of, for Zimbabwe, relevant educational materials. A start at developing this kind of research has already been made (Kuiper, 1994).

3. The required teaching methodologies and approaches for an effective E.E. need serious consideration. It is relatively easy to develop teaching materials, but the success of their implementation depends largely on the teachers. There is a clear need for research on how best to change teachers' and students' attitudes and expectancies to teaching and learning in general. This is of a larger scope than mere E.E. It is therefore useful to see how efforts in this area can be linked to existing plans for educational change and in-service teacher training programmes.

4. **Research and Training Needs for E.E. at Teacher Training Level in Zimbabwe**
 1. There is no separate E.E. curriculum at teacher training colleges. There is a need to look into possibilities and ways of establishing such a curriculum. Teachers teaching the established syllabi that do include some E.E. have no strong background to translate the syllabi into effective E.E. activities.
 2. Lecturers at the Teacher Training Colleges, in general, do not have a strong background in E.E. either. There is a need here for the organisation of E.E. courses and the development of relevant materials for the training of the lecturers.
 3. The required teaching approach for an effective E.E., that is child-centred, conceptually orientated and with a problem-solving approach is not really promoted successfully at the Teacher Training Colleges. Lecturers need to be trained for their own way of lecturing as well as in how to train students in the application of an effective teaching approach.

5. **Research and Training Needs Concerning the Ministries of Education in Zimbabwe**
 1. An analysis is necessary of how effective lines of communication between the ministries and between their departments (CDU) and between them and the University and the Teacher Training Colleges can be used or established.
 2. There is a need to train relevant personnel into more awareness of what E.E. is and what its role should be in Zimbabwe in general and in the formal educational sector in particular (pp. 11-13).

Kuiper's report (1994) as well as that by Mtetwa (1994) below constitute a challenge to educational planners in Zimbabwe in order that E.E. be successfully implemented in the education system.

Mtsetwa (1994) in his report to the same conference provided the following summary of his research findings:

The main problems affecting E.E. in Zimbabwe include that, although government is aware of the need for better management of the natural resources, the awareness is still mainly confined to the land degradation problems of the communal areas. The waste and pollution created in the urban environment are not being addressed.

Further, there is a lack of overall government E.E. policy to guide and coordinate environment education, resulting in sometimes both gaps and unnecessary repetition in the instruction. Coordination is also lacking between teachers training and the curricula for primary and secondary schools.

Another problem is poor teaching methods. Environmental issues are not treated in a holistic way or integrated into other subjects. Instruction usually lacks a problem-solving and child-centred approach and too little time is spent using the local environment as a study object. Many teachers are not confident in their teaching role and want more explanation of the subject content. There is also a general lack of textbooks, teachers guides and other learning equipment related to E.E.

NGOs working with E.E. need to improve their work: develop cooperation, improve their professionalism, assistance to develop ideas and grants for funding projects.

Despite the problems, there are positive factors and initiatives for improving the possibilities for development of E.E. There is a growing awareness in Zimbabwe on the need for sustainable development and care for the environment. Within the E.E. fields itself, there is a well established, mostly informal network between the government institutions and NGOs. Zimbabwe appears to have both the basic institutional infrastructure, flexibility in educational approach and political commitment to environment issues, to be able to make good progress in E.E. (Mtsetwa, 1994, pp. 13-14)

South African educational authorities need to note these research findings by Kuiper (1994) and Mtsetwa (1994) as discussed above.

An analysis of the above three sets of report conclusions reveals that, while much is being done to further the aims and objectives of E.E. in Zimbabwe, there remains scope for further improvements, such as in the area of curriculum development, teacher training and incorporation of E.E. into subject-based programmes of work.

4.3.3 Environmental Education in Kenya

Kenya is another African country which has achieved much in the field of E.E. Recent visits to South Africa by Dr. Asenath Omwega of the Department of Geography at Kenyatta University in Nairobi and Mrs G Kigato of the National Curriculum Development Centre of the Kenyan Institute of Education revealed the importance of Geography as a vehicle to impart E.E. in their country.

In 1974 Kenya established its National Environmental Secretariat (NES) with its major function being to coordinate, initiate and formulate policies concerning the protection and improvement of the natural and social environment. The NES was divided into various departments among which was one dealing with E.E. and information. This is the department which is concerned with planning and developing E.E. programmes for Kenyans in schools and the public at large. Even though NES was established in 1974, its E.E. programmes were not operational in various educational institutions until the late 1970's.

The introduction of E.E. programmes in Kenya was preceded by various conferences and workshops. Among the key conferences that acted as catalysts for the introduction of E.E. in the formal education sector in Kenya were the 1972 Stockholm conference on the Human Environment and the 1977 Intergovernmental conference on E.E. held in Tbilisi in the then USSR. Following the Tbilisi Conference, Kenya held a National Symposia on E.E. Workshop at the Kenyatta University College in 1979. This workshop was sponsored by the NES. This symposia aimed at reviewing developments made in E.E. since the Stockholm Conference of 1972 and to recommend modalities for implementing and evaluating the proposed E.E. curriculum at various levels of the education system. An important recommendation resulting from this workshop was that E.E. should be offered at all levels of the formal education sector based on the inter-disciplinary approach. From this symposia E.E. was formally incorporated in various subjects at all levels of the formal education system.

The main goals and objectives of E.E. at all levels in Kenya, as identified at the symposia, are to:

- (a) generate an awareness of the importance of safeguarding the environment;
- (b) foster clear awareness of, and concern about economic, social and ecological interdependence in urban and rural areas;
- (c) provide every person with opportunities to acquire the knowledge, values, commitment and skills to protect and improve the environment;
- (d) create new patterns of behaviour of individuals, groups and society as a whole towards the environment;
- (e) create awareness of the environment problems and how to solve them;
- (f) understand and use the environment for the individual, national and international development (Wanaswa, 1993 p.104 in Otiende and Karugu, 1994).

The education system in Kenya has the subject of Geography as a cornerstone at all levels. In Kenya it is a compulsory subject in the school curriculum up to University level. At primary school and junior secondary school the subject offered is Geography, History and Civics (GHC), which is offered as a combined course. One of the important objectives of the schooling system is to develop an awareness and understanding of the environment and to foster positive attitudes to it. Looking specifically at the Geography, History and Civics course (GHC), it aims:

at helping the pupil understand himself as a social being and his relationship with his family, community, district, province, nation and international community. The Geography, History and Civics course also aims at contributing to the effective development of the pupil. Some values that the course aims at developing are patriotism, loyalty, self-reliance, tolerance, co-operation, diligence, honesty, justice, fairness, love, respect for elders, peace and responsibility. A particular concern of the Geography, History and Civics course is the development of skills. The pupil should be helped to acquire the skills of critical thinking, inquiry and decision making.

The Geography, History and Civics course is a genuine attempt at an interdisciplinary study of man and his environment. The course aims at making the pupil understand his environment and be a useful member of his community. To achieve this aim the pupil must understand how the environment has moulded man's development and how in turn man has moulded the environment for his benefit. This implies a study of the relationships of knowledge of man's environment. But focusing on a study of the relationships between Geography, History and Civics does not imply any sacrifice of content in any of the areas. Content items specific to each of the three areas will be stressed, without duplication and overlap as when teaching the three subjects separately.

(Source: Geography Syllabus for Kenya, p. 55).

Various general and specific objectives for the course have been identified, many of them having an environmental bias:

Recognise and use the environment for the individual, national and international development.

Specifically: The learner should be able to:

- (a) Identify problems in his environment;
- (b) Identify the potential and use of local resources;
- (c) Acquire and use skills for the study of the environment e.g. map reading and interpretation;
- (d) Acquire the correct attitudes and values for the conservation and improvement of the environment;
- (e) Understand the relationship of environmental factors for individual, national and international development;
- (f) Utilise, manage and conserve the environment to meet individual, national and international needs;
- (g) Understand and appreciate the importance of local, national and international co-operation in the use of the environment;
- (h) Identify the position and size of the area of study.

(Source: Geography Syllabus for Kenya, p. 55).

In the Geography component of the Geography, History and Civics course the two aspects of the artistic and scientific nature of the discipline of Geography are carefully considered to give the learner an appreciation of the interrelationship between Geography and other disciplines. The syllabus attempts to expose the learner to a systematic study of both physical and human aspects of Geography with specific examples drawn from Kenya and related studies from other parts of the world.

The syllabus preamble points out that there are many methods of teaching Geography. Field work has, however, been singled out and given more emphasis since it gives the learner an opportunity to develop practical skills.

As a result of this, the learner will be able to develop a practical understanding and interpretation of geographical phenomenon. Also, the learners are introduced to the main geographical skills and concepts early in

the course and apply them throughout the course. Relevant statistical methods, field studies and photographs will, therefore, accompany the appropriate content wherever it appears during the four-year course.

(Source: Geography Syllabus for Kenya, p.3).

A study of the Geography syllabus for Kenya reveals on page nineteen an important section of the syllabus of the upper secondary school which has direct relevance to Geography and E.E. This section is titled: Management and Conservation of the Environment and focuses on Management and Conservation measures in Kenya.

Environmental Education at the Secondary School Level

In the secondary school curriculum E.E. is integrated in agriculture, home science, Geography, social education and ethics (SEE), physical and Biological sciences. The following discussion is taken from the Kenya Certificate of Secondary Education (KCSE) Regulations and Syllabuses; 1989-1990, Nairobi: KNEC, 1987 p.377-397 and from work done by Otiende and Karugu (1994).

In agriculture, E.E. is taught within such units as soil, environmental influences on agriculture, soil and water conservation, land reclamation, crop pests and diseases, livestock, health and diseases and water supply.

In home science E.E. is learnt within such units as childhood diseases and ailments, food hygiene and preservation, ventilation, management of time and energy, methods of providing family shelter, nutritional disorders, safety in the home, and environmental hygiene.

In Geography E.E. is discussed within such units as soils, weather and climate, land reclamation, energy, mining, wildlife, fisheries, population and settlement, tourism, industries, transport and communication.

In SEE E.E. is covered within such units as personal health, family needs and resource management, drug use and abuse, the neighbourhood and immediate social environment, nature and ethics of national life, rural and urban school pluralism, population and E.E.

In physical science E.E. is learnt within such units as energy, X-rays, radioactivity, composition of air, water cycle, pollution, properties of metals, non-metals, electricity and re-cycling of waste.

Finally, in biological sciences E.E. is discussed within such units as the study of plants, animals, substances in living systems, nutrition, transport of animals, gaseous exchange in animals and plants, excretion, ecology, animal and human health, micro-organisms, viruses and their economic importance.

An observation which can be made at this point is that students in secondary school chose subjects from six clusters meaning that students who opt to take such subjects as commerce, woodwork or Islamic/Christian religious education may not be exposed to any E.E. in their secondary school course. This is because not all subjects have integrated E.E. in them.

A second observation which can be made is that in the secondary school curriculum E.E. is found mostly in Geography and to a lesser extent in physical/biological sciences. Unlike in the primary school curriculum E.E. messages are not manifest in history and government.

Again, as is the case of primary school curriculum, it is observed that there is an obvious omission of discussion on socio-economic factors relating to the environment. It is not immediately clear why this is ignored, as socio-economic factors are critical in the conservation and enhancement of the environment.

In terms of the development of textbooks and other learning activities at the secondary school level there appears to be minimal practical work; most authors of textbooks prefer to give examination revision questions at the end of each unit topic rather than suggesting projects or field trips which would expose and deepen students' knowledge, awareness, attitude and skills of their environment.

In many ways, textbook authors are restricted by the expectation of national examinations in various secondary school subjects. The secondary education level in Kenya is examination-oriented and textbook authors are extremely mindful of this orientation. This in reality means that while the syllabuses may address themselves to practical topics on E.E.

the message may not be passed onto the students effectively because of the demands of the examination structure.

Many of the concerns discussed above are similar to deficiencies identified by Jones for Namibia (Proceedings 1994b) and Makuku (1992) for Zimbabwe and reflect similarities in the South African situation.

Environmental Education at the Secondary Teacher Education Level

The Kenya Science Teachers' College (KSTC) was the first teacher education institution to offer E.E. as a separate-compulsory subject. The KSTC was later joined by other Secondary Diploma Teacher's Colleges in offering E.E. as a segregated-compulsory subject. In addition the teaching of E.E. is enriched through the relevant academic secondary school subjects that the student-teacher studies in the college. Looking at E.E. as a segregated - compulsory subject the following are the topics studied by all students:

- (a) Introduction to E.E.
- (b) Ecology and management of natural resources.
- (c) Environmental issues such as pollution and human settlement, food and nutrition, energy, technology, health and pollution.
- (d) Natural disasters.
- (e) Environmental management.

Some of the question raised in regard to E.E. as a separate subject at this level include: are the goals and objectives achievable? are the topics adequate in content? what activities, materials, books, evaluation techniques and procedures are used in teaching these topics? who teaches them? how much time is allocated?

If it is assumed that the student-teacher covered the topics mentioned above, at the pre-primary, primary and secondary segments of the education system then the content could

be considered adequate. If not then creating the desired attitude may be rather difficult at this level.

The main reference text on E.E. at this level is A Guide on Environmental Education for Secondary School Teachers in Kenya which was jointly written by UNESCO, Kenya Institute of Education (KIE) and the Kenya Science Teachers' College (KSTC) in 1990.

The stated objectives of the Guide are to:

- (a) create an awareness and understanding on the total environment;
- (b) promote international consciousness, co-operation and action towards creating a 'Common Future' to enhance human welfare for the majority of the global population;
- (c) promote desirable lifestyles through the education of the young towards the achievement of a better quality of life and sustainable development;
- (d) provide secondary school teachers with essential content, teaching methodologies, evaluation techniques and to develop skills necessary to achieve the specified goals and objectives of E.E.

In examining the guide one gets the impression that it deals more with objective (d) above, than the rest of the stated objectives. The guide does not follow strictly the order of topics as stated in the E.E. curriculum; there is a problem of overlap of topics which is likely to cause undue confusion in the learners. For instance there is an overlap in the coverage of the topics - (b) ecology and management of natural resources and (e) environmental management.

Apart from dealing with the content of E.E. the guide also has sections on the methodology of teaching E.E. topics. For example on the topic of famine, hunger and malnutrition the authors of the guide suggest such teaching methods as use of debates, lectures by experts, group discussions, excursions, showing various films on the topic. While these are appropriate methods and activities it may be observed that some of them for example,

lectures by experts and showing of films would be more suited to an urban than a rural setting.

Further, the guide does not address itself adequately to E.E. topics covered in the teaching subjects such as agriculture, home science, biological sciences and Geography. It appears the authors of the guide assumed that E.E. messages or content is sufficiently dealt in the integrated syllabus. Despite this the guide remains a very important resource on E.E. for secondary school student-teachers. The need for the development of such a guide for student teachers in South Africa still remains.

Conclusion

From the above discussion it is evident that the government in Kenya has attempted to ensure that E.E. is an integral part of the school curricula at all levels of the education system. However, there are shortcomings or gaps at different levels of the education system e.g. it is observable that at the lower levels of the pre-school and primary levels, E.E. is better integrated in the school curriculum than at the secondary and tertiary levels.

Unlike formal education in the Non-Formal Education (NFE) sector little progress has been made in integrating E.E. in the curricula. The NFE seems to be generally characterised by a lack of teaching materials, teachers and coordinated planning.

The following recommendations are made by Otiende and Karugu in their review of the state of E.E. in Kenya and substantiate the various primary sources listed earlier in this section:

- (a) Given that the objectives of E.E. are the same at all levels of the education system this would appear to be expecting too much from the students. It would be most realistic to have specific goals for each level; starting from nursery school and building progressively from this level to the university. This would take into consideration the students' readiness, preparedness and capacity to internalise basic concepts of E.E.
- (b) In the formal education sector there is a need to carry out a study to identify the attitudes of teachers, parents and students to E.E. This is because some of the E.E. concepts are not examined in the various examinations in this sector. This puts E.E. at a disadvantage vis-a-vis other examinable subjects.

- (c) There is also a need to carry out a study of how teachers integrate E.E. curricula in actual classroom teaching situations. This would assist in evaluating the success of E.E. integration in such subjects as GHC, science and agriculture.
- (d) At all levels there is need to strengthen the coordination of E.E. activities. This is more so with respect to the NFE level which is predominantly undertaken by NGOs.
- (e) In regard to community participation and public awareness there is a need to prepare E.E. programmes tailored specifically to particular communities. A critical issue which needs to be considered is that each community should be involved in planning and implementing E.E. for its specific needs. This would make it easier to mobilise grassroot communities.
- (f) At all levels inadequate financial, teaching and learning resources are a major constraint in the development of E.E. Therefore the successful integration of E.E. at whatever level will require financial backup in order to train enough personnel and prepare relevant teaching and learning resources for E.E.
- (g) In regard to the Kenya Natural Environment Action Plan there is a need to undertake constant monitoring and evaluation of agreed action plans. (Otiende and Karugu, 1994, pp. 27-29).

The above recommendations, made at the recent Workshop on Research Issues in Environmental Education in East and Southern Africa held in Kenya (29 August - 2 September 1994), provide a good summation of the state of E.E. in that country and need to be heeded by South African educational authorities when implementing E.E. programmes. The empirical study in Chapter Eight of this study attempts to identify teacher attitudes to E.E. and to address some of the issues raised in the above recommendations.

One aspect of E.E. which has received attention in Kenya is the evaluation of specific skills, as well as knowledge, attitudes and values. Since in most curricula in Africa, E.E. is or will most probably be integrated into existing subjects, the African Social and Environmental Studies Programme (ASESP) in Kenya offered a set of skills which teachers teaching E.E. should seek to teach and evaluate:

Environmental Education Skills

1. **Problem/Issue Identification -**

The ability to recognise from direct experience or audio-visual or print media, some apparent impact, threat, or risk to the environment.

2. **Problem/Issue Definition,-**

The ability to generate or synthesise a summary of the problem or issue in narrative, chart and/or pictorial form.

3. **Problem analysis -**

The ability to break a complex problem into simple, clear components, including the source/location of the problem, the input or systematic activity that causes it, and its impacts.

4. **Issue Analysis -**

The ability to recognise the parties at issue, the positions each party takes, their stated or apparent rationales, and the values implied in these positions or rationales.

5. **Primary Problem/Issue Investigation -**

The ability to use sampling, survey and questionnaire techniques to collect primary data on a problem.

6. **Secondary Problem/Issue Investigation -**

Collection and use of audio-visual and print material to investigate a problem/issue.

7. **Problem/Issue Evaluation -**

Based on a synthesis of the primary and secondary sources, the ability to draw a tentative conclusion about the nature, magnitude and importance of a problem or issue.

8. **Identifying Resolution Strategies -**

The ability to identify a range of strategies that a citizen can take to resolve the problem or issue, including persuasive, political, and a legal action and direct management of natural resources. Identify which strategies are applicable and most likely to succeed with the problem or issue at hand.

9. **Planning for Resolution of the Problem/Issue-**

The ability to select one or more strategies to address the problem or issue. Includes identifying resources needed, allocating resources and sequencing activities over time.

10. **Implementing a Resolution -**

Ability to carry out an action plan, to practice the skills needed to carry out the planned strategies.

11. **Evaluating Each Step -**

A planned action should be evaluated before, during, and after its implementation. This skill includes evaluating personal values in relation to the problem or issue.

The emphasis on skills as recommended by A.S.E.S.P., is laudable. A.S.E.S.P. research has also shown that knowledge and skills should not be taught separately and should be complementary to each other. Attitudes and values are difficult to evaluate and because of this teachers tend to shy away from this concern which is particularly important in E.E. This is rather unfortunate because our attitudes as well as personal and group values have a

strong bearing on how we use resources in our environment. Further research is required into the effective evaluation of attitudes and values in E.E.

Vulliamy (1988) has pointed out the importance of teaching about environmental concerns in the developing countries. However, research has indicated the dangers of importing the content of school syllabuses uncritically from developed to developing countries as well as the dangers in transferring teaching styles or curriculum development approaches. Constraints which act against potential implementation of E.E. in developing countries are discussed by Vulliamy and include the socio-political context of schooling, aspects of the educational system and difficulties encountered in the transfer of school knowledge children receive at school to students' behaviour outside the school.

To be successful the teaching of E.E. in schools in developing countries needs to be given high status in the eyes of students and teachers. What might be required is to infiltrate environmental concerns into the higher status subjects (such as English, Mathematics and Science), rather than create new subjects which would inevitably be accorded lower status.

In most developing countries' schools the single most important reform required to promote E.E. would be a change in examination methods designed to promote this. Internal assessment on a continuous basis has been shown to allow greater scope for evaluating skills than the mere regurgitation of factual content which often characterises formal assessment.

What is required is for E.E. protagonists to temper some of their more idealistic ambitions with the harsh realities of the practicalities of schooling in developing countries. This obviously has much relevance for educational planners and syllabus designers in South Africa and has been taken into account by Nightingale in his draft syllabus discussed later in Chapter Seven.

4.4 CONCLUSION

This literature review chapter has attempted to illustrate, through the use of both primary and secondary documentary sources, and using Namibia, Zimbabwe and Kenya as examples, the important influence E.E. can have in the secondary school syllabus and in particular the important role it can play in the Geography syllabus. In many cases it plays a

pivotal role and it is such a role that is required for it in restructured syllabi in South Africa. The importance of a more Africanised perspective on the role of E.E. in Geography is acknowledged, based on the experiences of Namibia, Zimbabwe and Kenya. This represents a challenge to curriculum and syllabus planners in South Africa who have tended in the past to base their efforts on a Eurocentric perspective.

CHAPTER FIVE

RESEARCH METHODOLOGY

5.1 INTRODUCTION: RESEARCH FIELD AND AIMS

The research field addressed through this study is curriculum development in secondary school Geography syllabi in South Africa and in particular the incorporation of principles and practices of E.E. and sustainable development.

The study uses a variety of research instruments: Content analysis of documents, a questionnaire and interviews. Each will be considered in turn. However, initially it is important to distinguish between the two broad paradigms of educational research.

5.2 THE NATURE OF QUALITATIVE AND QUANTITATIVE RESEARCH

According to Bell (1993) quantitative researchers collect facts and study the relationships of one set of facts to another. They measure, using scientific techniques that are likely to produce quantified and, if possible, generalizable conclusions. Researchers adopting a qualitative perspective are more concerned to understand individuals' perceptions of the world. They seek insight rather than the statistical analysis. They doubt whether social 'facts' exist and question whether a 'scientific' approach can be used when dealing with human beings. Yet there are occasions when qualitative researchers draw on quantitative techniques, and vice versa.

Classifying an approach as quantitative or qualitative does not mean that once an approach has been selected, the researcher may not move from the method normally associated with that style. Each approach has its strengths and weaknesses and each is particularly suitable for a particular context. The approach adopted and the method of data collection selected will depend on the nature of the inquiry and the type of information required.

According to Cohen and Manion (1994) investigators adopting an objectivist (or positivist) approach to the social world and who treat it like the world of natural phenomena as being hard, real and external to the individual will chose from a range of

traditional options - surveys, experiments, and the like. Others favouring the more subjectivist (or anti-positivist) approach and who view the social world as being much less certain and more personal and will tend to select from a comparable range of recent and emerging techniques - accounts, participant observation and personal constructs, for example.

Where one subscribes to the view which treats the social world like the natural world - as if it was a hard, external and objective reality - then 'scientific' investigation will be directed at analysing the relationship and regularities between selected factors in that world i.e. predominantly quantitative.

However, if one favours the alternative view of social reality which stresses the importance of the subjective experiences of individuals in the creation of the social world, then the search for understanding focuses upon different issues and approaches them in different ways. The principal concern is with an understanding of the way in which the individual creates, modifies and interprets the world in which he or she finds him or herself. The approach now takes on a qualitative as well as quantitative aspect.

The study thus exists within the qualitative paradigm. Although a questionnaire is used, rigorous sampling did not take place and statistical significance cannot be measured. The findings from the questionnaire are merely indications and highlight certain issues - firm or hard generalisations cannot be made from them. The documentary analysis provides insight into, and understanding of, the development of E.E. in South Africa. While these findings are a valid account of the documents concerned they pertain to a particular context and cannot be generalised to other contexts.

5.3 RESEARCH TECHNIQUES USED IN THIS STUDY

To address the research aim stated in section 5.1 of this chapter a variety of research techniques were chosen. The reason for this variety was first, to provide a range of opportunities for participation in the research, second to support the progressive clarification of the research field and aim and third, because some researchers regard

the use of a variety of research techniques as one of the intrinsic characteristics of qualitative or non-positivist research.

In this study the following two main research techniques were used:

1. Document analysis using both primary and secondary sources but with an emphasis on primary sources where possible. Documents analysed include education reports, syllabus drafts etc.
2. Questionnaire analysis (empirical study)

The document analysis contributed to both a description and an analysis of the past, present and future positions of the areas of study covered while the questionnaire survey obtained information in order to identify broad trends or patterns. In this study both these research tools have been used qualitatively to record impressions and comments and to describe and understand phenomena as they exist.

Minor additional research techniques used included thirteen unstructured interviews of various persons considered by current literature to be leading figures in the fields of E.E. and Geography syllabus development in South Africa. The names of these persons appear in the study acknowledgements on page v and vi of this study.

Information obtained from these unstructured interviews, eight of which were conducted telephonically, is included in the discussion and analysis at various points in the study. Additional information on E.E. and Geography syllabi development in South Africa was requested of persons interviewed, the analysis and information of which appears as stated above in discussion and analysis at various points in the study.

An additional research technique used was conference/workshop analysis of three workshops attended on curriculum development and Geography syllabi development in South Africa. Detailed notes were taken at the conferences and workshops and the observations recorded appear in Chapter Seven of this study. The conferences/workshops attended were a) The Independent Schools Geography Conference held at Michaelhouse School in KwaZulu-Natal in March 1993 b) The Geography Curriculum Initiative in South Africa (GCISA) workshop 'The Future of Geography in the South

African School Curriculum' held in Durban on 16 and 17 June 1993 and c) Various Natal Geographical Association Conferences including one entitled 'Teaching Geography in a Changing South Africa' held in Hilton, KwaZulu-Natal on 19 June 1992.

Although not a widely used research technique, workshops provided the opportunity for the interactive sharing of ideas and development of strategies. Interactive methods of inquiry are consistent with an emphasis on dialogue and social interaction as important features of learning and understanding.

It is important to note that research methods can be used in either a quantitative or qualitative manner depending mainly on the research question being asked, how they are used and what is claimed in the subsequent analysis of research data. In this study interviews were carried out in a semi-structured, informal way with a number of relevant people where, although the interviewer had a list of questions, these were guidelines which were not rigidly adhered to and dialogue allowed to develop to clarify issues and follow up interesting lines of discussion. (i.e. a qualitative approach)

Similarly, the questionnaire was very open-ended and was used with a relatively small group of people to gain insight and understanding. The focus of this study was on the indicative use of the questionnaire and thus represented a qualitative study. Used quantitatively, the questionnaire would have been administered in larger numbers to a properly selected sample and analysed so, so as to make statements about a larger population.

The content or document analysis done in this study is also qualitative in that among other things, it attempts to analyse educational, social and political values in literary sources by describing the contents and analysing it.

A more detailed discussion and analysis of document analysis now follows.

5.4 THE NATURE OF DOCUMENT ANALYSIS

Document analysis or Content Analysis as used in this study constitutes a type of descriptive research, which simply seeks to describe particular phenomena as they are.

Documentary analysis is a sub-category of descriptive research. Descriptive research does not only give a description, but analyses and interprets as well. In other words, it includes the use of techniques such as comparison, contrasting, measuring, classification and evaluation.

According to Best (1970 p.70) descriptive research is concerned with:

conditions or relationships that exist; practices that prevail; beliefs, points of views, or attitudes that are held; processes that are going on; effects that are being felt; or trends that are developing. At times, descriptive research is concerned with how *what* is or *what exists* is related to some preceding event that has influenced or affected a present condition or event.

In descriptive research the researcher is *accounting* for what has already occurred. The majority of education studies that are reported in the literature are descriptive. They look at individuals, groups, institutions, methods and materials in order to describe, compare, contrast, classify, and analyse and interpret the entities and the events that constitute their various fields of enquiry. Descriptive research is sometimes called developmental research because it is concerned both to describe what the present relationships are among variables in a given situation and to account for changes accruing in those relationships as a function of time.

In a later work Best (1977) sees content or document analysis as dealing with the current records or documents as sources of data. Although documents usually consist of written or printed works or figures, they may also include paintings, drawings, cartoons and photographs. Some studies may merely gather and classify factual data from the official reports of institutions or organisations. Other studies may classify and evaluate the contents of documents according to established criteria.

In using documentary sources, one must bear in mind the fact that data appearing in print are not necessarily trustworthy and need to be subjected to careful criticism. Not only is the authenticity of the document important, but the validity of its contents is crucial. The researcher has the obligation to establish the trustworthiness of all data that he draws from the documentary sources.

In documentary analysis the following may, for example, be used as sources of data:

official records and reports, printed forms, textbooks, reference books, letters, autobiographies, diaries, compositions, themes or other prepared work, books, magazines, newspapers, syllabi or courses of study, pictures, films and cartoons.

According to Best (1977 p.129-130) the following two purposes may be served through documentary analysis:

1. To describe prevailing practices or conditions
2. To discover the relative importance of, or interest in, certain topics or problems.

To which may be added:

3. To analyse values in documents
4. To analyse sources of documents

Best believes that content or document analysis should serve a useful purpose in adding important knowledge to a field of study, or yielding information that is helpful in evaluating and improving social or educational practices.

In their work Cohen and Manion (1989) differentiate between historical research and other forms of research. Historical research deals with data that already exists and can be classified into two main groups: primary sources and secondary sources. Primary sources of data have been described as those items that are original to the problem under study and include:

not only the written and oral testimony provided by the actual participants in, or witness of, an event, but also the participants themselves. Documents considered as primary sources include manuscripts, charters, laws, archives of official minutes or records, files, letters memoranda, memoirs, biography, official publications, wills, newspapers and magazines, maps, diagrams, catalogues, films, painting, inscriptions, recordings, transcriptions, log books and research reports. All these are, intentionally or unintentionally, capable of transmitting a first-hand account of an event and are therefore considered as sources of primary data. Historical research in education draws chiefly on the kind of sources identified in this second category. (Cohen and Manion, 1989, p.55)

Various commentators stress the importance of using primary sources of data where possible:

In the process of conducting historical research the investigator should never be satisfied with copies of documents that can be obtained in original form ... Relatively insignificant errors in reproduction processes may, through additive or multiplication effects, produce a resultant error of comparatively great magnitude in the final form of the data. This condition is particularly well illustrated in reporting census data in various forms and indexes, where these final forms are derived through the operations of addition, subtraction, multiplication and/or division. (Hill and Kerber 1967 in Cohen and Manion, 1989, pp. 55-56)

Cohen and Manion (op.cit.) see secondary sources as those that do not bear a direct physical relationship to the event being studied. They are made up of data that cannot be described as original. A secondary source would thus be one in which the person describing the event was not actually present but who obtained his descriptions from another person or source. These may or may not have been primary sources. Other instances of secondary sources used in historical research include: quoted material, textbooks, encyclopaedias, other reproductions of material or information, prints of paintings or replicas of art objects. Best (1970 in Cohen and Manion op.cit.) points out that secondary sources of data are usually of limited worth because of the errors that result when information is passed on from one person to another. On the other hand the value, too, of secondary sources should not be minimised. There are numerous occasions where a secondary source can contribute significantly to more valid and reliable research than would otherwise be the case.

5.5 REQUIREMENTS OF DOCUMENT ANALYSIS

To have credibility and academic worth document analysis needs to have both validity and reliability and be subjected to either external or internal criticism or both.

Validity refers to the problem of whether the data collected is a true picture of what is being studied. Is it really evidence of what it claims to be evidence of? The problem arises particularly when the data collected seems to be the product of the research method used rather than of what is being studied. Traditionally qualitative research has tended to be high in validity.

On the other hand, reliability concerns the replicability and consistency of the methods, conditions and results of research. It refers to the problem of whether data collected or research evidence obtained would be the same if somebody else using the same

method, or the same person using it another time, would come up with the same results. i.e. if the research is repeated would the same results be obtained. Some methods in sociological research are regarded as being more reliable than others. Any method that involves a single researcher in a situation that cannot be repeated, as in this study, is always in danger of being thought unreliable. Qualitative research is normally characterised as being low in reliability.

Duffy (in Bell 1993) discusses how the analysis of documents can be divided into external and internal criticism, even though these may overlap to a large extent. External criticism aims to discover whether a document is both genuine (i.e. not forged) and authentic (i.e. it is what it purports to be and truthfully reports on its subject.) In external criticism it is necessary to know for certain that the author produced the document and questions may need to be asked to clarify this.

Internal criticism is the method whereby, as in this study, the contexts of a document are subjected to rigorous analysis. Included here is the need to assess whether fact or bias is the main analysis. Included here is the need to assess whether fact or bias is the main characteristic of a document or whether and how the case it makes contributes to a particular discussion or argument.

5.6 THE NEED FOR MORE DOCUMENT ANALYSIS

According to Scott (1990) documentary sources of information, of all kinds, figure centrally in the research of social scientists. Yet these materials have rarely been given the attention that they deserve in accounts of sociological research methods. The aims of Scott's book is to attempt to remedy this situation by illustrating the diversity of documentary sources available for social research. He shows that methodological issues and general principles involved in handling documentary sources are similar to those that arise in handling any sources of evidence in social research. Scott introduces four criteria of assessing the quality of social research evidence - authenticity, credibility, representativeness, and meaning and applies them to the whole range of social research before proceeding to a detailed consideration of documentary sources.

Harber (1996) also points out that documentary sources of information have however not been given the attention they deserve in accounts of educational research methods. This is in spite of the fact that documentary research has a number of advantages, given the constraints of the contexts in which ones research may be carried out. For educational researchers, documentary research merits more serious and conscious attention in research design.

Documents used qualitatively, are used both to try to gain realistic insights into various contexts, issues and organisations as well as to analyse and interpret the meanings transmitted by them. They play a role in contributing to our understanding of the often ambiguous and problematic nature of education that is difficult with ordered, tidy and generalisable statistical data based on controlled sampling. Harber points out certain important advantages of documents - they are convenient to use, are often free or available at only a small cost, can be collected during a shorter pace of time than interviews, questionnaires or data based on observation and can be analysed at one's leisure when the institutions supplying the data are closed.

Of course documents must be used carefully and with sensitivity to the possible biases and mistakes of both the writer and researcher. They tend to be impressionistic and non-verifiable. They also have a major limitation in that they describe what is said rather than what is done. They are however both a useful support to other research methods and a valuable research method in their own right.

Secondary documentation provides information which is non-original, second hand information which already exists. In contrast to this, primary data is obtained directly either from people themselves or from eye-witnesses. However, Harber (1996) points out documentation can belong in either category depending on its nature and how it is used. For example, school textbooks usually contain secondary information but if the context is being analysed for political values then they become primary sources.

As stated earlier the problem with secondary documentation is that what is said can differ from that was actually done and sometimes documentation can be deliberately written in such a way so as to alter perceptions of what happened according to a particular perspective. Other research methods are thus often used in conjunction with

documents. Despite the above misgivings, as Harber points out, a great deal of communication about and within education comes in a written form and the resulting documentation offers a potentially rich source of qualitative research insights into education. The relevancy of using document analysis as a research method in this study is pertinent here, with the study's focus on the development of new syllabi for Geography in an emerging new curriculum.

5.7 DOCUMENTS USED IN THIS STUDY

Various documentation in the field of E.E. and Geography Education were used to gain insight into the existing and potential relationships between the two. Besides the study of writings of various individual authors, all perceived leading figures in the field, documentation of various organisations and bodies were also studied. These include E.E.A.S.A. and its Education Working Group, the South African Journal of E.E., the South African Council for the Environment and the South African Development Conference Workshop. Documentation obtained from various educational bodies and conferences was also analysed. This includes information obtained from various National Departments of Education, including Namibia, Zimbabwe and Kenya as well as proceedings of various conferences attended while others were analysed in terms of proceedings documents obtained. Every effort was made to undertake, where possible, document analysis of primary as opposed to secondary sources.

5.8 THE QUESTIONNAIRE AS A RESEARCH TOOL

Although the use of the questionnaire is the research method probably subjected to the most criticism, it is still the method used most frequently by educational researchers. Actually it has unique advantages and properly constructed and administered, it may serve as a most appropriate and useful data-gathering device in a research project. According to Van Dalen (1978) for some studies, or certain phases of them, presenting respondents with carefully selected and ordered questions may be the only practical way to obtain data. Researchers using questionnaires are usually well aware of the advantages to be gained through their use but need to be mindful of the limitations and difficulties associated with them.

The use of the questionnaire as a qualitative research tool, as has occurred in this study, has both advantages and disadvantages. The advantages include its breadth, its ability to encompass a wide range of information and to allow the researcher the ability to fairly easily come to conclusions or make inferences. Questionnaires are a good way of collecting certain types of information quickly and relatively cheaply as long as subjects are sufficiently disciplined to abandon questions that are superfluous to the main task.

Disadvantages associated with the use of questionnaires in qualitative research include sometimes a lack of the depth, with the questions asked requiring only superficial responses. Lack of explanation can also be a problem depending on the amount of open-ended type responses required by the questionnaire. Problems of validity concerning questionnaire responses are a well known disadvantage of this type of research tool. The first concern in this regard is whether respondents who complete the questionnaire do so accurately and second whether those who fail to return their questionnaires would have given the same distribution of answers as did the returnees. It must also be borne in mind that while there were enough respondents to justify certain broad statements the sample was not scientifically selected in a quantitative sense and the findings are regarded as suggestive rather than conclusive.

5.9 THE QUESTIONNAIRE USED IN THIS STUDY

Regarding the actual questionnaire used in this study, a copy was sent to the Geography Subject Head of a randomly selected number of 32 secondary schools in KwaZulu-Natal, both private as well as state and state-aided. All the schools surveyed wrote the ex-Natal Education Department Natal Senior Certificate Matriculation examination.

The process began with a letter dated 27 October 1993 sent to Professor G Garland of the Department of Geographical and Environmental Sciences at the University of Natal in Durban by Dr R Ballantyne of the Queensland University of Technology in Australia. Dr Ballantyne sent the letter in his capacity as a Project Leader of an International Geographical Union Survey of Geographers and Geography educators regarding their perceptions of the place of E.E. in Geography. I, in turn received a

letter dated 23 November 1993 from Professor Garland requesting my help in the distribution of the questionnaires among practising teachers. The letter was presumably sent to me as the Current Chairman of the Natal Geographical Association, a body consisting of about 250 mainly secondary school teachers from throughout KwaZulu-Natal. It was probably felt that I would have at my disposal the required infrastructure to more easily distribute the questionnaire among teachers. The matter was discussed with Mr HJB Bosman, then Subject Advisor for Geography in the ex-Natal Education Department. It was decided that a letter would be sent to the Senior Teacher of the 32 randomly selected secondary schools inviting responses from their staff as well as themselves on their understanding of the aims of E.E. and its place in the teaching of Geography. The Senior Teachers were instructed to allow their staff to photocopy the questionnaire so as to allow as many teachers as possible to respond to it. Responses were to be returned by 29 July 1994.

The list of schools involved in the survey appears as Appendix I. Also listed is the numbers of teachers teaching Geography in those schools which provides an indication of the total number of possible survey respondents. The actual survey/questionnaire used appears as Appendix II. An indication was made to Mr HJB Bosman that I would be willing to collate the responses to the survey as part of this study, to which he agreed.

A total number of 70 responses were received by the end of August 1994. A period of 1 month's grace was allowed to cater for late returns and postage problems experienced by outlying rural areas. Appendix I reveals that a total of 110 possible responses could have been received, this being the total number of teachers teaching Geography in those schools at the time. This produced a 64% response which represented a satisfactory return when it is born in mind that the original letter to Geography Subject Heads did not clearly state how many responses were expected from each school, some schools getting all Geography teachers to return a questionnaire and others only the Senior Teacher. According to Dyer (1979) response rates of less than 50% are fairly common for mailed questionnaires in educational research. The responses clearly indicate that in some schools all teachers of Geography completed a questionnaire, in others only a selected few teachers and in

some others only the Subject Head responded. The sample of 70 teachers represents about 20% of the total number of secondary school teachers in KwaZulu-Natal teaching Geography in schools writing the Natal Senior Certificate examinations.

It is believed that the findings have value as an exploratory study and can act as an indication of trends in teacher thought on the subject. An encouraging aspect of the study was the spread of responses received from teachers of varying experience in the teaching of the subject as well as the spread of responses received from schools scattered throughout the province, both urban and rural, private and public, co-educational as well as single sex. The sample of thirty two schools reveals the following breakdown: Urban 20, Rural 12; Private 2, Public 30; Co-educational 19 and Single sex 13.

The study findings, discussed in Chapter Eight of this study, reveal clearly that E.E. has an important part to play in effective Geography teaching in South African. The study also clearly shows that the sample of teachers involved see E.E. as an important component of good Geography teaching and that the majority of Geography lessons should have an environmental focus.

5.10 CONCLUSION

The preceding discussion of various research techniques has revealed their appropriateness in undertaking the task of successfully achieving the study's research aims and to explore as fully as possible the study's research field. The need for the greater inclusion of E.E. in the development of new Geography syllabi in South Africa is highlighted by the research and presents a challenge to educational planners and syllabus development personnel. The importance of teacher input in the process is seen as crucial to its eventual success. These points are highlighted by the empirical studies discussed later in Chapter Eight.

CHAPTER SIX

THE STATE OF ENVIRONMENTAL EDUCATION IN SOUTH AFRICA, IN THE SOUTH AFRICAN EDUCATIONAL SYSTEM AND IN THE CURRENT SOUTH AFRICAN SECONDARY SCHOOL GEOGRAPHY SYLLABUS

6.1 INTRODUCTION

This chapter will attempt an overview of the current position of E.E. in South Africa as well as examine the current position of E.E. in the formal sector of the South African educational system, with particular reference to secondary schools. This will act to provide a perspective for the previous chapter of the study which focused on the position of E.E. in the Geography syllabus of selected African countries.

This will be achieved in this chapter by content analysis of documentation relating to the development of E.E. in South Africa. The structure of the chapter is historical and selected key documents in the recent development of E.E. will be analysed and discussed. Focus will be placed on five important primary sources with brief comment on secondary sources where applicable. The documents and reports selected for analysis and discussion are seen by this study to be important to the development of E.E. as a curriculum initiative in South Africa.

In each case an attempt will be made to analyse and discuss the document in terms of a few key questions viz. What was the document's purpose? Why was the document produced when it was? Where does the document fit into an ideological framework? What significant contribution does the document make to the developing debate on E.E. in South Africa? Section 6.2.6 of the chapter provides further critical analysis of the documentation. This section and the chapter conclusion will be used to draw these strands together.

6.2 THE POSITION OF ENVIRONMENTAL EDUCATION IN THE SOUTH AFRICAN EDUCATION SYSTEM

6.2.1 Department of Environment Affairs 1989 White Paper on Environmental Education (Refer Appendix III)

The draft White paper on National Policy regarding E.E. in 1986 constitutes the starting point in the discussion of the current position of E.E. in South Africa. The White paper established a policy on E.E. to promote and act as a guide line for joint and co-ordinated campaign at all levels of government and by all formal education authorities, persons and institutions involved in non-formal and informal education. The draft White Paper was accepted by the Government and released as a White Paper on Environmental Education in 1989. Much discussion and debate followed the release of the White Paper, much of it focusing on the legitimacy rather than on the manner in which the process of E.E. could be incorporated into schools and even in the formulation of a national Schools' E.E. Policy.

The publication of the White Paper marked the beginning of a new era in the search for a long-term solution to the environmental crisis in South Africa. E.E. had now been accorded international recognition by bodies such as the International Union for Conservation of Nature and Natural Resources (I.U.C.N.), United Nations Environment Programme (U.N.E.P.), and the World Wide Fund for Nature (W.W.F) and had at last been accepted at the highest official level in South Africa.

The aims outlined in the White Paper are :

To stimulate education processes that develop responsible life-styles in harmony with the environment as a whole. (White Paper on Environmental Education, 1989, p.5)

The principles of this document reflect concern for the total environment, both natural and man-made. They also reflect the interdisciplinary and participatory nature of the process.

Of the strategies listed in the White Paper the following are highlighted as areas of current relevance:

1. The White Paper supported curriculum initiatives in E.E. and suggested that these should be cross-curricular and integrated. In the past the inclusion of E.E. into the core syllabus alone was seen to be the way to achieve E.E. in schools.

The Wildlife Society of Southern Africa's experience and indeed that of the curriculum movement on a worldwide scale indicated that this was no easy matter. Far more than a policy was necessary to institute the profound changes required for effective E.E. The South African education departments at the time now had the mandate to initiate the required changes as a result of the White Paper and were already making headway.

2. The Paper also made provision for strategies to supplement formal curriculum initiatives and give support to E.E. projects and centres while stressing the need for teacher-training. Much good work in this area was already being done by the Wildlife Society and other organisations whose strategy had progressed from a simplistic outlook of attempting to convert people to the conservation ideal and teaching them how to attain it, to one of partnership - enabling people to take the initiative for their own change. The most important outcome of this change in direction was that the strategy reduced the likelihood of teachers becoming too dependent on outside support and instead enabled them to lead the way as agents of change.

3. The White Paper also recommended the provision and development of resource materials for E.E. including the provision of handbooks (for teachers), workbooks (for pupils) and audio-visual aids. Much good work had been achieved in this area and co-operation between, for example, the Wildlife Society's Extension Service and E.E.A.S.A. had initiated a snowball effect of awareness enhancement and

continuing change as people interacted with one another over environmental issues.

In terms of research the White Paper listed evaluation as a priority as well as advocating research into teaching methods and teaching aids for E.E. Various bodies research experience in the evaluation of E.E. at the time enabled a new synthesis for evaluation to be achieved in which communication and evaluation merged to provide a powerful driving force for change towards an environmentally responsible society.

Although the White Paper was to be welcomed many at the time were left with a sense of helplessness at the lack of action that sometimes results from Government initiatives. The claim that the White Paper was simply lip service to E.E. and avoided having to do something more tangible was, however, unreasonable. The Department of Environmental Affairs had achieved a great deal with limited resources and was now likely to continue doing so with greater support and recognition.

The White Paper also provided other Government departments, in particular the education and conservation departments, with a much-needed mandate for E.E. From the Wildlife Society's and other non-government organisations' point of view, the document had considerable positive implications particularly since it promised "direct or indirect support" (page 8) for private-sector E.E. initiatives.

At the time the White Paper was welcomed and the Council for the Environment was to be congratulated for providing the initiative and the Department of Environment Affairs for taking the draft along the lengthy road to fruition. It was hoped that the Government would be able to put the plans into effect with the all-too-frequent financial cut-backs. It was hoped, too, that the strategies characterised by terms like "target groups", "behaviour modification" and "communication by objectives" so prevalent in our thinking in the past, would make way for more tenable communication practices. A behaviourist view of communication to achieve behaviour change was seen as a

weak way of going about E.E.

Irwin (1990) in his analysis states that credit needed to be given to the Department of Environment Affairs and the Council for the Environment for overcoming years of resistance from conservatives in some of the country's education departments for preparing the White Paper. Despite some scepticism and limited acceptance of the document among sections of society at the time, the document unequivocally embraces the 'Tbilisi Principles' and the internationally accepted concept of E.E. and for this it deserved thorough consideration. Irwin (op.cit.) saw the White Paper as a potentially powerful tool for promoting E.E.

Concerns about the White Paper were raised by Viljoen and Fenn (1990) who were worried that in its format at the time it might be irrelevant and outdated for a large section of the education fraternity. A possible reason for this was identified, namely that the White Paper was compiled in the absence of a large representative group such as the Mass Democratic Movement and other groups at the time whose representatives were either in exile or not invited due to their liberal and progressive approaches to education. They suggested a re-formulation of the White Paper which needed to propagate and publicise E.E. more aggressively. It also needed more authority and 'teeth' in order to ensure co-operation between various education departments and organisations.

6.2.2 Council for the Environment. 1993. The Development of a Core Syllabus for Environmental Education in South Africa. Council for the Environment, Pretoria (Refer Appendix IV)

In October 1993 the Council for the Environment released a document entitled 'The Development of a Core Syllabus for E.E. in South Africa'. In the document it was claimed that:

✓ | This document was produced after preliminary consultations ... at a national conference convened under the auspices of the Department of Environment Affairs and the Environmental Education Association of South Africa at the Dikhololo Conference Centre ... (Council for the Environment, 1993, p.4)

This document provided as its rationale some dimensions of E.E., explored also why E.E. deserved to have the status of a discrete subject at tertiary level, the evaluation of E.E., principles to be observed in the development of an environmental curriculum, identification of objectives and scope for the proposed course as well as the development of teaching and learning methods.

An article in the journal Enviroteach No. 1 1994 provides the background to the development of this syllabus. During 1992 the Committee for Environmental Education of the Council for the Environment undertook a survey of E.E. education programmes at tertiary level in South Africa. The committee's original brief was to start a process whereby a holistic E.E. programme could be generated.

The document, The Development of a Core Syllabus for Environmental Education in South Africa, was produced after preliminary consultations with a group of educational planners at the national conference convened under the auspices of the Department of Environment Affairs and the EEASA at Brits during August 1993. (the Dikhololo Conference).

According to the Council for the Environment (in Enviroteach No. 1 1994, p. 33)

It was envisaged that this working document might serve as a catalyst to enable the effective implementation of specialist E.E. courses at colleges of education at Higher Diploma in Education level, at Further Diploma in Education level, and at graduate and post-graduate levels.

E.E. is seen by the document as a multi-disciplinary task, using a broad range of teaching methodologies e.g. the creative arts, hand in hand with more traditional methods, to provide a highly effective manner of conveying environmental issues.

Much criticism has been levelled at this document by EEASA and their Journal No. 13 of 1993 contains papers by Taylor, O'Donoghue and Clacherty as well as Schreuder which examine the Council for the Environment document. The document is criticised in terms of process, content and substance by the EEPI working group and the National Education and Training Forum (NETF) was asked to intervene in the dispute. Environmental issues needed to be key agenda issues in formal education and disputes like this one between EEASA and the Council for the Environment required a speedy resolution.

The EEPI developed a response to the Council addressing issues of process, for it was strongly felt that the Council had neglected the basic principles of consultation and inclusivity and had then attempted to gain credibility by means of the reference to the Dikhololo process, which enjoyed wide support and credibility. A formal response reflecting these concerns was sent to the Council.

At the same time as the EEPI response was being compiled, a number of other environmental educators, as mentioned above, also decided to voice their concern about the Council's document.

Taylor, O'Donoghue and Clacherty examined the Council's document in terms of process, underlying orientations and substance. Deficiencies in the process by which this document had been produced, worrying underpinning orientations and inconsistencies in its substance led this group to question where this document was taking E.E. in South Africa.

According to Taylor, O'Donoghue and Clacherty the chief concern about the way the Council document came about lay in the fact that in the education community in South Africa, the focus of conflict had been attempts on the part of the existing education authorities, primarily the Department of National Education (DNE), to develop and put in place new education policy in isolation of the wider process of policy

development. This had been seen as attempts at 'unilateral restructuring' and at entrenching certain views and structures ahead of national negotiations in education.

It was noteworthy that the DNE had undertaken to desist from the unilateral activities and rather to locate such work within the ambit of the National Education Training Forum (NETF). It was noted with concern that the Council for the Environment had not thought it necessary to take a similar step.

Further the authors believed that there was a fundamental inconsistency in the fact that the document laid claim to having been constructed after consultation at Dikhololo, while, in fact, it had been released outside the EEPI in an attempt to position itself as a national resource for the development of syllabi and programmes. A document used at a national level for this purpose was clearly a policy. One must thus question the intent of the Council. Its members endorsed the EEPI, and the Council then appeared to have rush released its own and apparently competing policy initiative. In these circumstances it was difficult to understand the call for the document to be:

considered, edited, added to, amplified and extended to accommodate all desired emphases, to become a national resource document for the development of local E.E. syllabuses and programmes (Council for the Environment, 1993, p.4)

The authors demanded that the Council clarify its apparently dual agenda and its participation in the EEPI initiative with the Department of Environmental Affairs. The Council and the Department shared the same address so they should more easily than some other groups, have been able to work together on the clarification and support of E.E.

Further problematic underlying assumptions as well as issues of content were of concern to the authors. Scrutinising of the document reveals an underlying ideology (technicism) and an orientation (behaviourism) that has been discredited throughout the world. Also a careful analysis of the text reveals a worrying association of ideas in the document with those of Christian National Education and its education philosophy

of fundamental pedagogics. Other criticisms of the document are its eclectic style, its reductionist outlook on learning, its tendency towards limited perspectives on major issues and its lack of coherence in substance. Many of these criticisms also apply to the government's White Paper of 1989 discussed in the preceding section.

✓ Taylor, O'Donoghue and Clacherty conclude their analysis of the Council Document thus:

The core syllabus which initially held such a compelling sense of usefulness, is to say the least, unhelpful. It amounts to little more than a superficial rhetoric that is internally inconsistent and serves more to cloud and to confuse than to illuminate E.E.. This syllabus document clearly needs to be radically reconceptualised, both as a process and in terms of its substance, if the Council is to contribute to the development of environmental education programmes in South Africa. We would like to believe that the Council's document was prepared and marketed with the best intentions for the future of E.E. in South Africa. That the document has dangerous ambiguities is probably owing, ironically, to the lack of co-operation in its development, coupled with a desire to satisfy all-comers and to influence education practice in the heat of current events. This does no justice to E.E. as a significant endeavour for education change in South Africa. The fact that a wider group of expertise needs to work together on projects of this nature is obvious, especially in the light of the wide range of opinion that is apparent, and reflected in this document. We hope that through this effort to debate the issues we will all learn a great deal. (1993, pp. 43-44)

6.2.3 Environment, Development and Environmental Education: A working document of sources and perspectives in formal education. (Edited by Rob O'Donoghue, Published by the EEPI, 1994.) (Refer Appendix V)

On the 25th April 1994 all participants in the EEPI process received a document from A.J. Clacherty, the National Executant for the EEPI Steering Committee viz The Environment, Development and Environmental Education. This document was developed originally by the Natal Working Group of EEPI as a working paper Environment and Development Education and as draft booklet 9/93 and is commonly referred to as the 'Natal' document. It has since been developed further and broadened in its perspective. It was now able to act as a valuable resource and

stimulus document and represented an important contribution in the field. This document was useful as it considered key quotations and issues in E.E., explored key concerns regarding the environmental crises globally as well as in Southern Africa and reviewed changing perspectives in the field. Some options for formal education were provided, focus areas and current initiatives considered, references, resource materials and case studies also made available.

The document expressed concerns about various limitations of past perspectives and documents on E.E. in South Africa. Many approaches had been weak owing to very narrow perspectives on environmental problems and on communication, learning and change. Firstly, the environment crises had tended to be treated as resource destruction, pollution and conservation issues, to the exclusion of social, political and economic concerns. Secondly, the dominant approaches have been the communication of information to create public awareness and nature study fieldwork experiences to change values and attitudes. These perspectives were seen as outdated and narrow and the document explores a wider vision of environmental issues and forwards some policy and curriculum options.

Further analysis of the document reveals its attempt to locate trends in E.E. historically, to map shifts and to portray the “multiple narratives” of E.E. in Southern Africa. Of great value to the community was the way the document traced developments from the 1970’s focus on conservation education (teaching about nature and conservation problems), into the 1980’s with an emphasis on values education and experiential fieldwork in nature, into the 1990’s, where the focus has moved to environmental action and community-based problem-solving, empowerment, sustainability and social justice.

The above trends are summarised by the document in terms of changes of perspective in three areas:

- From top-down messages (which still characterises much environmental education activity today) to participatory action;
- From nature experience approaches to experiential action research;
- From conservation of natural resources to sustainability and social justice.

The document asks the following key policy and curriculum question:

How can policy and curriculum initiatives be undertaken to empower teachers and pupils with the capacity to exercise choice, to take responsibility and to engage in creative action to solve problems?

The document is seen as a valuable “broad sweep” resource document with some challenging new perspectives to consider and provides a valuable contribution to the development of E.E. in South Africa.

6.2.4 The Integration of Environmental Education into Formal Education(Discussion document edited by Tinus Joubert and Lindie Steenkamp. Published by the Department of Environmental Affairs & Tourism, Pretoria, 1995.) (Refer Appendix VI)

Attention will now be given to the first draft of a Discussion document of an E.E.A.S.A. Education Working Group titled The Integration of Environmental Education in Formal Education (1994). This report arose out of a meeting of the steering committee of the EEPI on 12 August 1994 in which regions and constituencies were requested to consider how E.E. should be integrated into formal education and they should develop a document which might serve as structure for the integrating process. A group consisting of various persons in the formal education structures met on 1 September 1994 and a task group was designated to compile a document which included all the various suggestions of the different groups. The task group met on four occasions (14,22, 23 September and 20 October), and compiled a

document for discussion. This final document was compiled after feedback from all participants and represents a bulky piece of documentation.

This document, commonly referred to as the ‘Pretoria document’ was drawn up by the Pretoria Working Group of the EEPI which consisted mostly of education department personnel. The group expressed the concern that much of the EEPI debate and policy development was not taking adequate account of the processes and structures within formal education that need to be considered in education policy development. It also recognised that departmental decision-makers would need to be presented with documents written in a particular style in order to promote a strong identification with the subject.

After an introductory rationale the document discussed the concept of sustainability in South Africa. Sustainability is seen as a crucial ethic that needs to form a central focus in E.E. programmes in our schools. The document examines the concept of the environment, E.E. and environmental literacy before examining the aims, goals and objectives for E.E. in formal education.

According to the document E.E. needs to become a central focus of the curriculum which should offer students opportunities in three components throughout their schooling:

- * education about the environment (knowledge and understanding)
- * education in and through the environment (resources, skills and experience)
- * education for the environment (values, attitudes and positive actions)

The above components were discussed in Chapter Three of the study. According to the Education Working Group (op.cit.) E.E. also needs to encourage commitment to the environment. Schools should become environmentally aware and responsible communities in themselves which will influence their local areas. According to the document schools should adopt the following principles for sustainable living:

Principles for Sustainable Living

- * Respect and care for the community of life
- * Improve the quality of human life
- * Conserve the earth's vitality and diversity
- * Minimise the depletion of non-renewable resources
- * Keep within the carrying capacity of the earth
- * Change personal attitudes and practices
- * Provide an international framework for integrating development and conservation
- * Create a global alliance
- *

Caring for the Earth 1991

These principles need to underpin all areas of the curriculum and be promoted through all subject teaching. The curriculum should be relevant to the learners and should incorporate local community concerns and interests. A strong focus needs to be placed on skills development and critical problem solving. The document lists the following characteristics of an ideal curriculum for environmental education:

- * **learner-focused**
- * **holistic**, considering natural, human living, technological and social environments where the latter category would also include economic, political, cultural, ethical and aesthetic aspects;
- * **universally oriented**, not only for the ecosystem of Earth, but for the entire universe;
- * **future-oriented**, demonstrating concern not only for the present, but for future inhabitants as well;
- * **issue-oriented**, examining issues through all perspectives - local, regional, national, international and universal;

- * **action-oriented**, directly involving participants in the resolution of local problems and issues;
 - * **continuous**, serving students in all subject areas at all grade levels;
 - * **interdisciplinary**, drawing its content from all disciplines and
 - * **experientially oriented**, employing a diverse array of learning environments and instructional approaches, utilising direct experiences whenever possible.
- (Education Working Group, op.cit., pp. 17-18)

The document cites the Science, Technology and Society (STS) approach to curriculum and syllabus development which is recognised by various countries (including Australia, United Kingdom, United States, Canada and others) as a suitable way to incorporate environmental issues into the curriculum.

According to the document:

The STS approach strives to broaden the scope of science education by integrating into the science programme accurate presentations of the nature of science, the nature of technology and the interactions of science and technology with each other and with society. The primary motivation to make STS an important part of science curriculum is the realisation that the effect of science and technology on society must be understood by the citizens of society. Not only will citizens and leaders have to be more scientifically and technologically literate, but they will also have to be more aware of the limitations of science and technology in solving environmental problems in our society. Many people have come to believe that scientists and technologists will always be able to provide a solution for environmental problems created by the needs and wants of modern lifestyles. What is certain is that all citizens will have to make more and more decisions of STS issues. An STS approach to environmental education lends itself to focusing on problems students might encounter as part of a wider real world experience. (Education Working Group, op.cit., p. 19)

The document states that the general feeling is that E.E. should be treated as a non-curricular approach in education. As has already been stated this is also the view held in this study. Some educationists, are, however, in favour of treating it as a separate

subject. Whatever approach is used a school policy of E.E. needs to be formulated by all schools to suit their own particular ethos and situation. The school's link with its community is very important. The school policy for E.E., once formulated, should be worthwhile, workable and acceptable to the school's community. Besides School Policy, the document provides recommendations on the Learning and Teaching Environment, Teaching Programmes, the nature and use of Resources, Evaluation and Assessment.

The process of E.E. also requires the use of diverse formative assessment methods which according to the document could include the following:

- (i) Assessment of understanding and knowledge of concepts
- (ii) Assessment of attitudes and values
- (iii) Assessment of skills
- (iv) Assessment of issue-based learning

Regarding Teacher Education the document sees an enormous challenge being directed towards teacher education when E.E. is integrated in formal education. The E.E. approach requires a change in attitude from teacher/content centred education, to learner centred education. Teachers need to be educated in the field, with the necessary knowledge, skills and attitudes being obtained during pre-, in-service and further training.

All teachers need to make a contribution to the development of environmental awareness, understanding, skills and commitments to action through the subjects that they teach.

E.E. is not the responsibility of specialists only. Teacher education should be more practically orientated towards wider issues/problems in their immediate communities (e.g. socio-economic issues), reconsidering the school as a focus and resource base for

their community. Teachers need to be proactive in terms of local environmental issues, not reactive. Regarding pre-service teacher education, E.E. must of necessity be included as a compulsory module, a subject in all certificate, diploma or degree courses.

In summary the document is comprehensive and draws together a wide range of concepts and curriculum possibilities from around the world, as well as reflecting a South African reality. It does not go into detail in terms of policy options.

The Pretoria document contains many sections which complement the Natal document discussed in the previous section. For example, Introduction: "Clarifying environmental education": Situation analysis; Rationale; Principles; aims, goals and objectives of environmental education; list of essential learnings in E.E. and approaches, methodologies and strategies.

These encourage the reader to engage with the range of material presented there and to subject it to further debate.

In terms of the four key areas of policy options presented, the Pretoria document focuses almost entirely on the "infusion" of E.E. into the curriculum. In this regard it does not take full account of more recent trends towards critical environmental action and community problem-solving. However, its main value for formal education is its comprehensive coverage of a wide range of E.E. themes drawn from literature, both here and abroad.

6.2.5 Environmental Education Policy Options for Formal Education in South Africa. E.E.P.I. October 1995 Edited by A.J. Clacherty (Refer Appendix VII)

This document updates, revises and extends a draft document dated July 1994 by A.J. Clacherty which contained extracts from policy documents on Approaches to Incorporating Environmental Education into the Curriculum. In the 1995 document a

national core curriculum with local flexibility is advocated. In order to achieve the ideals of E.E., the EEPI believes that the curriculum should not be prescriptive. It should allow for flexibility, relevance and a local emphasis. This means that the core curriculum should specify skill, principles and concepts and not over emphasise specific content. It would thus be in a position to allow for options that are relevant to local environment issues, resources and contexts.

The idea behind this is not only to promote locally relevant environmental understanding and action, but to promote teacher development through collaborative local resource networks (NGOs, state, industry, schools, colleges, teachers, tertiary institutions).

Under the heading - **Approaches to Incorporating Environmental Education into the Curriculum**, the document notes that the introduction of E.E. into the curriculum needs to be carried out by means of a carefully planned, incremental process. It continues:

Given the diverse nature of South African society and our education system, different approaches to and views of knowledge need to be entertained, as do a diversity of ideological perspectives. In this regard, an orientation towards engaging with and seeking clarity on diverse perspectives is encouraged.
(Clacherty, (ed), 1995, pp. 2-3)

At the proposed General Certificate of Education (GCE) and Further Education Certificate (FEC) levels, the document proposes a blend of the following approaches:

1. Local, problem-solving curriculum actions.
2. An integrated approach to environmental education (and environmental perspective within separate subjects).
3. A separate subject.

4. A component with a subject.

The curriculum structure within which the above strategies are being proposed is spelled out by the document. Thereafter each of the above four strategies is presented in more detail:

Lower and Junior Primary: Cross-curricular theme approach (local environment and issues) is appropriate.

Senior Primary: In this phase there is a tendency to adopt subject-based teaching (it is felt that class-based teaching with an integrated studies approach would be more appropriate).

A cross-curricular theme approach is proposed as the ideal for this phase, with an 'integrated-within-subjects' approach as another option. Project-based work is a useful approach here.

Junior Secondary: As subject specialisation takes over so a need to adopt an 'integrated-within-subjects' approach arises. In as far as normal subjects are examinable, so too would E.E. be examinable, where it is integrated within subjects, but even where cross-curricular themes are adopted, assessment needs to play a role.

In addition to integration within subjects, a distinct subject, namely Education for Sustainable Living is proposed.

Senior Secondary: A fully 'integrated-within-subjects' approach as well as:

(i) an optional specialist subject (which takes into account the demands of the world of work)

and

(ii) a module in any appropriate subject (e.g. Chemistry, History).

The following proposals on the incorporation of E.E. into the curriculum were made by the document:

- * Learning institutions should be encouraged to engage in local, problem-solving E.E. activities by focusing on local issues and examples;
- * Subject advisors should be encouraged to provide support; their roles should be facilitatory. Subject advisors should promote collaborative work where possible.
- * Appropriate resource people in universities, colleges, community centres, technikons and NGOs should be encouraged to become involved in supporting E.E. activities;
- * Regulations governing activities beyond the school premises should be structured in such a way as to expedite such environmental initiatives;
- * As this approach to E.E. is new and innovative, implementation should be handled sensitively and on an incremental basis. Existing experience of this approach in South African schools is available to support the process.
- * The proposal concerning an E.E. co-ordinating teacher in each learning institution is of particular relevance in this case (Clacherty, (ed.) op.cit., p. 4).

Integration within subjects

In this case the document sees E.E. as not a separate subject but that it should “permeate the curriculum as a ‘flavour’ for everything that is done.”

As such it has the capacity to act as a change agent in education. The integration of an environmental perspective into subjects should be done by

subject specialists within a broad framework provided by this committee. This prevents artificial manipulation of subject ethos and integrity. An environmental perspective within a subject will draw on the unique capacities of that subject to provide a better educational experience for each learner.

(Clacherty (ed.) op.cit. p. 4)

As the document points out:

Some subjects spring more readily to mind as “environmental”, for example, Geography, Biology and Agriculture. However, working primarily in these subjects is to miss the point that all subjects have a unique place in the curriculum and each one can make a different yet complimentary contribution by incorporating an environmental perspective. (Clacherty (ed.) op.cit., p. 4).

On the other hand:

There are some subjects that do not provide rich possibilities for an integrated approach, for example many aspects of Mathematics, Typing, the more technical aspects of language. These subjects should not be abused in order to ‘make them environmental’. Artificial infusion of environmental education is not acceptable.

Nevertheless, the document sees many subjects, beyond the obvious ones, as very suitable for exploring environmental issues, for example, Home Economics, History, Languages, Physical Science, General Science, Health, Industrial Art/Technical subjects and so on. For example in Home Economics the home could be studied as a place where many goods and services come in, are processed in some way and are then released as waste or new goods. The scope for the application of environmental principles in this context is huge.

(Clacherty (ed.) op.cit., p. 5)

In terms of the above, each subject curriculum committee or interest group needs to examine the ways its area of interest can best include an environmental perspective. As a first step a general position statement for a subject could be developed. This would then need to be worked into each subject syllabus. Committees need to be aware of the broad perspective that E.E. implies as well as the fact that most subjects are suitable for the 'integration-within-subjects' approach presently under discussion.

Specialist/distinct courses

Alongside the above integration of an environmental perspective into the curriculum generally, there is also a place for specific subjects within the general field of E.E..

- A) Environmental Studies at lower primary level.
- B) Life Science/Education for Sustainable Living at middle school level.
- C) Environmental Studies at Further Education Level.

Each of the above is now briefly described:

A) Environmental Studies (Lower Primary)

The document calls for a Working Group of specialists in this phase representing a wide range of perspectives, including so-called progressive groups, as well as the E.E. community should be established to carry out this task.

B) Education for Sustainable Living - (Middle School Level)

The document states:

The following proposal is not unanimously supported with the EEPI. It is felt that a number of problems are associated with it, for example, as a new subject within the GCE level of education it will require massive in-service provision that will be an unacceptable drain on resources; it will have to compete for space within the curriculum and will probably displace one or more traditional subjects; it assumes a level of teacher competence and knowledge that we do not yet have; it will require an entirely new set of text books. Nevertheless, the proposal is worth considering as in principle it could be the single most important contribution to the lives of our people and their abilities to live more sustainably and successfully.

Life Science is a Namibian example that has stimulated interest in a similar course in this country. A favoured title for such a course here is *Education for Sustainable Living*. The purpose of the course is to equip school leavers with skills for living sustainably (in a wide range of contexts).

In Namibia, Life Science is provided at their Grade 8 to 10 levels (the last 3 years of 'Basic Education'. We propose that Education for Sustainable Living should be provided during the last 2 or 3 years of our General Certificate of Education. Life Science in Namibia is a compulsory subject and is a 'people's education' blend of Geography, Biology and Agricultural Science. As a Science of Life, rather than a Science of plant/animals etc, it does not replace Geography or Agricultural Science, which can still be selected for study at a more specialist level, but it does replace Biology. It is similar in overall

philosophy to Education with Production (Clacherty (ed.), op.cit., p. 8).

The document points out that taking the South African reality into account (a strong industrial and urban component) the Namibian Life Science course may not be entirely appropriate here. For this reason a composite concept based on Science and Technology, Education with Production and Life Science may be an appropriate option.

C) Environmental Studies (Further Education Certificate Level)

According to the document:

This is a proposal for a vocationally oriented subject involving a wide range of environmental topics or themes (it is thus not Environmental Science.) It is not intended for this course to replace subjects like Environmental Law, Environmental Economics, Environmental Management and Planning, Environment and Primary Health Care, Development Studies and Conservation and would prepare learners for employment for further study in the broader environmental field. (Clacherty (ed.), op.cit., p. 9).

Components within subjects.

The document states that there should also be specific environmental components in other subjects, for example, chemistry, which examine the environmental implications of what is being dealt with (sources of raw materials, by-products, chemical waste etc.). History could include a component on the history of environmentalism as a social movement.

Separate or specialist courses or components should be holistic and avoid the narrow view that applications of technology to environmental problems will achieve solutions.

The document gives recommendations on the following areas: Teacher Education and Development (including Pre-service and In-service teacher education), Teaching and Learning Strategies and Evaluation and Assessment.

The document then goes on to examine and forward proposals in the following areas: Resource Materials Development, Institution-Based Environmental Policy, Curriculum Development Structures and Environmental Education (and Teacher) Centres. On this latter point the document states:

Across the country environmental education centres exist both within and outside the state structures. Generally, environmental education centres have been devoted to running ecology courses. The education process has not always reflected the learning and teaching principles referred to in this document. While the contribution of these centres is not denied, a broadening of perspective to include, for example, rural development and sustainable living processes is proposed.

Ways thus need to be explored of utilising the resources that these centres offer formal education more broadly. In particular, the role of environmental education centres as community resource centres is put forward as a productive possibility. This would allow centres to play a useful role in broad environmental reconstruction projects at local or regional levels. (Clacherty, op.cit., pp. 15-16).

The document is accompanied by an Appendix titled Towards a School Environment Policy, which could prove useful in assisting schools and their teachers to implement E.E. policies.

The document's value is that it constituted an alternative and challenging viewpoint to that held by the establishment as represented in the previous document. Such diversity of views and approaches are healthy but need to be incorporated into a single vision to allow E.E. to move forward. The

document is also to be commended for its fleshing out of the proposed incorporation of E.E. in the school system in South Africa. The document proposes a curriculum developed around relevant general and subject specific environmental concepts at all stages of schooling. The integration of an environmental perspective into existing subjects needed to occur within a broad E.E. framework. The importance of involving all roleplayers, especially practitioners, being involved in curriculum development is highlighted.

6.2.6 Further Critical Analysis of Documentation.

Much has been done and is being done in the cause of E.E. in South Africa both by a variety of organisations and individuals. The important work being done through the EEPI initiative as well as the contribution of various NGOs to the furtherance of E.E. goals and objectives in South Africa should not be underestimated. There remains, however, scope for further and more urgent effort by Government in particular to ensure the development of E.E. in our country.

The preceding document analysis has revealed a slow broadening over time of our understanding of the concept of environment, the environment crisis and solutions to that crisis.

Recognition has been given to the socially constructed nature of the environment and to its social, political and economic dimensions. More emphasis has been placed on the complexities of environmental issues, and on their roots in social structures and thought patterns. As far as responses to the crises are concerned, proposed solutions have also broadened, moving from measures for nature preservation to calls for social justice for sustainable living.

E.E. in schools and other centres has increasingly come to be treated as a broad approach to education, which was less authority-driven. Here the teacher is a facilitator who allows learners to freely experience environments

and to freely decide what they wanted to do and not to do with regards to environmental problems. The educational ideas behind the facilitation of E.E. as a broad approach lies in liberal-humanist philosophies, which elevate individual rights above all other concerns, including the shared environment. This approach seldom seeks a critical and democratic engagement with local issues and sustained problem-solving actions.

The documentation reveals that more recent approaches to E.E. in South Africa are showing greater clarity and coherence. Some of the themes have been as follows:

- 1) Making classroom learning relevant to learners through fieldwork where they would use what they know from the classroom and their own experience to make sense of what they see in the field. Here we see the influence of the theory of Constructivism, which says that learners are not empty vessels, but active constructors of meaning, who always bring their existing understanding into the learning situation.
- 2) Active learning situations where students develop new insights and value orientations through a challenging balance of teacher-guided 'asking telling' in outdoor environments. The teacher is neither a top-down authority or social engineer, nor a background facilitator, but an active mediator of knowledge and values, with students.
- 3) Socially critical joint investigations of local environmental problems, with low-cost kits which give the tools of science away to students and allow them to think of solving local problems, thus bridging the gap between schools and communities, and between learning and doing. Here the educational idea is that learning involves interacting processes of thinking - touching - talking (a reflection - encounter - dialogue process).

The documentation reveals that there has been a concern for empowerment and capacity building, using techniques like participatory rural appraisals. A swing away from an expert-driven approach to joint investigations and problem-solving in development contexts has relevance to the development of new secondary school Geography syllabi in South Africa.

A new approach to E.E. is essential - an approach in which an understanding of the intricate and often delicately poised balance between humanity and the natural world is emphasised. As has already been mentioned previous “top-down” attempts at E.E. based on simplistic attitude change and behaviour modification have largely failed and have alienated people. It is therefore critical that, in future, E.E. is conducted in a participatory way, as is advocated in documents three and five discussed above, enabling the learners - school pupils, the public, community groups or whoever - to be active participants in the learning experience.

The documentation has revealed that E.E. should aim, firstly, at providing the required understanding of political processes so that all citizens can participate actively and effectively in decision-making about environmental issues on a local, regional, national and global scale. In other words, there is a need for E.E. at all levels, from the schools through to the decision-makers at local, regional and central government levels.

Secondly, E.E. should enable all citizens to acquire the necessary knowledge and understanding - including critically, that of ecological principles and processes - which will enable them to make informed choices and decisions about environmental issues. In other words, it must promote critical thought.

6.3 CONCLUSION

This chapter has attempted to reveal the dynamic status of E.E. in South Africa as represented by the primary documentation analysed. Themes to emerge included the need for an emphasis on skills, attitudes and values in E.E. programme compilation. Central to the implementation of E.E. in South Africa should be a commitment to the

sustainable maintenance of the environment. Useful insights into the implementation of the process of E.E. in formal education were revealed through the document analysis. Clearly, the position of E.E. in the South African educational system is being evaluated and needs to be actively encouraged in future initiatives. Past confused perceptions of what constitutes E.E. need to be replaced through a process of evolutionary change. The focus of E.E. must remain the improvement in the quality of our environment through a process of sustainable development. As an approach to education, E.E. has an important role to play in influencing the thoughts and lives of people.

Based on the analysis of the development of E.E. in the South Africa educational system there is clearly a need for the inclusion and integration of much more E.E. in school syllabi and much scope remains for policy makers to include more material on our environment. A focus of such syllabi on sustainable development linked to environmental concerns would seem to represent a good basis for seven new syllabi. Educational authorities should note the position of E.E. in secondary school syllabi in the selected countries considered in Chapter Four. The important work being done by various NGOs in these countries often eclipsing the efforts of the formal education authorities also needs to be noted. Every attempt must be made in South Africa to avoid problems which have existed in African countries. We also have various NGOs who are doing sterling work in the field of E.E. and conservation, and a bureaucratic education system which is often too slow and cumbersome to incorporate the good work and ideas which are forthcoming. It is the contention of this study that all relevant input from all relevant role-players is needed to provide the best available incorporation of E.E. into South Africa's educational system. This study can be seen to be one such input into the process.

CHAPTER SEVEN

A NEW SECONDARY SCHOOL GEOGRAPHY SYLLABUS IN SOUTH AFRICA

7.1 INTRODUCTION

It is the intention of this chapter to explore, through conference/workshop analysis and content analysis of primary documentation (the Nightingale draft syllabus) the current position of Geography in the secondary school education system in South Africa. Brief consideration was given to the topic in section 2.5 of Chapter Two of this study.

Pointers will also be provided in this chapter as to what could be included in a completely new syllabus. My ideas are provided from this research as well as my experience over nearly twenty years as a senior school Geography teacher, Standard 10 examiner, university education diploma methods tutor and involvement in various 'non-white' education initiatives in Geography. Membership of various organisations such as the Environmental Education Association of South Africa, the Society of South African Geographers and the British Geographical Association, as well as regular attendance at various conferences, committee and society meetings etc. have helped keep me abreast of the ever changing face of Geography in South Africa. The latter point highlights the difficulty of trying to portray a situation which is constantly changing and the information and ideas provided in this chapter represent the position as at March of 1995 and which began in January 1992 when this present study was started. The empirical study which follows in the next chapter attempts to highlight the need to include more E.E. in a new secondary school Geography syllabus. The syllabus draft discussed in this chapter (the Nightingale syllabus) reveals that this could be achieved through the use of the concept sustainability.

7.2 CONFERENCE/WORKSHOP ANALYSIS

Valuable insight into the evolving position of Geography syllabus development in South Africa can be gained through an analysis of various conferences and workshops attended during the period 1992 to 1995.

7.2.1 The independent Schools' Geography Conference Michaelhouse School, March 1993.

The conference represents an important step in the on-going development of a new syllabus in that many of the presentations by delegates revolved around topics like

changing curricula and syllabi, E.E., development concerns (both rural and urban), teaching methodology, fieldwork etc.

Two keynote addresses were made at the conference and both merit attention at this point as they have relevance to my developing argument. The first address by Dr. Tony Binns of Sussex University, (the then President Elect of the British Geographical Association) titled “An International Perspective on Geographic Curricula - a British View”, sketched the valuable work done by British teachers in Campaigning for a secure place for Geography in a revamped curriculum. He highlighted the focus on environmental and sustainable development issues as central to the development of a relevant and interesting syllabus. A focus on bottom-up development of the syllabus represented an important break with past procedures and has direct bearing on what is required in South Africa. The strong emphasis placed on place, skills, attitudes, values and issues in the new British syllabi provide important pointers to what is needed in South Africa.

Binns saw the need for Geography education to:

1. stimulate pupil’s interest in their surroundings.
2. foster a sense of wonder of the beauty of the environment.
3. help to increase and develop a concern for the environment.
4. inculcate a responsibility for the earth and its people.

Binns believed that the above needs were being met by Geography in the National Curriculum through the following 5 attainment targets viz:

1. Geographical skills including fieldwork and other practical work.
2. Knowledge and understanding of places including local locality and other case studies.
3. Physical Geography
4. Human Geography

5. Environmental Geography

The second keynote address was delivered by Professor John Earle from the University of Witwatersrand and titled ‘A Changing Geography in a Changing World with particular reference to South Africa.’ Earle began his address by focusing on the view of pupil numbers doing Geography in the Black educational system. Figures presented by him showed a commendable growth in pupil numbers in the years 1982 to 1991 which disputes the earlier claim by Ballantyne (1987) that Geography’s popularity in Black schools fell far short of its position in the white educational system. Figure 4 and 5 in Chapter One of the study, were presented by Earle to illustrate the increasing popularity of the subject.

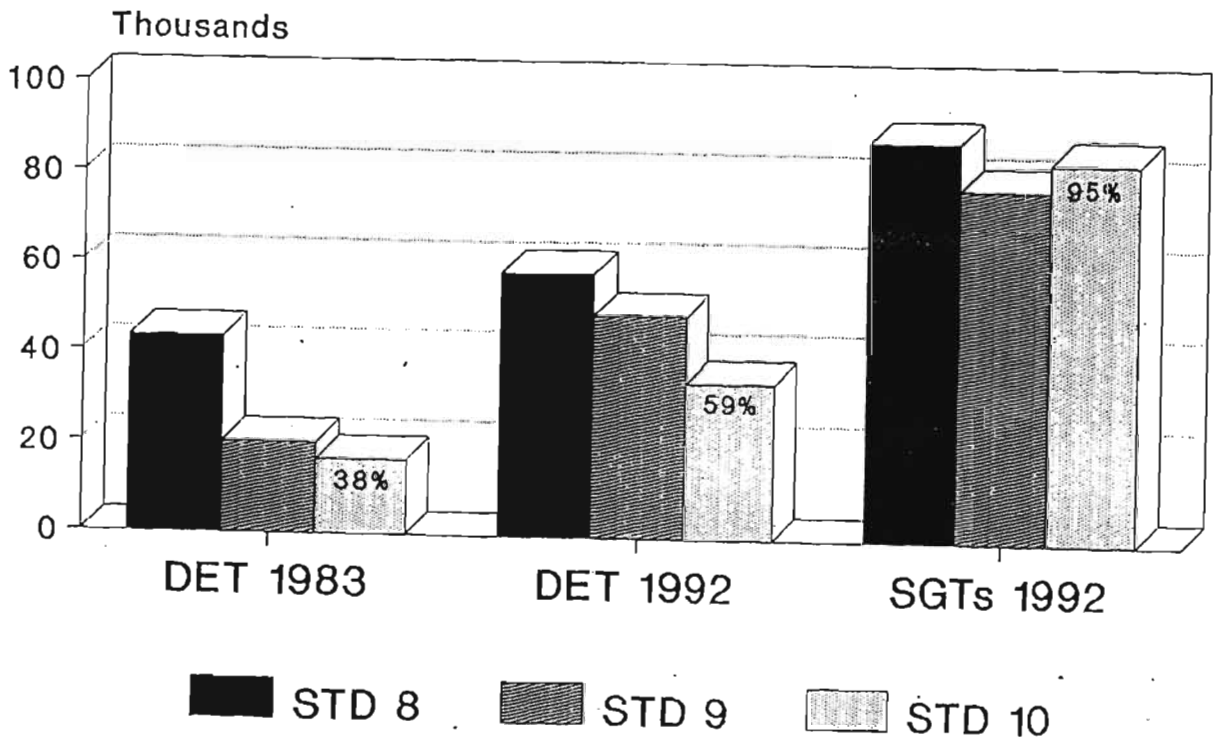


Figure 12: D.E.T. Geography Std 8 to Std 10 Progression 1983 and 1992

Source: Earle, 1993

Further evidence of the popularity of the subject can be seen by the numbers of registered students enrolled in Geography courses at the predominantly Black universities.

The University of the North had nearly 3 000 registered students doing Geography in 1994, up on the already large figure for 1993 shown in Table 9:

UNIVERSITY	YEAR 1	YEAR 2	YEAR 3	HONOURS	MASTERS	PHD	TOTAL
Johannesburg College*	116	68					184
Rhodes	76	32	30	6	8		152
Natal Durban	90	29	29	10	26	6	190
Natal Pietermaritzburg	113	45	28	19	12	5	222
University of the North	13362	853	547	20	3	2	2787
Port Elizabeth	78	49	21	4	5	2	159
Pretoria	81	58	50	24	18	5	236
UNISA	1204	390	168	170	12	4	1948
Stellenbosch	103	78	64	11	11	3	270
Transkei	202	151	92	18			463
VISTA	357	98	37	26			518
Witwatersrand#	101	51	33	2	22		209

*Johannesburg College's figures are combined totals for Degree and Diploma Students

#University of Witwatersrand's figures exclude Preliminary Students, Additional Studies etc. The figure of 22 entered for Masters may well include a number of PhDs.

Table: 9: Number of Geography Students 1993

Source : South African Geographical Society Newsletter, October 1993, p.19

Earle's lecture focused on our constantly changing world and how Geography needed to take this into account. Two aspects were considered: 1) problems faced by urban areas in the twenty first century and 2) population issues and the Aids crisis. Earle urged Geography teachers when teaching the above section to focus pupil studies on socio-economic, demographic, economic and human capital issues. The importance of attitudes and values in the study of Geography was once again stressed. What was important was not the content of the work taught but the processes used by teachers to help pupils solve problems. Earle challenged teachers to take a more active role in shaping syllabus change, as had happened in Britain, but co-ordinated action was required on their part.

Another important address at the conference was delivered by Professor Jeff McCarthy titled 'Changing Nature of Geography in South Africa'. His address focused on issues like population and development, urbanisation, post-apartheid society and economy and environment and development and called for the inclusion of such topics in a new Geography syllabus. Looking at Geography and change McCarthy examined the traditions of the subject viz. 1) man/land relations as encompassed by natural versus social Geography. 2) regional studies. 3) spatial/analytical approaches. 4) Geography was seen as a high skilled subject in terms of methodology but not enough practical application of skills occurred. Geographers had tremendous potential to be practical problem solvers and to be seen as relevant contributors to finding solutions to problems. In going forward what was required was : 1) a balance between tradition and change 2) more theoretical and methodological development 3) more applied work and 4) more focus on future challenges. These challenges face those responsible for syllabus revision in South Africa and must be faced with confidence by those concerned.

A highlight of the conference was a workshop on 'Concepts of Development and Sustainability' conducted by Dr Lynn Hurry and Professor Rob Fincham. The goal of the workshop was to encourage Geography teachers to use appropriate opportunities to increase the capacity of their students for participation in, or for making contributions towards, ongoing integrated development.

Sustainable development was seen as a process by which the members of a society increase their personal and institutional capacities to mobilise and manage their resources to produce sustainable and justly distributed improvements in their quality of life consistent with their own aspirations. The implication for Geography teachers of this definition was then discussed by the workshop participants.

Discussion then centred around E.E. and Hurry provided the following definition:

It is an enabling process that increases the capacity of people to participate in the solution of current environmental problems and the prevention of new ones. E.E. facilitates the acquisition of knowledge, encourages positive environmental attitudes, constructive life styles and participatory styles of problem solving.

The implication for Geography teachers of this definition was then also discussed by the workshop participants.

By combining the two concepts Hurry and Fincham believe that they arrive at the concept of Development Education. They see this as a co-ordinating and enabling process that is directed at : 1) education for sustainable development 2) increasing the capacity of individuals and communities to participate effectively in the development process, while at the same time enabling them to contribute to the sustainability of their environments. Emphasis is on the solution of current environmental problems and the prevention of new ones. Development Education is also about sustainable development - philosophies, theories and practice.

Chapter Two of this study considered these definitions when considering the rationale for a new Geography syllabus and it was intimated there that the definitions would form a good basis for the new syllabus.

7.2.2 Workshop: The Future of Geography in the South African School Curriculum: Reality, Relevance and Response.

(A Changing Geography for a Changing South Africa)

The workshop represented another important step forward in the quest for a new Geography syllabus in South Africa. The workshop was held in Durban on the 16th/17th June 1993 and convened by Dr Lynn Hurry on behalf of G.C.I.S.A. (the Geography Curriculum Initiative in South Africa), based at the Institute of Natural Resources, University of Natal, Pietermaritzburg. The vision for the conference reveals its relevance in the context of this study:

- * Africanisation of Geography.
- * Making Geography more skill orientated.
- * Making curriculum relevant to the changing face of Geography
- * Skill building for teaching in rural areas.
- * Process and product of curriculum change.

- * Making Geography more relevant to the real world.
- * Post-Apartheid curriculum scenarios.
- * Application of GIS to school teaching.
- * Alternative assessment.

The need for Geography to play a role in educating pupils for empowerment was also dealt with in a separate session by Mr S Nightingale. He asked the following questions which need to be considered by all persons and organisations involved in syllabus revision.

Empowerment: Enabling people to help themselves and others to shape their space.

- * How can Geography serve to empower students?
- * What are the essential elements of the school Geography course (skills and process)?
- * Should Geography make a contribution to citizenship change?
- * Can Geography make a contribution to the production process?
- * What teaching strategies should be used to maximise Geographical educational potential?
- * How can Geography teachers be equipped to educate for empowerment?
- * Teacher training - pre- and in-service training and support structures.
- * How can the process of curriculum process be improved?

Session three of the conference took the form of Group workshops and delegates were divided into groups to consider the following areas:

Group A : Curriculum Content

Group B : Teaching / Learning Process

Group C : Teacher Education / Support Structures

Group D : Curriculum Development / Process

A general plenary report back session was held and the following recommendations and suggestions, relevant to the purpose of this study, were made by Groups A and D:

Group A : Curriculum Content

The following points emerged:

- (a) The need to consult with pupils and parents as to what should be taught in Geography.
- (b) The content of the Geography curriculum can't be dealt with linearly, and an eclectic approach should therefore be adopted.
- (c) There is a need to look at skills, concepts, attitudes and values.
- (d) There exists three important aspects in Geography:
 - (i) Special understanding - maps
 - (ii) Problem solving
 - (iii) Environmental knowledge and empathy

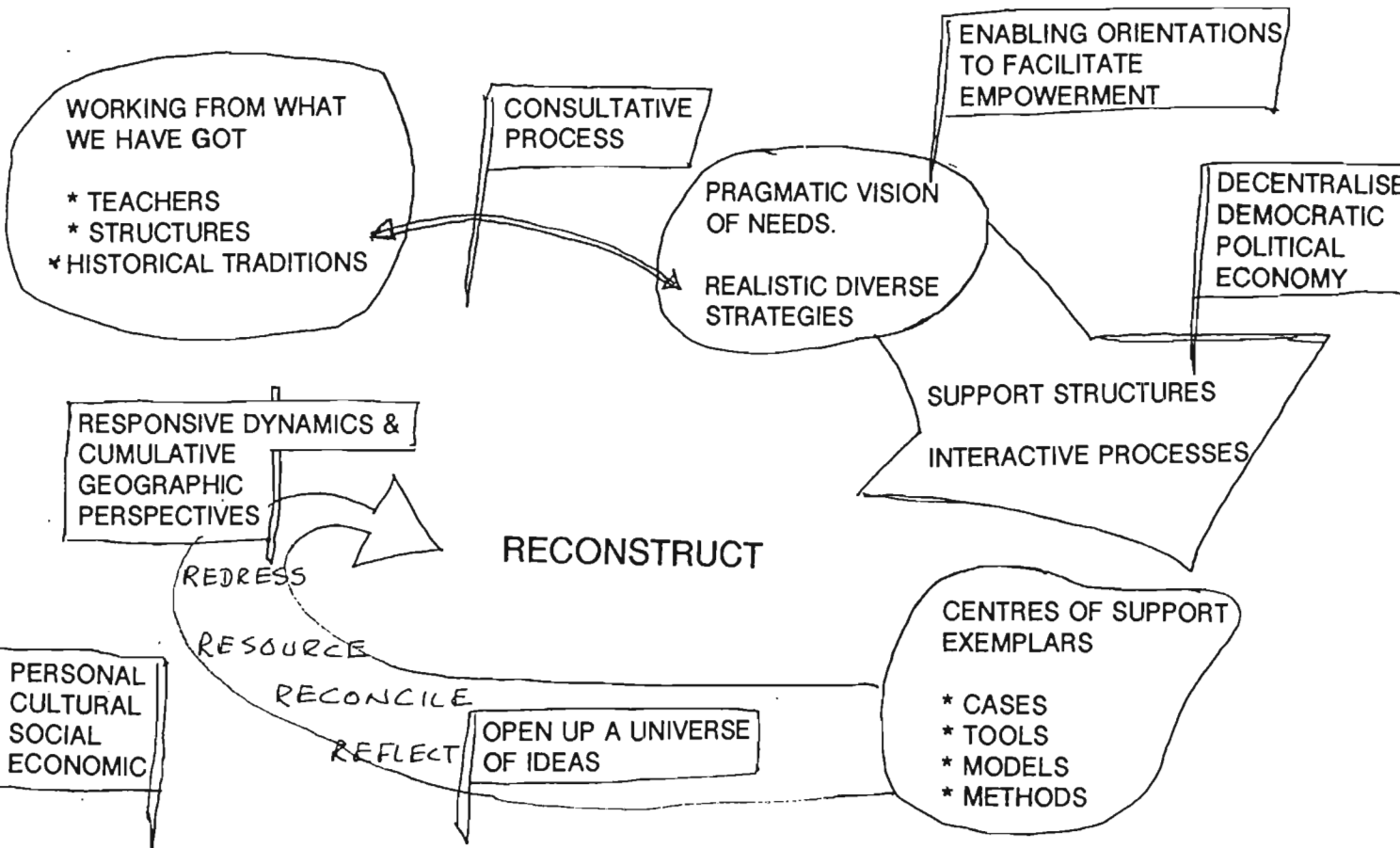
All three can be applied in the categories outlined above.

- (e) The aforementioned approach may be seen as an holistic approach to curriculum development.
- (f) It is necessary to see it within a broad macro-cosmic sense - it must be legitimate.
- (g) It may prove instructive to use social fieldwork e.g. questionnaires, that take pupils into the society in which they operate.
- (h) The content of the syllabus should be relevant to the context i.e. it should serve the needs of both urban and rural societies.

- (i) It is important to recognize that children appropriate knowledge in their environment, and should therefore be taught what is relevant to them - and they should be assessed in terms of this spatial-specific knowledge.
- (j) However, although relevance is an important issue, one should note that knowledge for enjoyment is also significant and necessary. (Source: Proceedings, 1993b).

Group D : Curriculum Development Process

The following diagram was developed to best illustrate the process:



(Source: Proceedings, 1993b)

Points which arose out of discussion on the diagram:

- (a) A pragmatic vision and realistic strategy is needed to drive curriculum development. This is linked to realistic conditions on the ground. Structures and processes to facilitate empowerment should be a part of a national vision. Empowerment should be from the bottom up.

(b) The 5 R's of Reconstruction must form part of the curriculum development process:

Reflect, Reconcile, Resource, Redress and Reconstruct

(c) Interrelatedness. The curriculum development process must be:

* Interrelated to transformation in South Africa.

* Interrelated to other subjects.

(d) A consultative process was needed.

(e) We need curriculum development to be long term and ongoing.

(f) Geography is seen in a polar way:

(i) discreet discipline

(ii) Geography as connected with other disciplines - permeable to other influences.

(g) We need to find a balance between maintaining what we have, but accommodating and recognising other influences/paradigms.

(h) Regarding the role of reconstruction: This occurred on two levels:

(i) Social needs

(ii) Classroom practice

Both will inform the curriculum process.

(i) Two values important in reconstruction

(i) Forgiveness

(ii) Tolerance.

(j) Geography has an important contribution to make in 'nation building'.

- (k) Geography is important in the reconstruction of society and can help lead the country to a reopening of the international experience.
- (l) The curriculum development process must be seen as an ongoing thing.

The conference closed with the establishment of the Geography Curriculum Initiative in South Africa (GCISA) and a consideration of its draft mission statement, aims and objectives. A final draft of the mission statement aims and objectives, modus operandi, interim steering committee and list of first projects appeared in the new body's first newsletter in August 1993. It was also decided that the first major project of the new body would be to release a publication of documents titled 'A Case for Geography in the new South Africa' to be edited by Dr Lynn Hurry, to which persons would be invited to submit papers. Included is a paper by this author titled 'The Place of Secondary School Geography in a Changing South Africa'.

7.2.3 Natal Geographical Association Conferences

Various conferences and seminars on the teaching of Geography and the need for a new syllabus have been organised by myself as current Chairman of the Natal Geographical Association (recently renamed the APEK Geography Association). At these meetings, various topics and subjects have been addressed by a variety of invited speakers and have relevance to my discussion at this point.

One such conference was held on 19 June 1992 titled 'Teaching Geography in a Changing South Africa' by Lynn Hurry then of the Institute of Natural Resources at the University of Natal, Pietermaritzburg, which offered in diagrammatic form a possible model for a new Geography syllabus in South Africa (Figure 13):

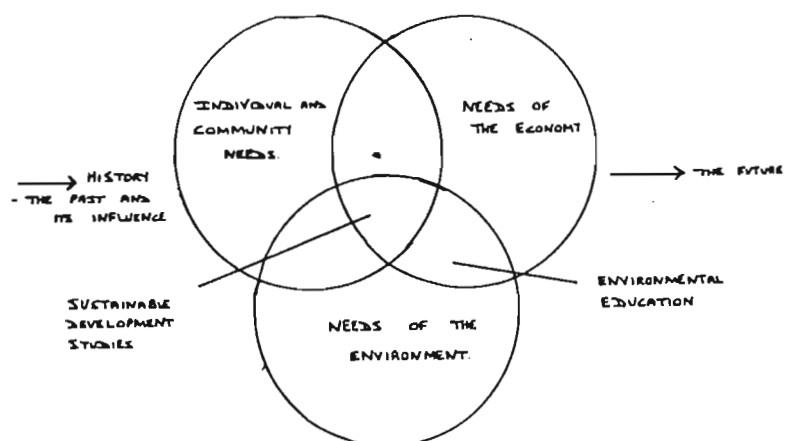


Figure 13 : A Possible Model for a New Geography Syllabus in South Africa

Source: Adapted from Hurry, 1992.

Hurry sees the role of E.E. in a new syllabus as trying to provide three main things: 1) provision of knowledge 2) provision of skills and 3) provision of a positive attitude toward environmental sustainability. The focus of a new syllabus should be on development issues and must be directed towards the concept of sustainable development in particular. Pupils need the necessary knowledge and skills to solve environmental problems and help prevent new ones. They need to become more aware of the environmental/development interface and Hurry believes this can be achieved by 1) helping pupils recognize the factors affecting the quality and nature of their environment 2) helping pupils to appreciate basic principles of urban and rural development. This would help produce a relevant syllabus worthy of study by Geography pupils.

At the same conference consideration was given to the British Geographical Association and its publication A Case for Geography (Bailey and Binns, eds. 1987), in which it is explained that Geography is first and foremost a distinctive way of ordering experience;

that its content follows from its approaches, and that important messages about the human condition (not conveyed in the same way by any other subject) can be learnt from it.

The importance of relevance in Geography and its value as a vocational subject is often the subject of debate at such conferences, and attention was given at the conference to a leaflet produced by the (then) South African Geographical Society. A strong belief exists that the contents of the leaflet should form the basis of a section called 'The World of Work' or 'Vocational Geography' to be taught in Standard 7 and 10. Such a section would be of immense benefit to Standard 7 pupils who need to select their package of subjects for Standard 8 - 10 and to Standard 10 for obvious career purposes. The 'Nightingale' syllabus for Standard 10, to be discussed later in the study does contain a module called 'Geography and the Workplace.'

A further conference organised by the Natal Geographical Association was held at the Edgewood College of Education on Saturday 19 February 1994. The keynote address by Mr P Ranby on his integrated curriculum at Sacred Heart College was followed by a session led by Mr C.S. Nightingale, recently retired head of the Geography department at Edgewood College. The purpose of this session was for Mr Nightingale to stimulate thinking and discussion on a new Geography syllabus. This he did through a listing of lead questions which conference delegates discussed in group sessions. The list of lead questions was as follows:

- (a) To what extent are children truly advantaged/disadvantaged if they do/don't take geography?
- (b) What advantages/disadvantages arise from teaching geography in combination with other subjects?
 - (i) What subject combinations might be appropriate?
 - (ii) At what stages should these subject combinations appear?
- (c) What contribution should geography make to Adult Basic Education (ABE)?
 - (i) What modules should geography offer to students who are not school?

- (ii) To what extent will these facilitate students movement into the formal education system?
- (d) In what ways can geography empower children?
- (e) How can geography help to equip children to get a job?
- (f) Is the geography we are teaching at present the best that the discipline has to offer?

Consider

- (i) The content of our present syllabus.
- (ii) The teaching/learning strategies we adopt.
- (g) What should be the main foci of school geography?
 - (i) What parts of the present syllabus should be emphasised/de-emphasised/jettisoned?
 - (ii) What new material should be incorporated?
 - (iii) How should the foci change to match the development of the pupil?
- (h) Which parts of the syllabus most often attract the following comments from pupils/educationists/parents/the community:
 - * what is the point of learning this?
 - * this really is important!
- (i) The ANC has emphasised the need for grass roots participation in the formulation of curricula. This workshop is a grass roots initiative. How can the findings of this workshop become part of the wider curriculum debate?
- (j) What changes should be made to present geography syllabi and textbooks in order to make them more appropriate for the New South Africa?

- (k) How can we become better informed of the needs and aspirations of pupils from different communities?

Much interesting debate and discussion took place with many teachers commenting that this had been the first opportunity in their teaching careers for them to openly debate curriculum and syllabi issues. Such transparency and openness on curriculum and syllabi matters has been absent in the past and the new Geography syllabus that will emerge in the future will of necessity be the product of much discussion and debate by as wide a spectrum of role players as necessary.

An analysis of the conference proceeding reveals that there can be no doubting the fact that Geography needs to concentrate on the development of marketable skills in pupils as alluded to in point (f) above. In particular the following areas need to be focused upon:

1. Fieldwork, with projects and assignments based on the fieldwork exercises counting for final examination marks.
2. World knowledge, studied through a regional approach which makes political and economic considerations relevant.
3. Graphicacy.
4. Use of maps and photographs to develop an appreciation of aerial distribution.

Such foci would ensure and cement a strong vocational bias in school Geography. In this connection Nightingale (1992, p.2) argues that provision needs to be made in future syllabi for various modules to be included which would give the subject the necessary career orientation. Nightingale's suggested list includes:

Environmental engineering

Research methods and application/statistics

Infra-red imagery/remote sensing

Mapping, cartography and land surveying

Ergonomics

Town and rural planning/management/development strategies

Environmental/land use law

Environmental/Social Impact Assessment

Geographic information systems

Introductory geology/mining

Family planning/demographic development

Transportation, transportation planning, transport economics

Soil science/pedology

Meteorology and its applications

Location and analysis/site selection/feasibility/resource potential studies

Nature conservation (theory and practical applications)

Recreational Geography, tourism.

Nightingale, like Ballantyne (1988) and Earle (1993) in Chapter One believes that serious consideration needs to be given to ways and means of attracting pupils, particularly black pupils, to the subject. It must be emphasised to pupils, parents and policy makers that the subject does open doors to important career opportunities. In this connection the call by Professor L M Magi (1990) in Chapter One of this study for a new Africanist Geography to meet the challenges and problems facing school Geography today needs to be heeded. Recent research by Earle (1993) also discussed in Chapter One and earlier in this chapter reveals an encouraging trend of increasing enrolments to study Geography among black pupils in the Department of Education and Training and the various Homeland and National departments.(Appendix VIII)

Earle's scenario points to the increasing relevance of the subject among black pupils and represents a challenge which needs to be met not only by Geography educationists but also by those entrusted with formulating school syllabi and curricula. Geography's contribution in the school curriculum both at primary and secondary level needs to be made and all concerned Geographers must focus every available Geographical resource on the attainment of this objective. It is for this reason that a paper by Taylor (1994) is seen as important. His thoughtful analysis based on his study of Geography at Primary School level

provides valuable background to claims for the inclusion of secondary school Geography in the school curriculum.

It also needs to be noted at this point that any syllabus is a document embodying a certain selection of knowledge, skills and attitudes/values - in the case called 'Geography'. As has been stated before it can be analysed as a social construction, reflecting current attitudes, values and concerns held by syllabus planners. This needs to be taken into account when discussing syllabi development in South Africa. The political, social and economic changes which have occurred in South Africa will inevitably bring about a change of mindset on the part of education planners and curriculum development specialists and this will reflect itself in syllabus and curricula change. The preceding conference and workshop analysis reveals a transforming evolution of ideas on what Geography as a subject should contain. The Nightingale draft syllabus to be discussed shortly represents a significant step in the transformative evolution of the subject in South Africa, representing as it does an enlightened step forward to a new relevant syllabus.

7.2.4 Conclusion

It is the already stated contention of this study that a new Geography syllabus for South African schools should have an emphasis on Sustainable Development, E.E. and Development Education as is the case with the Nightingale Draft syllabus which is discussed in the next section of this chapter. The underlying theme of a new syllabus should be the need to promote sustainable development as was discussed in Chapter Three of this study. For the purpose of this study the following definitions are advocated for use in a new syllabus:

Sustainable development is a process by which the members of a society increase their personal and institutional capacities to produce sustainable and justly distributed improvements in their quality of life consistent with their own aspirations (Hurry, 1990).

Environmental education is a facilitating process that helps people to acquire the knowledge and skills to participate in the solution of current environmental problems and the prevention of new ones. It also encourages positive attitudes towards environmental sustainability (Hurry, 1990).

Development education is a co-ordinating process that is directed towards sustainable development. It facilitates development while at the same time enabling people to acquire the knowledge and skills to participate in the solution of environmental problems and the prevention of new ones (Hurry, 1990).

Further, at school, the aim of development education should be to encourage environmentally aware students who have the knowledge, motivation and commitment to participate constructively at appropriate levels and stages within regional development plans. These aims must be achieved through programmes that would:

1. Enable pupils to recognise the basic factors affecting the quality and nature of their environments.
2. Enable the pupils to understand and appreciate the basic principles of urban and rural development.
3. Be more relevant to learners than some of the syllabus material currently in use.

Diagrammatically the inter-relationship between these concepts is illustrated in Figure 14:

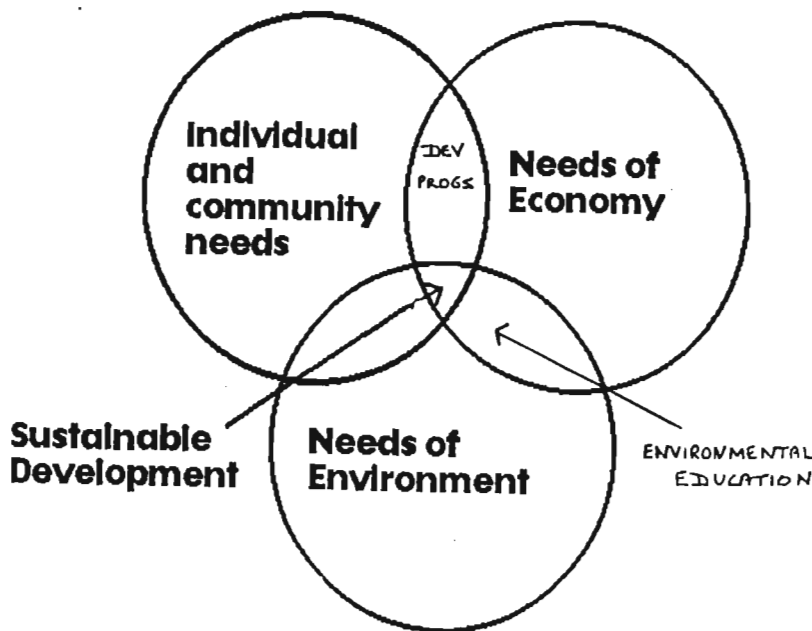


Figure 14: Venn Diagram showing E.E.

Source: Hurry, 1993.

As well as incorporating the above concepts a new Geography syllabus must take into account the following points which form part of the study's final conclusions in Chapter Nine.

1. The need to ground the discipline in the reality of contemporary problems - environmental, urban and development issues. Geographical problems must be tackled using explanations advanced by economists, sociologists and political scientists.
2. School geography needs to become a stepping stone to employment opportunities - the tools and skills of the subject are thus very important.
3. Areas in which Geographers can use their skills are Environmental Management, Urban Studies and Development Studies. The Geography syllabus should be structured around these themes.
4. The Geography syllabus must not become entirely Afro-centric. Appropriate Euro-centric aspects must be maintained.
5. De-emphasise information and concentrate on Geographical skills.
6. Make Geography real and relevant to the pupils taking it.
7. The Geography syllabus must address all the issues related to all people in South Africa.
8. A new participatory style of curriculum development is required involving the local community.
9. Skills should drive the content of what is taught - we need useful knowledge and skills.
10. We must aim at a more South African Geography not a Colonial Geography.
11. Geography teachers must be involved in curriculum change.
12. The Geography syllabus must take into account the different circumstances of the students/communities studying it. Syllabi must be tested against these different

circumstances to see whether they work: White and Black pupils in South Africa would have differing perceptions on what constitutes Geography, E.E., development etc.

13. Systematic revision is expected in the new South Africa - action research, pilot studies, syllabus testing etc.
14. Basic instructional packages are needed to be compiled so that even the most basic equipment is needed to teach the subject, e.g. maps and globe kit.
15. The basis of policy should be what is required to make teaching work in different circumstances (e.g. township school, squatter school, farm school etc.). We also need to go from practice to policy rather than the other way around.
16. Learning should be experiential -so much of what pupils learn is based on simulated (not real) activities. Theory and practice must be brought close together.
17. The purpose of Education is to equip pupils for life in the new South Africa. We must educate for empowerment - equipping people to take control of their own lives through the use of Geographical knowledge.

It is the contention of this study that much of the substance of this section of this chapter, of the points listed above and the ideas discussed in the preceding few pages are contained in the Nightingale Syllabus draft document, discussion of which now follows.

7.3 THE NIGHTINGALE SYLLABUS

A secondary school syllabus document for Geography which has been formulated and distributed for discussion has been drawn up by Nightingale, recently retired Head of Department for Geography at the Edgewood College of Education in Kwa-Zulu Natal. (Appendix IX). As a member of the then Natal Education Department Syllabus sub-committee of the Geography subject committee he was commissioned to start work on a new fourth phase (Std 8 - 10) Geography syllabus for South Africa. As a member of the same committee I volunteered to assist Mr Nightingale with some of his initial work and since his retirement have attempted to champion the cause of the syllabus by encouraging, mainly through the Natal Geographical Association, further work-shopping and discussions on it. The syllabus as such which Nightingale produced should still be seen as a working

document and should be seen to be providing suggestions for a draft syllabus. The draft syllabus document contains ideas and suggestions for the new 'core' syllabus for Geography. The fact that the syllabus for Geography was initiated by a racially exclusive committee of a largely racially based education department at the time and has little grass roots input should not discredit what I believe is a solid piece of Geographical research by an eminently respected Geographer and deserves consideration in the formulation of a new syllabus. My thesis is not that Nightingale's proposals should necessarily constitute the new syllabus but rather that serious consideration be given to aspects of it. It does contain much input which could be of benefit in a new syllabus. Much favourable reaction to the syllabus document has been obtained by Nightingale from a wide variety of people and organisations he has distributed the syllabus to for consideration. His concern for transparency is evidenced in a paper he wrote responding to early criticism of his draft syllabus.

It is the contention of this study that this draft syllabus goes a long way to fulfil the criteria listed in Chapter One of this study viz. it is an attempt to rectify past errors and omissions in syllabus reform in South Africa, it has a greater Afro-centric focus in terms of its content and it incorporates E.E. in its teaching methodology through its adoption of sustainability as its core theme. For these reasons it warrants serious attention in this study. A detailed description of the syllabus is therefore required to provide necessary background and is then followed by critical analysis and interpretation.

Rationale of the Syllabus

Emphasis on Sustainable Development

According to Nightingale, the underlying theme of his proposed new syllabus was the need to promote sustainable development. Throughout the world there was a growing awareness of the fact that the life support systems of this planet were under severe strain; our profligate use of resources and abuse of ecosystems was undermining the ability of this planet to provide a decent livelihood for our growing human population. The question which all should ask is: 'What kind of world will we leave to our children?' It was this concern that prompted the coming together in Rio de Janeiro of the greatest number of delegates at the largest conference ever held - a conference called to consider the threats to

earth's environments. The gravity of the issues debated and the importance attached to them was demonstrated by the fact that a hundred Heads of State were at the conference.

Nightingale states further that in the past development had often been at the expense of the environment; now there was a growing realisation that development which did not promote the integrity of the environment was a recipe for disaster. An increasing number of people were arguing that sound environmental management was impossible without the resources made available through development regardless of the environmental costs; and grinding poverty, which makes desperate people destroy life giving ecosystems, were equally a threat to our existence.

Nightingale's syllabus, as does this study, promotes the ideals of 'development education', the aim of which is to enable pupils to comprehend and participate in the development of themselves, their community, their nation and the world. Poverty, conflict, power, justice are some of the issues which reoccur; inevitably an education which deals with such issues promotes personal development. It is education which deals with development, aiming to foster the awareness and skills needed to participate in responsible decision making. An important feature of this syllabus is that it will contribute to a student's economic understanding as an important cross-curricula theme, with Geography making a major contribution. The syllabus also makes provision for students to gain insights into the political dimensions of development issues.

It is Nightingale's conviction that it is the responsibility of educationists to instil an environmental ethic in the minds of their pupils that has motivated the choice of the major themes which form the basic structure of this syllabus. The emphasis on sustainable development encompasses both physical and human environments, and is a motivation for understanding the main principles of Geography and acquiring Geographical skills.

Variety of Approaches to Geography

According to Nightingale a study of development issues encourages varying approaches to Geography since they cross the boundaries of physical and human Geography. The search for answers to development problems must take physical processes into account; it also requires spatial and temporal analysis, as well as an examination of the activities, motives

and values of people and the environments and contexts which effect them. Thus in seeking to understand people-environment relationships, the syllabus encourages varying approaches to Geography. Some parts focus on individuals; others on groups and organisations; and still others on social, economic and political contexts or structures. These are complemented by the 'scientific' approaches to the search for explanations of change in the physical environment.

Broad Range of Skills

By encouraging a number of approaches to Geography Nightingale believes this syllabus also promotes the acquisition of the varying skills associated with them, for example skills such as identifying values (human Geography) and hypothesis testing (physical Geography). A balanced range of skills should be acquired and a variety of types of sources used. Both quantitative methods should be employed.

Flexibility

Nightingale sees another important characteristic of this syllabus as its flexibility, both in the choice of content and methods of assessment. This flexibility allows students and learning centres to develop their interest and to make the best use available of resources.

The Nature of Geography as a Discipline

Before any syllabus draft can be forwarded a clear exposition of the authors views on the nature of the subject as a discipline is required. In this connection Nightingale provides the following points:

- (a) Geography is indispensable to understanding the modern world. It should be an exacting, challenging, but also enjoyable discipline.
- (b) In the broadest terms the nature of Geography can be set out as follows:
 - (i) It explores the relationship between the Earth and its people through the study of place, space, and environment. Geographers ask the questions: where and what; also how and why?

- (ii) 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 those features.
 - (iii) The study of space seeks to explore the relationships between places and patterns of activity arising from the use people make of the physical settings where they live and work.
 - (iv) 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 interrelationships between the two.
 - (v) The study of development issues focuses on the need for people to utilise the resources which the earth produces. This can be done in a responsible manner, ensuring that future generations can benefit from the earth's bounty; or all life on earth can be imperilled by man's selfish plundering of nature's resources.
- (c) Nightingale believes these four elements - place, space, environment and development issues - form the core of Geography. Uniquely, they create a bridge between the humanities and the physical sciences. Geographical study should be pursued at local, regional, national, continental and global scales. Furthermore, changes are constantly under way: the examination of change is integral to the study. Using a wide range of skills, the subject identifies, analyses, and helps to clarify some contemporary problems concerning peoples and their environments. In this sense Geography also asks the question 'How ought?'

Aims

According to Nightingale in the light of our understanding of:

- * the needs of senior pupils who must be prepared to play their part in the rapidly evolving South Africa;

- * the purpose of a national curriculum
- * the nature of Geography and the vital contribution which it can make to the education of young people.

Geography should:

- (a) stimulate pupils' interest in their surroundings and in the variety of physical and human conditions on the Earth's surface;
- (b) foster their sense of wonder at the beauty of the world around them;
- (c) help them to develop an informed concern about the quality of the environment and the future of the human habitat; and the sustainability of economic enterprises;
- (d) thereby enhance their sense of responsibility for the care of the Earth and its peoples.

Such a general statement must be fleshed out in the form of more specific aims. In this connection Nightingale believes Geography should lead pupils to:

- (a) acquire a framework of knowledge about locations and places that will help them to set local, national, and international events within a Geographical context, and that will support their development of Geographical understanding;
- (b) understand some of the important characteristics of the Earth's major physical systems - its landforms, weather and climate, hydrological and ecological systems - and the interaction among those systems;
- (c) understand the significance of location and of distribution patterns in human activities and physical processes; how places are linked by movements of people, materials and places are linked by movements of people, materials and information, and by physical, economic, social and political relationships; and the interdependence of people, places and environment throughout the world;

- (d) understand some of the relationships between people and environments, including both:
- (i) the influence of environmental conditions on human activities, and
 - (ii) the varied ways in which societies with different technologies, economic systems and cultural values have perceived, used, altered and created particular environments.
- (e) develop a sense of place: a feeling for the ‘personality’ of a place and what it might be like to live there;
- (f) acquire the knowledge and understanding about the physical and human processes that bring about changes in place, space, and environments, and a critical appreciation of the consequences of these changes;
- (g) develop awareness and appreciation of the ethnic, cultural, economic and political diversity of human society, and its Geographical expression;
- (h) acquire the knowledge and develop the skills and understanding necessary to identify and investigate important cultural, social and political issues relating to place, space, environment and development, with sensitivity to the range of attitudes and values associated with such issues;
- (i) acquire techniques and develop skills and competencies necessary for Geographical enquiry, and of value for other purposes, especially the making and interpretation of maps, the use of information technology and the conduct of fieldwork; and
- (j) develop intellectual and social skills, including the ability to observe, analyse and communicate.

Such a list as this represents a more than acceptable basis on which to base new Geography syllabi in South Africa and the points listed are in line with suggestions made in the previous section of this chapter.

Because of its breadth of content and methodology, Nightingale believes Geography has many links with other subjects in the curriculum and contributes strongly to cross-curricular

themes, skills and dimensions. The aims stated above enable this to happen while focusing on what is specific to Geography.

Curricula Aims of the Subject

According to Nightingale, it is intended that his proposed syllabus facilitates a variety of modes of learning, teaching methods and approaches to Geography and will provide candidates with opportunity to:

- * develop a range of skills including enquiry skills, problem solving, decision making and report writing;
- * appreciate the contribution which Geography, with its various philosophies and approaches, can make to understanding contemporary issues;
- * realise that Geographical studies are concerned with explanations and understanding which, because of the complexity of the world, may be tentative and in-complete.

It is also intended that courses based upon this syllabus will

- * be complete in themselves and perform a useful educational function for students not intending to study Geography at a higher level and
- * provide a suitable preparation for higher education courses in Geography and other subjects.

Assessment Objectives

On this topic Nightingale states that the three sets of assessment objectives listed below provide a general indication of the abilities, knowledge and understanding (in conjunction with the listed aims, key themes and detailed material) which should be examined. These sets of assessment objectives, although clearly distinguished below, obviously interact and overlap because both geographical skills and attitudes, values and approaches to Geography may be considered as contributing to and involving knowledge and understanding. Individual questions will test more than one set of objectives.

Knowledge and Understanding

According to Nightingale candidates will be expected to demonstrate and communicate a knowledge and understanding of:

- * a sense of place and an understanding of relative location at a variety of scales;
- * Geographical themes and how they might be applied to a variety of physical, economic, technological, social and political environments;
- * the interactions within and between the elements of physical and human Geography;
- * the characteristics and effects of changes in physical and human environments and the processes which influence them;
- * how changes in one place, region or country may be influenced by decisions and processes occurring in other places, regions and countries.

Geographical Skills and Processes

Through study of the proposed syllabus Nightingale believes candidates will be expected to demonstrate and communicate their

- * ability to identify and critically evaluate issues and problems and present reasoned responses to them and to make decisions which may often be on the basis of limited evidence;
- * ability to initiate, implement, report on and evaluate the procedures of a Geographical enquiry;
- * awareness of and ability to make use of a range of sources of information;
- * ability to observe, collect, record, describe; analyse and present information using appropriate methods;

- * ability to identify Geographical changes from source materials and analyse their effects and the responses of people to them.

Attitudes, Values and Approaches to Geography

Nightingale believes candidates will be expected to demonstrate and communicate a critical awareness of

- * the significance of people's attitudes and values to the candidate's understanding of Geographical themes and change;
- * the relative priority given to economic, social and environmental attitudes and values by individuals, groups, organisations and governments;
- * the role(s) played by decision-makers in influencing change;
- * the opportunities and constraints facing different people within a society, and amongst different societies at varying levels of development that affect attitudes and values;
- * the varying ways of studying Geographical issues.

Emphasising Skills and Process

According to Nightingale one of the guiding principles of his proposed scheme of examination is that processes, skills and techniques of particular value in Geographical studies at this level should be meaningfully introduced, where relevant, in the context of investigative learning arising from the study of the modules.

Nightingale provides a categorisation and listing which is intended to establish a norm of expectation of students, rather than provide an exhaustive inventory. There is no wish to inhibit teachers and candidates from introducing further innovative techniques where these are thought to enhance the candidate's learning experiences.

Nightingale hopes that candidates will come to appreciate that the components separated later are part of a total geographical methodology, progressing from inductive observation

(data collection) through analysis to generalisation and theoretical explanation or, alternatively, research design, data collection and analysis to test hypothesis.

Nightingale believes that applications of these skills will arise within candidates' Individual Studies and in the examination they may be asked to demonstrate a critical understanding of the nature and relevance of a technique or their ability to interpret the results of an application rather than working through a lengthy, contrived exercise. Data response exercises will test the ability to interpret and apply evidence presented in the form of maps, diagrams, photographs and data tabulation.

Nightingale contends that the growing availability of the microcomputer (and suitable software) as a classroom tool will facilitate rapid application of statistical procedures to 'real life' data. Increasingly, attention will focus on the need for candidates to understand the principles of data manipulation and what significance can be attached to the results. It will also allow greater emphasis on the interpretation of data rather than lengthy preoccupation with the statistical techniques themselves:

INTELLECTUAL PROCESSES, SKILLS AND RELATED TECHNIQUES (After Nightingale 1994 p.9)

Reference skills and processes - ability to make use of a variety of sources for obtaining information.

data collection through fieldwork. data collection from various media tapes/slide/book/journal/film, etc.

Communication skills and process - ability to present information in a clear and appropriate way.

TRANSFORMATION OF DATA: INTO GRAPHS, (LINE, HISTOGRAM, PIE, RADIAL, SCATTER); MAPS (SKETCH, CHOROPLETH, ISOPLETH, TOPOLOGICAL).
landscape sketching

Interpretive skills and processes - ability to give meaning to data.

INTERPRETATION OF DATA: GRAPHS (LINE, HISTOGRAM, PIE, RADIAL, SCATTER); MAPS (SKETCH, CHOROPLETH, ISOPLETH, TOPOLOGICAL, TOPOGRAPHICAL) AT VARIOUS SCALES; PHOTOGRAPHS (VERTICAL AIR, OBLIQUE, GROUND LEVEL); DIAGRAMS, NUMERICAL DATA.

SIMPLE NETWORK ANALYSIS

ANALYSIS OF DOCUMENTARY EVIDENCE e.g. OLD MAPS, PHOTOS, ADVERTISEMENTS, questionnaires etc.

ANALYSIS OF ATLASES

Evaluative skills and processes - ability to consider evidence and form a conclusion

role play
exercises/games
DECISION-MAKING
discussion

Conceptualising skills and processes - ability to organise information to form a concept or generalisation.

discussion
research and investigation
prediction

Hypothesising skills and processes - ability to formulate hypotheses and to test and reformulate on the basis of evidence.

classifying
APPLICATION OF UNDERSTANDINGS TO NEW SITUATIONS

The candidate's ability to use the techniques written in CAPITALS in the table above may be assessed in the written papers. All the techniques listed are appropriate to the candidates Individual Studies, particularly those which are not assessed in the written papers.

Summary Of Syllabus Content

As can be seen below the syllabus focuses attention on the theme of sustainable development. According to Nightingale in the first two years each major division is organised into modules, the Core Modules are compulsory, a selection is to be made from the Optional Modules. The wide range of optional modules provides that flexibility which will enable educators to adapt the syllabus to the needs of widely differing communities. In the final year there is no choice:

Standard Eight

MANAGING NATURAL ENVIRONMENTS

Core Modules

Landform Management

The use and Abuse of Ecosystems

Optional Modules (A choice of TWO of the following)

Climatic Change and Uncertainty

Living in Difficult Environments
Pollution of Natural Environments
The Geological Challenge

THE USE AND MISUSE OF NATURAL RESOURCES

Core Modules
Energy into the 21st Century
Water Management
Optional Modules (A choice of two of the following)
Minerals as a Resource
Land as a Resource
Soils as a Resource
Managing Forest and Woodland
The potential of Oceans and Seas

Standard Nine

MANAGING HUMAN ENVIRONMENTS

Core Modules
The challenge of Urbanisation
Changing Employment Patterns
Optional Modules (A choice of two of the following)
Changing Urban Landscapes
The Impact of Secondary Industry
The Growth of Service Industries
The Impact of Recreation and Leisure
Changing Transport and Communication

ISSUES OF GLOBAL CONCERN

Core Modules
Population and Resources
Famine and Surplus - the World Food Problem
Optional Modules (A choice of TWO of the following)
Global Limits to Growth
Alternative Approaches to Development
People Planning and Environment

Standard Ten

Africa - A continent in crisis
South Africa at the crossroads
Geography in the workplace
(Source: Nightingale, 1994, p. 12)

A Unified Course

According to Nightingale a criticism that has been levelled at past Geography syllabi has been the tendency to compartmentalise; it must often have appeared to pupils that their Geography was a compendium of different subjects. If, however, the key theme of

sustainable development is given prominence it will forge the link which ensures that the course forms a unified whole with the units complementing each other. More important, however, is the fact that the three years of study will convey an important message to the pupils - one which mankind ignores at its peril.

The Core Modules have been selected to ensure that the pupils gain insight into the working of the natural and human systems of which they are part; and of the potential for good or ill of human management or mismanagement of this planet's resources.

It is for this reason that both the physical and social aspects of Geography need to occur in a unified subject, with the physical aspects of Geography inevitably being left out when the subject becomes part of a Social Science course.

Students should acquire considerable ecological, economic and some political literacy from these studies, as well as the opportunity to explore and develop their own value systems. Thus the course becomes in the best sense, a training in responsible citizenship.

According to Nightingale the drawing up of a teaching syllabus will, in part, be the responsibility of the school (and the community it serves), exercised through the choice of optional modules. Not only should the selection be made with the pupils and the particular community in mind; but the course should cover such aspects of Geography as, the physical environment; population; settlement; agriculture; extracting, processing and manufacturing industries; tertiary activities and communication. Case studies (at various scales) should be widely used, and examples selected to ensure that local, regional and global perspectives emerge. A judicious choice of exemplars can ensure a reasonably wide coverage. Such suggestions represent welcome innovations to Geography syllabi development in South Africa.

Nightingale goes on to state that each module of study poses a set of people-environment issues, questions or problems, and presents the opportunity to study the various aspects of Geography which are necessary for their investigation. Each module encourages students to raise the questions set out in the matrix, "Key Questions and Guiding Concepts" (this appears in an Appendix in the original document) and should lead, through enquiry, towards understanding of the guiding concepts. Study within each module leads to the

development of a variety of skills and techniques, and to a greater awareness of the values inherent in the issues under consideration.

Nightingale concludes that a school syllabus should be the product of widespread discussion and debate, with all interested parties being given the opportunity to make a contribution to the final product. The syllabus reported on in this paper should be viewed simply as a resource document, a draft prepared in great haste and by an individual who wishes to make a contribution to school Geography. It is Nightingale's hope that it will make a contribution to the efforts to produce a revised syllabus which really does serve the best interests of our pupils.

7.4 CRITICAL ANALYSIS OF THE NIGHTINGALE SYLLABUS DOCUMENT

The draft syllabus developed by Nightingale was widely distributed throughout South Africa and also appeared in Issue 7 of Geogram the South African Geographical Society newsletter of January 1993. The draft has received general acceptance and support from various quarters. Practising teachers have shown subdued support and only because Nightingale believes his draft syllabus is a fairly major departure from previous syllabi. Past studies have shown the generally conservative approach by teachers to proposed syllabus change. Every attempt has been made to avoid a overlong syllabus - a major problem in past syllabi. The focus in the syllabus on practical problem solving and pupil decision making skills is to be welcomed. The emphasis on numeracy and graphicacy is also a welcome change from past syllabi.

The strong development/environment link is an encouraging attempt to link E.E. with the concept of sustainable development. The draft syllabus also attempts to instil in pupils an environmental ethic. This represents a big improvement on the previous syllabus where the ecology section seemed to have just been lifted out of the biology syllabus. The ecology section has also been put into context with the focus on the effect of man's activities on the environment e.g. effect of alien vegetation (man's influence) on the natural vegetation.

Other commendations of the syllabus are the flexibility inherent in the use of a modular approach, its integrated nature which links the different modules to each other and the fact that teacher input has been a factor in its formulation. Another encouraging aspect of the

syllabus is its ability to meet the demands of an Africanist perspective while being based on aspects of Eurocentric (British) syllabi.

The criticism of the draft syllabus that it does not contain enough physical Geography has been shown to be invalid - a study of the draft shows a fair spread of physical Geography throughout the draft but integrated into different sections and not appearing under the usual headings. Physical Geography has been included in the Standard 8 and 10 syllabi in an applied fashion - physical Geography should not be taught just because it has been taught in a certain way in the past. The physical bias in the draft syllabus in Standard 8 provides an interesting contrast to the more human bias in the Standard 9 syllabus.

Regarding the criticism of not enough mapwork in the draft syllabus, Nightingale has not set aside a separate unit of study for mapwork but has integrated it into different sections of the syllabus. This I believe is the way mapwork should be taught. Those teachers who may still want to teach it as a separate section can still do so but time would have to be set aside for this.

The strong emphasis on a theme approach with each topic heading representing a separate theme is a welcome change from previous syllabi as well as the avoidance of the term 'content' in the layout of the different standards' syllabi - Nightingale has preferred the term generalisation/or theme.

The syllabus highlights how environment and development education have become top priorities internationally. The syllabus demonstrates an enhanced understanding that treats the environment as people and all other living things interacting within a socio-ecological life - support system. These shifts have contributed to E.E. developing revised orientations for enhancing formal education. Some of these are:

1. Critical processes that bring into question and strive to change current processes of education.
2. Cross-curricular themes which set out to infuse environment and development issues into all disciplines, including Geography.

3. Integrated subject modules and community problem solving modules. Such approaches to E.E. have contributed to Geography's role to address issues of sustainable living and social justice.

The Nightingale syllabus draft provides a suitable vehicle for the suggestions made in Section 2.7 of Chapter Two of this study where the position of E.E. in the present Geography syllabus in South Africa was outlined and suggestions for future implementations made. Relevant recommendations made by the study of E.E. in the school curricula of Namibia, Zimbabwe and Kenya in Chapter Four are present to varying degrees of emphasis in this syllabus.

As has been stated earlier in this study only fairly recently has formal curricula in the South African education system not largely ignored environmental principles and the philosophy of sustainable living. The whole status of E.E. in South Africa needs to be reviewed and integrated into the formal education structure at all appropriate levels. The Nightingale syllabus plays a role in this regard. Its focus on the concept of sustainability and its view of development as being both people-centred and conservation-based makes it a relevant and pertinent document worthy of a place in the evolving development of educational curricula and syllabi in South Africa. The syllabus views development as being based on the fundamental premise of exploiting renewable natural resources only within the constraints of their sustainability. This enables us to build a sustainable, more equitable and just society. This goal may seem visionary or idealistic, but it is attainable, provided we devise effective policies to give practical effect to implementing effective E.E. at all levels. The philosophy of sustainable living offers South Africa the best long-term prospect for a new, just, socially equitable and environmentally sound society. The Nightingale syllabus has a role to play in all of this, answering as it does the call for appropriate environmental literacy to be introduced as a compulsory element of the formal curriculum at all levels.

In summary then, the underlying rationale and ideological assumptions of the Nightingale syllabus viz. its emphasis on the concept of sustainable development, its variety of approaches to Geography, its broad range of skills and its flexibility all provide it with a versatility to accommodate individual school and teacher preferences. This will allow the subject to have relevance in the eyes of pupils whose schools occur in a variety of settings

and locations. The aims and objectives of the syllabus as well as its views on the nature of Geography are well set in current notions and theories on the subject both locally and internationally. Its recommended assessment procedures are in line with the growing emphasis on the testing of skills and competencies, processes, attitudes, values and approaches. The flexible assessment procedures recommended also allow individual schools and teachers the ability to judge what is best for their own pupils. The recommended content of which the course exists provides a balanced focus on topics dealing with environmental and development issues. The unified nature of the course provides a coherence which has been lacking in past Geography syllabi in South Africa.

It is the contention of this study that various other syllabi proposals submitted during the study period (viz. the so-called Earle/Keats syllabus which first appeared in draft form in September 1994 and the Interim core syllabi of the Department of Education) all fall short of what is expected in terms of the inclusion of E.E.. Even though some sections contain aspects of E.E. there is no sustained focus on concepts like sustainability, development and the environment which this study sees as crucial to the success of any new Geography syllabus. The Nightingale syllabus also fleshes out in greater detail the substance of its core and optional modules, with the other syllabus initiatives discussed still representing an earlier stage of finalisation.

Of importance at this point is that recent indications by Government indicate the proposed implementation of new curricula to be introduced from 1998 which dispense with the subject-based curricula for a curriculum based on outcomes and competencies. The role to be played by Geography still requires finalisation, as does the proposed implementation of these syllabi.

7.5 CONCLUSION

This chapter has explored the development of a new secondary school Geography syllabus in South Africa. Particular focus has occurred on the nature, content and teaching approach of the syllabus. The need for the syllabus to reflect the changing scenario in South Africa was also explored. The need for the syllabus to include E.E., and sustainable development concepts was highlighted.

Focus occurred on the Nightingale draft document which seems to offer a reasonable basis for a new syllabus which would have as its focus the areas of E.E., sustainability and development and environmental concerns referred to above.

The need for syllabi to incorporate making classroom learning relevant to learners through fieldwork and other practical work, as discussed in the previous chapter of this study, is highlighted by the Nightingale draft syllabus. The influence of Constructivism in the syllabus is clearly evident. The need for teachers to become facilitators of knowledge through the creation of active learning situations is also implied by the syllabus draft. The need for learners to engage their environmental knowledge and skills to investigate local environmental problems is also highlighted.

Two empirical studies discussed in the next chapter highlight the need to include more E.E. in the syllabus. The input obtained from teachers in the studies help to identify the current perceived state of E.E. in our schools as well as what problems and difficulties need to be overcome.

CHAPTER EIGHT

EMPIRICAL RESEARCH ON THE NEED FOR THE INCLUSION OF MORE ENVIRONMENTAL EDUCATION INTO SOUTH AFRICAN SCHOOL GEOGRAPHY SYLLABI

8.1 INTRODUCTION

This chapter will focus on two pieces of empirical research which highlight the need for the inclusion of more E.E. into the South African school Geography syllabus. These studies concur with the general findings of the 'Global Impact' survey done in 1986 of over 800 primary and secondary school teachers in 21 randomly selected local education authorities throughout the United Kingdom which revealed, according to Greig, Pike and Selby (1987) that:

46% of teachers indicated that their school had policies or guidelines which feature environmental education.

69% of teachers think that environmental and development education are relevant to their subject areas.

67% of teachers think that the political aspects of development and environmental education are not too controversial to be dealt with in the classroom,

78% of primary and secondary school teachers think that development and environmental education are central to achieving an understanding of, and active participation in the world today.

65% of primary and secondary teachers would welcome in-service training on ways of incorporating development and environmental issues into their teaching.

These findings would seem to support those who have been calling for some time for the greater inclusion of E.E. into the school syllabi. These figures provide encouragement to those advocating the greater inclusion of E.E. for without the support of the majority of the teaching profession very little can be achieved.

8.2 AN EMPIRICAL STUDY I

The study was conducted in 1990 by Ms JB Blignaut among planners and senior educationalists from pre-primary to secondary level in the Cape Education Department to establish their awareness of the current nature and aims of E.E., attitudes towards its implementation in school and perceptions of likely constraints to the implementation of E.E. in the existing formal education system. It was found that there was support among 95% of respondents for the integration of the process of E.E. into school education as a matter of urgency. Of respondents, 85% indicated that at present insufficient attention was paid to this aspect of education in schools. While there was evidence that not all respondents were aware of present broad internationally acceptable interpretations of E.E., there was considerable support in principle for the inclusion of the biophysical, social, economic and political aspects of E.E. into formal education. Some of the constraints in the formal education system at the time were identified which made it difficult to apply the principle of E.E. and use the approaches necessary for its successful implementation. A brief description of the study will now follow, with a focus on those aspects which relate to the second empirical study which follows.

Survey

The survey had three aims:

Firstly, to analyse the prevailing awareness among senior educationalists of the nature and broad objectives and approaches of environmental education; secondly, to establish the attitudes of these educationalists towards the implementation of the process of environmental education in schools; and thirdly, to identify constraints in the existing education system that the respondents perceive to be detrimental to the successful implementation of environmental education in schools. (Blignaut, 1992, p.251)

The survey commenced with an investigation into the development and current nature of E.E. and various fundamental elements of E.E. were identified.

Broad educational objectives were formulated and the approaches necessary to attain these objectives were considered. The objectives and approaches were summarized into seven categories which were then used to form a framework for the compilation of a postal

questionnaire which was sent to 477 educationalists in the Cape Education Department. A 63% response rate was achieved.

Discussion

The results of this survey revealed that a large majority of respondents (95%) supported the implementation of E.E. in formal education and saw this as a matter of urgency. Eighty-five percent felt that the present formal education system did not adequately prepare children for their environmental responsibilities as citizens of South Africa. The 63% return of questionnaires would seem to indicate a high degree of interest in E.E. among senior educationalists. More specifically, an analysis of the responses gave an indication of the awareness and attitudes of respondents to the educational objectives of E.E. and the approaches necessary for its successful implementation.

Objectives

The respondents' attitudes to the main objectives of E.E. have been summarized by Blignaut (op. cit. p.253) as follows:

1) *Broad base of understanding*

Of respondents, 90% gave support to a curriculum which provides pupils with the broad base of understanding of environmental matters recommended in the principles of E.E. adopted in the *White paper on Environmental Education, 'F' of 1989* (Council for the Environment, 1989).

2) *Environmental ethic*

Approximately 90% of respondents agreed that all educational staff at school should work together to incorporate an environmental ethic into the school milieu. Ninety-five per cent of respondents supported the active promotion of attitudes and values which promote sustainability while 65% strongly supported this. Eighty-three per cent of respondents would like to see elements in the curriculum which encourage positive social interaction while 48% strongly support this.

3) *Development of action skills*

There was a strong support (>90%) for formal education to contribute to the development of the necessary skills and attitudes required for responsible individual behaviour and local participation in environmental maintenance and improvement. There was also strong

support (>90%) for the development of problem-solving and other empowerment skills required for informed active participation in addressing environmental issues during formal education.

Approaches

The respondents' attitudes towards the educational approaches needed to obtain these E.E. objectives have been outlined by Blignaut (op. cit. p.253) in the following paragraphs:

1) *Holistic approach*

Approximately 55% of respondents viewed the universe from an holistic perspective and had rationalized this viewpoint. Nevertheless 95% favoured a curriculum which emphasizes the interactions between environmental components, rather than excessive detail about components, and 71% felt that this understanding of interrelationships was more important than detailed subject emphasis for school-going children. Moreover, 59% felt that existing subject curricula did not cater for the perceptive mechanisms of the non-western cultures in the South African society. Respondents thus supported a change in the type of knowledge considered important in the curriculum.

2) *Interdisciplinary approach*

There was strong support (95%) for some form of integrated approach for environmental education. Eighty-two per cent of all respondents favoured the implementation of a curriculum which enables pupils to experience the environment as an integrated whole. This was significantly favoured by heads of primary school. Planners older than 55 years were significantly more conservative in their attitudes to fundamental change in the curriculum than planners below 35 years of age.

In the present formal school situation 72% of respondents favoured a multidisciplinary approach to environmental education, despite the problems it encounters in practice, while 23% favoured an interdisciplinary approach. It is possible that 'interdisciplinary' was confused with 'non-disciplinary' (a curriculum with no provision for disciplines) by some of the respondents. The whole concept of an interdisciplinary curriculum that is sufficiently structured to provide pupils with the knowledge and skills that would enable them to progress into subject specialization at a later stage but that provides for integrated activities may be too novel for many respondents to relate to. Nevertheless, 62% of the respondents agreed that a curriculum developed around concepts which relate man to his environment and which can be interpreted in any community context would be more relevant to all pupils in South Africa.

3) *Fieldwork*

More than 90% of respondents support the principle of fieldwork as a means of making pupils more environmentally aware and concerned and as a means of developing the skills needed for active environmental participation. However, 85% of respondents felt that at present fieldwork more regularly than twice a term is too disruptive. They identified several problems relating to present educational structure and practice which are detrimental to the successful use of fieldwork as an educational approach in the curriculum. These included inadequate teacher training; lack of time within the curriculum; the compartmentalized structure of education; administrative requirements for acquiring permission; lack of suitable guidance and resources; and attitudes and lack of commitment of some teachers.

4) *Affective domain*

Over 90% of the respondents supported the introduction of activities specifically aimed at the development of the pupil's affective domain into formal education and felt that development of pupils' feeling about and for the environment should play a more prominent role in schools. Some 64% of respondents felt that the teachers would neglect this development of the affective domain as long as evaluation is based only on the cognitive domain. Fieldwork was considered to be a more effective means of developing sensitivity to the environment than classroom teaching by 73% of respondents.

Awareness

The analysis of questionnaire returns revealed some lack of understanding of the nature of E.E. and its specific objectives and approaches. According to Bignaut's analysis (op. cit. p.154):

A minority of respondents (10%) appeared not to regard environmental education as a process that should be incorporated into all aspects of the curriculum at all levels of education.

Thirty-three per cent of respondents (and over half of secondary-school heads) viewed fieldwork in terms of the occasional visit to an outdoor centre in a natural environment, as is practised at present in some primary schools in the Cape Education Department, and did not see the need to re-enforce this by sensitizing pupils to the interactions within their own community environment.

Thirty-eight per cent of respondents (including 49% of secondary-school heads) saw environmental project work, which is intended to

develop environmental action skills, as a voluntary extra-mural activity as it is practised in some schools at present. This perception was less prevalent among planners and primary-school heads.

Constraints

Factors that could impede the successful implementation of E.E. were confirmed and identified by respondents. These factors were listed by Blignaut (op. cit. pp.254-255) as follows:

Teacher training

1. Some teachers were unaware of the nature or importance of environmental education.
2. Some respondents felt that at present teacher training did not equip teachers with a sufficiently holistic viewpoint or the knowledge and skills required to teach from an holistic perspective. This applied in particular to high-school teachers.
3. Teachers were not generally taught techniques for planning and organizing fieldwork or environmental project work with large classes. Pre-primary and junior primary school teachers receive better training in this respect.
4. Teachers were generally unaware of strategies and methodologies for developing a pupil's affective domain.
5. Some teachers needed opportunities of developing their own sensitivity to their environment and their own environmental attitudes and values.
6. Ninety per cent of respondents would support pre-service and in-service training of teachers if a more integrated approach to schooling is adopted but this would incur financial cost.

Curriculum

1. It appeared that the present curriculum is based on a reductionist philosophy which leads to compartmentalized learning in separate subjects. The interrelationships between man and his environment can be taught most effectively through an integrated approach.
2. Subject specialization occurred in the curriculum from Std 2 level in formal schooling. This compartmentalizing of knowledge led to complicated and inflexible timetabling which placed constraints on regular fieldwork and environmental projects especially when the school periods were short.

3. Content subject syllabuses tended to stress detail about specific components and generally did not emphasize inter-relationships between components.
4. The curriculum was very full and would need pruning if time were to be made available for fieldwork and environmental project work.
5. The curriculum was directed towards development and evaluation of the cognitive domain. Not enough emphasis was put on activities which encourage development of the affective domain or on methods of evaluation which recognized this development.
6. More than half of the respondents felt that many environmental issues were too broad to be dealt with in the curricula of any of the existing content subjects, particularly by subject specialists at the level that would be required in senior secondary schools.

Other factors

1. Environmental values and attitudes were not yet part of the school ethic in many schools.
2. Large schools (>500) had significantly more difficulty interacting with the community in environmental project work than small schools (<300).
3. Large classes made control difficult during fieldwork exercises especially if teachers had not been trained in the management of fieldwork.
4. Lack of local resources and guidance for teachers in the use of these resources especially when the local community environment was unfamiliar to them.
5. Cost of transport mitigated against excursions to sites beyond walking distance. This was not too serious as the local environment provides opportunities for E.E.

Conclusion

The survey clearly showed that senior staff in the Cape Education Department were strongly in favour of the introduction of E.E. into schools and that the majority supported the fundamental objectives of E.E. and the approaches required for its successful implementation. Blignaut provides the following recommendations in the conclusion to her study report (op. cit. p.255):

From this study it appeared that to be successful any attempt to introduce environmental education into formal education would have to be accompanied by a rationalization of the existing system to provide an educational structure which is conducive to an holistic integrated approach. It would also need to cater for the investigatory, problem-solving and environmental action skills which are developed during environmental project work.

Moreover, environmental education cannot take place at a purely cognitive level and the use of additional strategies and teaching methods to develop the affective domain would be necessary.

The successful implementation of environmental education in schools will need to be accompanied by in-service training and the inclusion of an environmental component in pre-service selection and training.

The value of this survey would be enhanced if it could be extended to other education departments. Further research is being done into the problems and opportunities associated with alternative options for the implementation of environmental education into formal education. However action research is necessary to guide the effective implementation of the process of environmental education into schools in the South African context.

To eventually redress the lack of understanding among the general public about the mechanisms that lead to environmental degradation and to empower future citizens with the skills they require to commit themselves to responsible action, it can only be hoped that the formal education sector will see that literacy, numeracy and environmental literacy, that is, understanding of and responsibility towards the total environment, are equally important in basic school education.

The Blignaut study as discussed above raised many important issues, not least of which was the need for more investigation and research by personnel in other education departments into the implementation of E.E. into schools. Many of the issues raised are included in the empirical study which follows which focused specifically on the use of Geography as a suitable vehicle to implement E.E. As has been stated earlier in this study, Geography is seen as a more than suitable vehicle to achieve these ends but is certainly not the only one. The constraints of this study has precluded as consideration of other vehicles.

8.3 AN EMPIRICAL STUDY II

The study under consideration was conducted by myself on a part-time basis during the period September to December 1994. The study was also in the form of a survey among practising Geography teachers on the teaching of environmental concepts, attitudes and

behaviour through Geography education. The aims of the survey were to gauge the feelings of the teachers on the incorporation of E.E. into and through Geography education.

Background to the study in terms of the procedure used to conduct it was discussed earlier in Chapter Five.

Study assumptions and limitations

The questionnaire utilised in this empirical study was devised as part of an International Geographical Union (IGU) Survey of Geographers and Geography educators and was deemed suitable and satisfactory for completion by the response group of Geography teachers in the ex-Natal Education Department. The questions posed and responses expected seemed to be all equally within the reasonably expected range of the teachers concerned. The respondents would also have been a reasonably homogeneous group in terms of race group, educational background and training as well as post training experiences. The respondents were all white, with at least a four year teaching qualification obtained in a university or teachers' training college and having some post training experience in having attended departmental in-service courses.

Analysis

A data analysis of the survey, as with the Blignaut study reported earlier, indicates clearly that E.E. has an important part to play in effective Geography teaching. A database was set up in the Microsoft works database program and the data was processed. Tables of percentages of the results were created in Wordperfect and the percentages were worked out using Microsoft Works.

The first step in the survey analysis was to arrive at percentage responses for each category of response for each question posed to respondents. Categories of responses had been clearly demarcated beforehand in the questionnaire so as to assist with response analysis.

The questionnaire made use of a Likert scale approach to gauge respondents' feelings and thoughts for each question. The following results were arrived at as a result of the above procedure.

1.	HOW IMPORTANT IS IT TO TEACH THE FOLLOWING ASPECTS OF ENVIRONMENTAL EDUCATION IN Geography LESSONS?	NOT IMPORTANT	IMPORTANT	EXTREMELY IMPORTANT
A.	Developing environmental knowledge	0%	35%	65%
B.	Exploring attitudes	0%	42%	58%
C.	Environmental attitudes	0%	35%	65%
D.	Teaching skills of environmental investigation /thinking	2%	41%	57%
E.	Influencing students' environmental behaviour	0%	36%	64%
F.	Encouraging active commitment to environmental causes	0%	52%	48%
G.	Teaching fieldwork skills	3%	65%	32%
H.	Developing environmental awareness	0%	20%	80%
I.	Developing a personal environmental ethic	2%	32%	66%
J.	Developing motivation/ skills for participation in environmental improvement	0%	52%	48%
K.	Promoting a willingness to adopt lifestyles compatible with the wise use of environmental resources	0%	42%	58%
L.	Developing an empathy for environmental issues	0%	44%	56%
M.	Developing solutions to environmental problems	0%	39%	61%

2.	Geography CLASSES SHOULD FOCUS ON ENVIRONMENTAL THEMES.	
A.	In almost every lesson (80-100%)	9%
B.	In the majority of lessons (60-80%)	47%
C.	In half the lessons (40-60%)	30%
D.	In some lessons (20-40%)	14%
E.	Rarely if ever (0-20%)	0%

3. PLEASE INDICATE HOW OFTEN YOU USE EACH OF THE FOLLOWING WHEN TEACHING ENVIRONMENTAL EDUCATION IN Geography CLASSES.		NEVER	OCCASIONALLY	OFTEN
A.	Teacher presentation	2%	58%	40%
B.	Class discussion	2%	61%	37%
C.	Textbooks	23%	64%	13%
D.	Work-sheets	8%	58%	34%
E.	Videos	14%	60%	26%
F.	Small group discussions	24%	62%	14%
G.	Field experiences	30%	65%	5%
H.	Investigating local controversial issues	24%	65%	11%
I.	Environmental action	42%	52%	6%
J.	Student projects	12%	70%	18%
K.	Exploring attitudes/values	6%	76%	18%
L.	Computers	94%	6%	0%

4. HOW WELL DID YOUR PRE-SERVICE EDUCATION COURSE PREPARE YOU FOR TEACHING ENVIRONMENTAL EDUCATION?		
A.	1 or 2 (Poorly)	56%
	3 or 4 or 5 (Adequately)	39%
	5 or 6 (Excellently)	5%

5. HOW IMPORTANT HAVE THE FOLLOWING EXPERIENCES BEEN IN CONTRIBUTING TO YOUR KNOWLEDGE/SKILLS IN ENVIRONMENTAL EDUCATION?		NOT IMPORTANT	IMPORTANT	EXTREMELY IMPORTANT
A.	In service courses	20%	56%	24%
B.	Conferences	33%	56%	11%
C.	Personal reading	0%	38%	62%
D.	Video/films	0%	56%	44%
E.	Environmental groups	36%	50%	14%
F.	Curriculum guides	33%	58%	9%
G.	Prepared teaching materials	21%	62%	17%
H.	Recreation/leisure activities	8%	57%	35%
I.	Field-based courses	41%	50%	9%

6. HOW COMPETENT ARE YOU IN TEACHING THE FOLLOWING ASPECTS OF ENVIRONMENTAL EDUCATION?		NOT COMPETENT	ADEQUATE	EXTREMELY COMPETENT
A.	Developing environmental knowledge/concepts (natural systems, human impacts)			
B.	Exploring environmental issues	5%	77%	18%
C.	Environmental attitudes	3%	83%	14%
D.	Teaching skills of environmental investigation /thinking	0%	79%	21%
E.	Influencing students' environmental behaviour	0%	86%	14%
F.	Encouraging active commitments to environmental causes	3%	83%	14%
G.	Teaching fieldwork skills (data collection and field investigations)	15%	74%	11%
H.	Developing environmental awareness	14%	71%	15%
I.	Developing a personal environmental ethic	2%	63%	35%
J.	Developing motivation/ skills for participation in environmental improvement	0%	73%	27%
K.	Promoting a willingness to adopt lifestyles compatible with the wise use of environmental resources	5%	86%	9%
L.	Developing an empathy for environmental issues	5%	83%	12%
M.	Developing solutions to environmental problems	0%	82%	18%
		5%	86%	9%

7.	INDICATE THE EXTENT OF COMMITMENT YOU HAVE FOR PROMOTING THE FOLLOWING IN GEOGRAPHY LESSONS.	NOT COMMITTED	COMMITTED	EXTREMELY COMMITTED
A.	Environmental knowledge	0%	50%	50%
B.	Environmental skills	2%	52%	36%
C.	Critical evaluation skills	0%	51%	39%
D.	Environmental attitudes and values	2%	48%	50%
E.	Responsible environmental behaviour	0%	50%	50%
F.	Active involvement in local environmental issues	20%	59%	21%

8.	DO YOU BELIEVE THAT GEOGRAPHY TEACHERS SHOULD PROMOTE A PARTICULAR ENVIRONMENT ETHIC OR ATTEMPTS TO DISPLAY A NEUTRAL, UNBIASED APPROACH?	
5.	Strong belief in promoting environmental ethic	45%
4.	Belief in promoting environmental ethic	50%
3.	Undecided	2%
2.	Belief in displaying a neutral approach	0%
1.	Strong belief in displaying a neutral approach	3%

9.	HOW IMPORTANT ARE EACH OF THE FOLLOWING AS OBSTACLES TO THE INCLUSION OF ENVIRONMENTAL EDUCATION IN GEOGRAPHY CLASSES?	NOT IMPORTANT	IMPORTANT	EXTREMELY IMPORTANT
A.	Lack of teaching resource materials	30%	52%	18%
B.	Not emphasised in syllabuses/curriculum	24%	58%	18%
C.	Teachers' lack of knowledge/training in environmental education	8%	77%	15%
D.	Time constraints	8%	53%	39%
E.	Personal heavy workload	14%	54%	32%
F.	Lack of school support for environmental education	42%	49%	9%
G.	Difficult to examine	39%	56%	5%
H.	Political nature of environment content	56%	44%	0%
I.	Opposition to teaching environmental values	77%	18%	5%
J.	Opposition to student involvement in environmental action	67%	31%	2%

10.	HOW IMPORTANT ARE THE FOLLOWING IN ENHANCING THE INCORPORATION OF ENVIRONMENTAL EDUCATION IN GEOGRAPHY CLASSES?	NOT IMPORTANT	IMPORTANT	EXTREMELY IMPORTANT
A.	Geography textbooks	23%	54%	23%
B.	Geography syllabuses/curriculum	8%	60%	32%
C.	Videos	2%	45%	53%
D.	Computer games/simulations	23%	59%	18%
E.	Geography pre-service education	6%	58%	36%
F.	Geography in-service teacher education	3%	56%	41%
G.	Geography post-graduate teacher education	23%	54%	23%
H.	Access to special equipment	21%	56%	23%
I.	Opportunities to field trips	2%	42%	56%

11.	INDICATE HOW STRONGLY YOU AGREE/DISAGREE WITH THE FOLLOWING STATEMENTS.	STRONGLY DISAGREE	UNDECIDED	STRONGLY AGREE
A.	The aims of environmental education are similar	6%	42%	52%
B.	Courses in "Geography and the Environment" should be included as a subject in the Geography curriculum	2%	27%	71%
C.	Environmental education should be taught in all subjects across the curriculum	9%	32%	59%

Table 10: Results (I) of Empirical Study II

The responses clearly show that the sample of teachers involved in the study see E.E. as an important component of good Geography teaching (as revealed by responses to question 1)

The responses to part F of question 1 show a fairly low (48%) number of teachers who rate encouraging active commitment to environmental causes as extremely important. A possible reason for this could be that teachers support in their lessons a commitment to environmental causes but that the constraints of teaching a overlong syllabus mitigate against an active (class time) involvement. The high percentage of positive respondents in question G (65% important, 32% extremely important) indicates the importance teachers attach to fieldwork skills, notwithstanding the problems of organising and funding fieldwork activities. Of significance too is the high number of respondents in question H (20% important, 80% extremely important) who see the developing of environmental awareness as an important aspect of E.E. in Geography lessons.

The fairly low response of 48% to question J may reveal uncertainty on the part of teachers as to exactly how to develop in their pupils motivation/skills for participation in environmental improvement.

The responses also show that the majority of Geography lessons should have an environmental focus (as revealed by responses to question 2). An analysis of question 3 reveals some interesting points. Disappointingly, but not really surprisingly considering South Africa's tradition of teacher-centred teaching, a fairly high number of teachers (40% - question 3A) would often use the method of teach presentation when teaching E.E. in Geography classes. Earlier discussion in this study revealed the need for pupil-centred teaching to be utilised as much as possible when incorporating E.E. into the teaching of

Geography (Ballantyne 1986). The traditional conservatism of teachers in employing a varied number of teaching approaches I believe is revealed in question 3 where current research and literature would recommend a higher percentage be recorded in the 'Often' column for parts F (small group discussions), G (field experiences), I (environmental action) and K (exploring attitudes/values). The rather surprising response of 0% under the 'Often' column for part L (computers) of question 3 may reveal that at the present time very few teachers of Geography feel competent or confident in the use of computers in their subject. The need for these structures to be rectified as soon as possible reveals the need for a large scale in-service programme in computer use for Geography teachers.

Responses to question 4 reveal the inadequate preparation teachers in KwaZulu-Natal received (and the rest of the country too with few exceptions) to allow them to teach E.E. as part of their subject teaching. The need for the inclusion of E.E. in the pre-service education course of student teachers has been highlighted in the past by various researchers, among them Dr C P Loubser of the Department of Didactics in the Faculty of Education at the University of South Africa. E.E. has been introduced into the Higher Education Diploma Geography Method Course at the University of Natal in Durban but using 1995 figures as an example this will affect only 9 out of a total of 80 students enrolled on the course. The rest of the students apparently will receive 1 x 45 minute session later in the year on E.E. as part of a series of lectures on inter-curricular studies.

This position is likely to change in the future as teacher training institutions institute the requirements of the COTEP document.

Responses to question 5 seem to reveal formal teaching structures have not made as important a contribution to teacher knowledge of and skills in E.E. as one would have hoped and reveal a need for the formal system to play a much greater role in the area as has been the case in the past. The fairly high percentages in questions 5 B, F and I in particular seem to reveal a need to increase the relevance of courses held and boost their stature sufficiently that teachers feel they will receive something worthwhile out of attending them. It was interesting to note that 62% of the respondents received their knowledge of and skills in E.E. from personal reading.

Responses to question 6 seem to reveal a feeling of teacher inadequacy and incompetence in the teaching of aspects of E.E.. Relatively few teachers felt extremely competent in teaching the latest aspects of E.E. - a disquieting situation when one usually perceives teachers as being generally fairly competent in the teaching of their subject matter. The need for large-scale in-service training in E.E. for practising teachers is clearly revealed as well as the absolute necessity, as has already been stated, for much more pre-service training in E.E. than is the case at present. The large percentage of respondents recording an 'adequate' response to the questions asked is an indictment on our present educational system and in particular our training of teachers.

Responses to question 7 seem to reveal a fairly high commitment on the part of teachers for promoting various aspects of E.E. in Geography lessons. A disappointingly high 20% of respondents did not feel at all committed to active involvement in local environmental issues (question 7F). One can only hope that this response reflected a personal decision based on reasons like time constraints etc. rather than a lack of commitment to, for example, encouraging pupils to become actively involved.

The overwhelmingly positive response to question 8 once again reveals the commitment of teachers to the ideals and development of E.E. This is viewed as a pleasing situation given that most Geography teachers (as indicated earlier) view the environment as an important component of study in their subject.

Question 9 reveals the potential that teachers have to overcome various hazards and difficulties to the inclusion of E.E. in Geography classes. Very few saw the list of obstacles presented as extremely important. The fairly high percentages listed in the important column reveal that teachers are realistic about the obstacles and feel they cannot just be wished away. Strategies would need to be developed to assist teachers to overcome the obstacles listed.

Regarding question 10, focus on the responses made will be on the 'Extremely important' column only. An analysis of responses reveals that teachers see a wide variety of different factors that impinge on the successful incorporation of E.E. in Geography classes. The need for more pre-service, in-service and post-service graduate training of teachers in E.E. is revealed in question E, F and G in the 'Important' column. The lower percentage of

teachers indicating and 'extremely important' response may stem from natural teacher reluctance to attend additional courses in their spare time. The ability of field trips to inculcate the spirit of E.E. in pupils as part of their Geography course is highlighted in questions 10I and supports the contentions of the Masters degree thesis of the author (Cowie, 1988) which showed the need for E.E. to be taught in Geography lessons through the use of fieldwork.

Responses to the final question of the questionnaire reinforce strongly earlier sentiments expressed by the teachers on the value of E.E. and its incorporation in the Geography syllabus at all levels and its incorporation in the syllabi of all subjects in the curriculum.

The following analysis examines the specific responses of various respondents to the open ended questions in the questionnaire viz Q1N, 3M, 4B, 5J, 9K and 10J. Not all respondents filled in an answer to these questions. The general feel of the responses was to support and reinforce the sentiments expressed in the 11 objective type questions discussed above. The responses below represent a selection of some of the more common items provided by respondents. Each response will be followed by a short analysis.

Question 1N : How important is it to teach certain aspects of E.E. in Geography lessons.

Highlight environmental problems

Stress pollution types

Practical application of theory

Positive attitudes

Pupil awareness

Responses to question 1N indicate that teachers see one of the most important aims of Geography lessons as being the need to highlight the environmental crisis facing the Earth today. Pupil awareness and attitude have been referred to at various points in this study as being important aims of the educational process.

Question 3M : Aids to teach E.E. in Geography.

Overhead projectors

Depends on subject matter

Class and Group projects

Video material

Slide material

Fieldwork

Conservation bodies e.g. Umgeni Valley Project (Wildlife Society)

Responses to question 3M indicate the need to use a multi-dimensional approach when teaching E.E. through the vehicle of Geography. The full range of available resources (audio-visual and other) needs to be utilised.

Question 4B : How well did your pre-service Geography Education Course prepare you for teaching E.E.

Environmental education was in its infancy

Zoology and Botany were the only aspects

Satisfactory

Good

E.E. only in Honours Course

Wasn't an issue 20 years ago

Too much theory

Personal experience only

Biogeography course in biology only

Responses to question 4B indicate, as has been highlighted already by the first Empirical study, the need for greater teacher training in preparing educators to teach E.E. in their subjects. Not only is there the need for greater pre-service training but also for in-service training of teachers already in the system.

Question 5J : What has contributed to knowledge in E.E.

Media

Government publications

Conservation organisations e.g. Natal Parks Board

Courses at Tertiary institutions

Responses to question 5J indicate the relative paucity of sources of information and knowledge on E.E. available to teachers. This, it is believed may

constitute one of the main reasons for the relative ignorance of E.E. principles by practicing teachers and the resulting general lack of their implementation in classrooms.

Question 9K : How important are certain obstacles in the inclusion of E.E. in Geography classes.

Field work cost factor

Lack of teacher training in E.E.

Balance between social and environmental needs must be maintained

Conservation and not preservation is required

Responses to question 9K indicate that very real obstacles do exist to limit the inclusion of E.E. in Geography lessons. These however can and must be overcome if the successful implementation of E.E. is going to occur. Initiative and inventiveness will be required by educational authorities to achieve this.

Question 10J : How important are certain aspects in the incorporation of E.E. in Geography classes.

Media

Guest speakers

Department of Environment

Conservation bodies e.g. Wildlife Society

Universities and teacher training institutions

Responses to question 10J indicate the wide range of inputs and influences that are available to assist the incorporation of E.E. in Geography lessons. Full utilisation of these must exist to achieve the desired implementation of E.E.

In the following analysis of data provided by the questionnaire teacher experience is compared with support for E.E. in Geography lessons (Table 11) and with E.E. preparation in the pre-service training (Table 12) the following code was used:

A = less than 2 years teaching experience

B = between 2 and 5 years teaching experience

C = between 5 and 10 years teaching experience

D = more than 10 years teaching experience

The percentages used were calculated bearing in mind that:

7 A teachers responded
 11 B teachers responded
 13 C teachers responded
 39 D teachers responded

 70 Total responses

The following table illustrates the relationship between teacher experience and their feelings on how much Geography classes should focus on environmental themes (Table 11):

CATEGORIES OF TEACHER EXPERIENCE

	Teacher response rate (90%)				
	0%-20%	21%-40%	41%-60%	61%-80%	81%-100%
A	0%	0%	20%	60%	20%
B	0%	11%	44%	22%	22%
C	0%	15%	15%	69%	0%
D	0%	15%	33%	44%	8%

Table 11: Results (II) of Empirical Study II

An analysis of the table above clearly reveals how the more senior teachers (in most cases those with little exposure to E.E. in their teacher training) felt less strongly about the need for their Geography classes to focus on environmental themes. This highlights the fact that only teachers having recently completed their training may have been exposed to E.E. and then usually to a limited extent.

The table below explores how well pre-service Geography education courses prepared teacher groups A, B, C or D for teaching E.E. (Table 12):

Pre-Service Geography Education Course Preparation			
	Poorly	Adequately	Excellently
A	20%	80%	0%
B	33%	44%	22%
C	62%	31%	8%
D	72%	28%	0%

Table 12: Results (III) of Empirical Study II

An analysis of the above table reveals that category A teachers feel that a significant amount could be done to improve pre-service Geography education courses to prepare teachers to teach E.E. (Excellent response 0%). However, 22% of category B teachers felt they had been excellently prepared. This may reveal that in-service teachers, on reflection after a few years of actual teaching, feel that the pre-service training received was not that bad at all.

Also of significance is the inverse correlation which exists between the responses in the 'Poorly' column with those in the 'Adequately' column. Those teachers longer in service revealed an inadequate or no training in E.E. to more junior teachers who had experienced some E.E. in their pre-service training.

The analyses presented above have attempted to show relationships which exist in the relationship between the responses given and the seniority of the teachers making the response as measured by the years of teaching experience of the respondent. The information had to be supplied by the respondents on the questionnaire. The first table on the page shows clearly that a high percentage of teachers in each of the 'experience' categories felt a strong need for their Geography lessons to have a focus on environmental themes. The second table merely confirms information highlighted earlier in the analysis viz that very few teachers felt their pre-service Geography education course had adequately prepared them for teaching E.E. as part of their lessons in Geography.

An attempt was made by fax to make contact with Dr R Ballantyne and Ms Carol Fortino regarding their project using the questionnaire in other parts of the world. The results obtained in other parts of the world as part of the International Geographical Union E.E. Survey would have made an interesting comparison but the results required are unfortunately not yet available.

8.4 CONCLUSION

Besides the recommendations and feelings of teachers on the inclusion of E.E. into the Geography syllabus as revealed in the two empirical studies discussed in this chapter, my Chairmanship and membership of various committees involved with the teaching of Geography has afforded me further opportunities to gauge the feelings of teachers to issues relating to the syllabus as a whole. Various submissions have as a result been made in what should be part of a new secondary school Geography syllabus in South Africa. As has been stated before, it is of crucial importance that the views of practising teachers be taken into account in the drawing up of new syllabi. The final recommendations and conclusions of this study which appear in the next chapter take these views into account.

CHAPTER NINE

CONCLUSIONS AND RECOMMENDATIONS

9.1 INTRODUCTION

Based on the analysis and discussion of preceding chapters and drawing on my own personal experiences of serving in different capacities on committees and bodies in education in KwaZulu-Natal over the last 18 years, and relying on the information gained from the preceding chapters, I believe I am in a position to make suggestions and recommendations, however tentative, towards the debate on a new secondary school syllabus for Geography in South Africa. It is not the intention to actually submit a new syllabus but to rather critically assess a few which have recently been circularised for analysis and discussion, as was done in Chapter Seven. Not one of these syllabi should at this early juncture be seen as being better than any other although more time was spent discussing and analyzing the so - called Natal document or Nightingale syllabus with which I am more familiar. My call for a greater infusion of E.E. into the new syllabus was also based on the analysis I conducted of questionnaire responses from teachers testing their opinions on E.E. in Geography and which was discussed in the preceding chapter. The results obtained from the analysis, for reasons already described, need to be incorporated as suggestions and recommendations for a new Geography syllabus in South African schools.

9.2 SYNOPSIS OF CURRENT THINKING

The following represents a synopsis of my thinking at this point and will be elaborated on with further discussion which follows in this chapter. It is based on trends which have emerged from earlier discussions in this study and attempts at synthesising these various strands into some sort of coherent whole. The thoughts presented here represent in many cases underlying principles on which a new syllabus could be based and have a similarity with many of the underlying principles of the Nightingale syllabus discussed in Chapter Seven.

Position paper: Geography in the National Curriculum

The following synopsis is illustrative of insights gained by the writer from his studies and research on this topic (Cowie 1988, 1993, 1994):

1. Geography should ideally take its rightful place as a compulsory separate subject or module from Std 2 - 10 in a National Curriculum. It must not become subsumed into a component of a Social Science or Humanities course unless its unique identity is protected and preserved as a component of the course.
2. Major revision of existing Geography syllabi will be required to meet the needs of the changing South Africa. Every attempt must be made to achieve a phase three status for the subject as recommended by Graves (1981).
3. The content of the subject will have to change to accommodate the experiences and aspirations of Black pupils. A need may well exist to develop a form of people's Geography to accomplish this. An indigenisation of the subject is thus required.
4. The aims and objectives of the new syllabus will need to be negotiated with a broad base of people with teachers, parents and most importantly pupils being consulted. All relevant role players must be included in deliberations, right from the beginning. Once decided on, the aims and objectives need to be expressed throughout the syllabus document and integrated with the content material and assessment strategies.

The syllabus needs to be flexible to allow for the study of both a compulsory core as well as various options.
5. The strength of the subject lies in its unique fusion of the physical and the human realms, the Sciences and the Humanities. E.E. should act as the catalyst for this holism and has the ability to act as an integrating mechanism.
6. The focus of study in the subject should be on man/environment relationships.
7. Besides the emphasis on the environment there should also be an emphasis on place (spatial perspectives), skills, issues, attitudes and values (affective domain).
8. Fieldwork should form an important aspect in the study of the subject. Learning experiences in the form of research-oriented fieldwork studies should form an important part of a new Geography syllabus.

9. The development of research skills should also form an important emphasis in the teaching of the subject.
10. Role play exercises and simulations should be utilised to more effectively communicate various concepts and ideas to pupils.
11. The subject must focus on relevance and must take into account our constantly changing world.

To have merit the syllabus must allow the relevance of the subject content to be borne constantly in mind and must concern itself with long-term educative goals. To achieve relevance every attempt must be made to ask what Geography pupils/students need to know and why they need to know it.

12. Current Geography syllabuses have been criticised as being too content-based. The subject needs to develop a process-oriented instead of the purely product-oriented approach as followed in the past.
13. There is a need to align the subject more closely towards the vocational, increasing the relevance of the subject in the market place.
14. In order to increase the relevance of the subject, particularly for rural communities, emphasis needs to be placed on the concepts of development and sustainability. A major focus must be on the poor and marginalised people of our country. The empowerment of these communities is seen as crucially important. Also, the needs of individuals, communities, the economy and the environment must be examined in a new syllabus through the incorporation of environmental and development education.
15. The move away from earlier descriptive methods in the teaching of the subject must be sustained and there needs to be even more emphasis placed on the skills of quantification, logic and abstraction.
16. The various syllabi need to be interpreted in the widest possible terms and transmitted to pupils using, where possible, pupil-centred learning techniques.

17. The syllabus should be concerned with extending conceptual thought. The syllabus must be designed to accommodate a year by year progression from simple to more complete concepts. Skills are closely linked to concepts and it is necessary to understand certain concepts before the skill can be learnt.
18. Student/pupil interest must be continuously maintained. This should be done by the continuous introduction of new concepts and skills and the conscious construction of a network of Geographical concepts.
19. Pupil assessment and evaluation needs to be ongoing (continuous) and interactive between teacher and pupil with a stress on the formative type of evaluation rather than summative evaluation which is used to rank pupils for external presentation. A re-evaluation needs to occur on the competitive and marks orientated nature of the continuous school assessment.
20. The syllabus must allow for creative, divergent and investigative thinking on the part of pupils/students and teachers.
21. Problem-solving and problem-handling techniques need to be included in the new Geography syllabus.

Based on this study and research on this topic (Cowie 1988, 1993, 1994) I believe the following points need to be considered when drawing up a new school Geography syllabus:

- I. Content must not be overemphasised.
- II. The first step in lesson planning is to identify key questions and sub-questions.
- III. The emphasis must be on learning processes and the development of skills (stress on marketable skills). The understanding of basic concepts is very important.
- IV. The syllabus guide must not be seen to be prescriptive - the creativeness and professionalism of the educator remain the primary factor.
- V. Understanding, relationships and explanations are key concepts.

VI. The syllabus must be pupil-activity based. (A discovery approach.)

VII. There needs to be a stress on pupils becoming more familiar with statistical methods, drawing and interpreting of graphs, fieldwork techniques, mental maps, values and attitudes. Also the use of questionnaires (primary research), and the development of sketching skills.

VIII. The teacher is to be seen as a guide/manager/consultant/facilitator - he/she makes the material accessible and real to the pupil.

IX. There needs to be a greater emphasis on projects and assignments - the research method is more important than the final result, process is more important than product.

X. The teaching methods used must be pupil-centred to develop greater pupil autonomy.

XI. When assessing/evaluating pupils focus should not be on the knowledge gained but how the knowledge was gained (process involved).

XII. Testing must focus on the aims/objective identified at the outset of the course.

XIII. Pupils must be taught how to evaluate - for them to give their own opinion or assessment. Teachers must ask what they think.

XIV. Teachers must use maps, atlases etc. to develop a greater spatial knowledge among the pupils.

XV. Pupils must see how different sections of the syllabus integrate with each other.

I also believe that all pupils studying Geography must be aware of the following:

The five important characteristics of school Geography:

- 1) Geography is a study of phenomena at a particular place (e.g. town, region, river basin, ocean, mountain range etc.). The exact location of something can be studied by means of maps and photographs.

- 2) Geography is a science that is concerned with the spatial distribution and position of phenomena. (Thus the importance of maps in Geography.
- 3) Geography stresses relationships which exist between different elements (e.g. relief and climate, climate and settlement etc.).
- 4) Geography studies the environment holistically ie it uses information from a wide variety of sources (e.g. social, cultural, economic, physical, ecological etc.) to obtain understanding of places.
- 5) Geography studies changes at places. It studies the ways in which phenomena and relationships change over time.

Some general aims of teaching Geography which must of necessity be taken account of:

To explain the environment.

To stress interrelationships.

To encourage pupils to think ecologically.

To encourage pupils to think holistically.

The following educational objectives in Geography teaching are also important:

- 1) Development of basic skills and concepts.
- 2) Training for Geographical thinking.
- 3) Development of mental maps.
- 4) Proficiency with maps, sketches and diagrams and graphs.
- 5) Proficiency in the use of problem solving, hypotheses testing, fieldwork techniques and research skills (project work).

Regarding syllabus content the following lists provide some ideas of topics which should where possible be included as they represent topics of direct relevance to pupils in the 1990's and into the first few years of the twenty-first century:

Landforms (Geomorphology) Oceans, Atmosphere (Climatology), Ecosystems (sustainable development): sub-tropics, soil erosion, landform management, changes in world climatic patterns (e.g. El Nino effect), global warming, ozone depletion, greenhouse effects, atmospheric pollution, management of ecosystems (natural forests, the sea etc.).

Human basic needs issues (e.g. supply of food, housing, water, electricity, provision of education, health services etc.).

Economic development issues (wealth, inequality, use and abuse of resources, the R.D.P., Industrialisation (North vs South), trade, urbanisation, employment, (formal vs informal), the use of labour and trade unions, entrepreneurship, rural issues, (depopulation, poverty, inequality in contributions to GDP).

Population issues/settlement issues (e.g. Aids crisis, refugees), Regional studies (selected focus on Africa where possible), Tourism as a tertiary economic activity.

As can be seen from the above listing priority areas of a new syllabus would be environmental issues, development studies, population studies, urban and rural studies, political Geography, regional studies and physical Geography. Applied studies and E.E. would be the two mechanisms used to link the Physical and Human components of the syllabus. What is required regarding curriculum change is a more South African Geography, a more 'Africanised' Geography and not a revamped colonial Geography. This will not be easy to attain because as stated earlier in Chapter One we have in this country the absence of a climate of curriculum change - systematic syllabus revision has not been a regular practice in South Africa. What we have had over the years has been a series of minor syllabus revisions and not true curriculum change. As has already been stated many syllabi, and in particular Geography have not had major syllabus changes since the 1960's. What is also needed is a situation where curriculum policy becomes a more accurate predictor of curriculum practice. A change of direction is required - we need in South Africa to move from a situation of curriculum practice to curriculum policy rather than the

other way around which has been the position in the past. Theory and practice need to be brought closer together in actual subject syllabi. Learning in our classrooms should be based on experiential learning. - so much of what is done in schools is based on simulated activities. There can be no doubting the potential effectiveness of Geography as a subject in the attainment of these objectives. What needs to be aimed for in the future new Geography syllabus is for it to help people make sense of their world - its processes, components, systems etc. A culture of thinking will be required - children need to be taught to think about the world and to be equipped to be sensitive to and sensible about it. The new syllabus must make people 'listen' to the world and encourage them to ask questions, to question what is right or wrong. Critical thinking skills must therefore be developed. Pupils must be consulted regarding what they would like to study in the new syllabus. In this connection information provided by a questionnaire completed by approximately 1600 pupils who wrote the 1993 IEB Geography examination (Ranby 1993) as well as evidence supplied by readers of the teenage magazine Upbeat, suggested the following:

- Geography should be about the "real" world (topics like racism, sexism, democracy etc. needed to be included in the syllabus)
- when topics relate to situations with which students identify, they can see the point of 'doing it'.
- Geography tends to include too much information.
- students prefer to learn skills which are/will be useful to them (e.g. life skills and citizenship skills).
- visual information such as photographs help make topics clearer and easy to understand.
- students like to hear about people their own age in various Geographical environments.

Regarding relevance in the new syllabus consultations with pupils in particular will be required for what people see as relevant may differ from what teachers see as relevant. A

distinct Geography must be aimed at which helps students to know where they are in the world, both locationally as well as socially. Of necessity to achieve this, studies in Geography will need to include spatial awareness, local area studies, exercises which develop empathy with others and exercises which empower children. Included here would be decision making skills, the tackling of environmental and development issues as well as local community issues. Urban studies, for example, need of necessity to include studies of black urban areas and townships which have been neglected in past syllabi. Every effort needs to be made in the new syllabus to help pupils to develop attitudes and behaviours which will assist to sustain our environment. The emphasis in the syllabus needs to be on process and not product and needs to provide teachers with a vision to think holistically about their subject.

When formulating a new syllabus a series of fundamental questions need to be asked. Answers to such questions will be crucial in the successful formulation of the syllabus:

- 1) How does a syllabus attempt to accommodate each and every school's different approach to its implementation?
- 2) How does a syllabus attempt to allocate time, for example, for fieldwork?
- 3) How does a syllabus attempt a balanced and fair approach to the demands of physical and human Geography?
- 4) What is the role of a new Geography syllabus in the new South Africa?
- 5) What is the importance of Geography in a new curriculum?
- 6) Can the aims/objectives of the subject best be served by the subject remaining a separate subject or becoming part of an integrated studies course?
- 7) How can realistic parameters be set for the subject's study?
- 8) How can relevance be best achieved when formulating a new syllabus?
- 9) What steps can be taken to avoid the new syllabus becoming too long?

10) How can the relationship between Geography and the language skills of the majority group of pupils studying it be improved?

There can be no doubting the relevancy of the subject if the following characteristics could be included in its teaching:

- 1) Skills based
- 2) Enquiry centred
- 3) Promotion of responsible attitudes and values
- 4) Encouragement of mutual thinking
- 5) Emphasis on discovery learning methods
- 6) Pupil creativity to be encouraged
- 7) Teaching methods, where possible, to be pupil-centred
- 8) Non-racist, non-sexist and afro-centric
- 9) Pupil engagement encouraged
- 10) Pupil enjoyment must be paramount

Over and above these characteristics cognisance needs to be taken of the fact that pupil numbers will increase in our classrooms placing additional stresses and strains on Geography teachers. A listing of various possibilities and principles, in this regard, released in February 1994 by the Natal Education Department, was intended to provide teachers with guidelines on how to cope successfully with the worsening position. In a follow up to this document the subject advisor for Geography in the ex-Natal Education Department identified four specific areas which would need attention:

a) Reducing contact time

Combining groups for team teaching as well as incorporating tutorial groups can be very successful and are recommended. It is already in practice but only in schools where there are experienced and qualified staff, team teaching space available and

where departments consist of more than one teacher. City schools in close proximity have the advantage to utilise the expertise of their immediate neighbours.

b) Opportunity for self-study

Self-study programmes are recommended but in-service courses will be necessary to facilitate these programmes.

c) The marking of written work

Multiple choice questions might be used where appropriate but a large bank of pre-tested items is required. Excellent work presently coming out of Britain could be consulted and could serve as a basis for producing items.

d) Pupil involvement in evaluation of their own work is recommended.

Teacher guides, notes, ideas, teaching material

Co-operatively produced guides, notes, teaching ideas and materials can be used.

Source: Natal Education Department, 1994.

These guidelines represent important challenges to Geography teachers who will need to adapt and change their teaching methodologies in order to successfully cope with the new situation.

Further modifications and changes to existing Geography syllabi will be required to successfully fulfil the requirements of a new syllabus:

- 1) A reading time needs to be allowed in all test and examination papers. Such reading time must be over and above the time set for answering the paper and not as at present where the examiner has supposedly 'built in' reading time into the exam. A maximum of perhaps, 15 minutes at Standard Ten level is proposed. Such a proposal has already been made by the Independent Examinations Board to Cafcert, the controlling body and has been rejected. Further lobbying is required before another application is made. A concession of 15 minutes reading time has been allowed in the IEB Standard 7 exam and this gives cause for some optimism regarding the Standard 10 paper. Examiners of papers need to take into account that examination candidates need time to carefully read the questions asked, to think about what to write, to read over what has been written and then to revise it if necessary.

Based on my years of teaching and examining Geography at secondary school level a perception exists that Geography papers are usually too long and that an over-examining syndrome exists with too many skills and concepts being tested in any one paper.

- 2) In the Standard 10 level the structure of the final examination needs to be changed from 2 papers of 3 hours and 1 hour long (theory and practical respectively) to 2 papers of 2 hours each duration. Paper 1 would constitute an expanded version of the existing practical (map-work) paper and would include testing of a variety of practical and fieldwork skills. Paper 2 would be structured in much the same way as the existing paper 2 (theory) with 3 sections as at present but with say, 6 as opposed to 7 questions asked and only 3 questions as opposed to the present 4 questions to be answered. The second paper would also emphasise skills, graphicacy, spatial perceptions etc. The Nightingale syllabus discussed in Chapter Seven proposes a similar sub-division of the examination paper to what has been suggested here.
- 3) In order to obviate the problem of pupils not finishing the examination paper because they perceive the paper to be too long and they write too much for the number of marks allocated by the examiner to each question, a system of mark allocation which halves the mark allocated, then multiplies it by 2 should be used. An 80 mark question would then consist of 40 x 2 and pupils would write for 40 marks for the same length of time as for an 80 mark question. Such a system is already being used by various examining bodies and has proved successful in getting pupils to write more concisely, and get to the essence of a question as soon as possible.

As has already been mentioned much good work has and is being done by the Independent Examination Board in trying to improve the position regarding examinations at the Standard 7 and 10 level. A series of recommendations were compiled from input obtained from various Geographer user groups across the country concerning the format, process, structure and method of examinations at Standard 10. This input must be taken account of in the formulation of new syllabi. For this to occur dissemination of this information on a wide scale needs to occur.

9.3 FINAL CONCLUSIONS

This study has attempted to provide ideas, thoughts and suggestions on the formulation of new secondary school Geography syllabi in a future South Africa. Much of this information appeared in Chapter Seven and section 9.2 earlier in this chapter and was subsequently discussed. The time frame for the formulation of new curricula and syllabi would probably constitute at least a 5 year period ranging between 1996 and about 2001. Preliminary work has already begun on formulating new curricula and syllabi but it is thought that real progress will only start occurring during the latter half of 1996. Preliminary indications are that such curricula would not be subject-based but focus on outcomes and competencies in various learning areas which can be objectively measured. Should this be the case extreme caution and diligence will be required to preserve the essential concepts, skills, attitudes and values of what this study has called Geography and to make sure of its inclusion under whatever name in the new curriculum. The ideas presented by this study attempt to provide a framework around which a new syllabus could be constructed. The ideas contained in the study represent an attempt to break away from past ideologies such as Apartheid and Christian National Education as well as past attempts at syllabus revision, which I believe acted as constraints to the full development of the subject to its true potential in the curriculum. The unitary nature of the subject, integrating as it does the physical and human components of Geography, make it important in its contribution to pupils' knowledge and education. For this reason the subject must of necessity retain its status as a foundation subject in the future curricula in South Africa. As has already been stated, based on the perceived failure of overseas examples, attempts to amalgamate the subject with certain other subjects to form a Social Studies or Humanities course need to be met with caution and circumspection. Besides a transparent process of rigorous debate and deliberations by as wide a variety of stakeholders as possible, special recognition should be given to the views of practising teachers who have not been consulted in past syllabus revisions. As Ballantyne and Oelofse (1989, p.11) stated in reference to the inclusion of E.E. into school syllabi:

It is clear that if E.E. is to be successfully introduced into South African schools, planners need to be mindful that the key to success lies in the hands of teachers. Without a motivated, committed teaching body, the goals of E.E. are unlikely to be realized. This is due to the nature of E.E., its emphasis on process rather than content, and the consequent need for student-centred, enquiry based teaching.

Planning strategy must, therefore take into account factors affecting teacher decision-making regarding their choice of teaching style and use of teaching methodologies. Workshops, incorporating teachers and planners, should be arranged in order to identify problems and plan strategies designed to introduce E.E. into the schools. Particular attention must be given to developing strategies which transcend the divided nature of the education system. Structures providing for non-racial, in-service teacher training programmes and the development of cross-curricula E.E. textbooks are two suggestions which could be explored.

To stand any chance of success, a strategy needs to emerge from and be owned by the teaching community. Unless it is, the goals of the National Policy for E.E. will not be achieved.

As has already been stated earlier in this study, every effort needs to be made to make the syllabus as relevant and interesting as possible to the pupils studying it. In the context of the changing scenario in South Africa this study recommends that the syllabus needs to adopt a more Afro-centric approach and become more appealing to black pupils in particular. As was reported earlier in the study research has indicated that the subject has not reached its full potential of growth and development in this sector.

Finally, the study recommends, as shown by the second empirical study, the need for a much greater inclusion of E.E. in Geography syllabi as has been the case in the past. Such inclusion needs to incorporate elements of development education and sustainability with the latter concept assuming a central role as an integrating mechanism in the future syllabus. A greater emphasis on sustainable development and development issues needs to occur in E.E. and Geography. Greater clarity needs to occur in the minds of teachers and pupils on the relationship between E.E. and Geography - that E.E. is an approach to education which has particular relevance to a subject like Geography that it may not have to the same extent on other subjects. It must not be viewed as a potential separate subject in the curriculum. It is part of Geography and even as the subject evolves and develops the environment will always form a central focus of its study.

Post-modern ideologies see the environment as assuming a central role in the curriculum - Geography needs to be ready at all times to adapt itself to incorporate this focus. Geographers need to see themselves as having a central role to play in future developments in E.E.. Such developments will inevitably focus on how to empower pupils to become environmentally active in the selection of environmental problems in their local communities. Of necessity E.E. programmes implemented in and by schools must

encompass all the essential facets of an individual environment (bio-physical, socio-economic, cultural and political). Furthermore, these programmes need to be flexible enough to accommodate the diverse needs and conditions of South African scholars.

E.E. is ultimately about helping people to choose wisely and act considerately, whether as individuals, citizens or members of the world community - the 'global village'. It is a life-long and many-sided process in which every educationist has a proper role to play. The Geographer, I believe, has an important contribution to make and this needs to be encapsulated in a new, relevant, interesting and dynamic school syllabus, an example of which was the Nightingale draft, discussed in Chapter Seven on this study. The challenge is there - this study has attempted to go some way to meeting this challenge.

LIST OF REFERENCES

- Action Magazine (1993) Special issue Campfire, Communal Areas Management Programme for Indigenous Resources. The Action Team, Harare, Zimbabwe.
- Adamson, J.E. (1921). 'The Place of Geography in the School Curriculum' in SA Geographical Journal, Vol. IV, September 1921 No. 1.
- Auerbach, R. (1994). 'Sustainable Development,' New Ground, 15, Autumn.
- Bailey, P. (1985). 'Responses to change,' Teaching Geography, 10.
- Bailey, P. and Binns, T. (ed.) (1987). A Case for Geography. British Geographical Association, Adlard and Son Ltd. The Garden City Press, Letchworth, Herts.
- Balchin, W. (1985). 'Graphicacy comes of age.' Teaching Geography, 29 (1), 8-9. In J. Bale, N. Graves, and R. Walford, (Eds). Perspectives in Geographical Education. Oliver and Boyd, Edinburgh.
- Balchin, W. and Coleman, A. (1973). 'Graphicacy should be the Fourth Ace in the Pack'. In J. Bale, N. Graves and R. Walford (Eds). Perspectives in Geographical Education. Oliver and Boyd, Edinburgh.
- Ballantyne, R.R. (1982). 'Geography Curriculum Development - the need for School-based Research' in SA Geographer, 10, (1), April.
- Ballantyne, R.R. (1985). 'Implementing change in South African secondary school geography - some comments' in South African Geographical Journal, 67.
- Ballantyne, R.R. (1987). Change in Secondary School Geography Education Teacher Attitudes and Practice. Unpublished PhD thesis, University of Cape Town.
- Ballantyne, R.R. (1988). 'Geography's Position in the Secondary School Curriculum - Pupil Enrolment Trends' in The South African Geographical Journal, Vol 70, No 1, April, 1988.
- Ballantyne, R.R. (1988). 'Graves' Typology and Geography in South African Secondary Schools' in SA Geographer, 15, (1/2), September 1987/April, 1988.
- Ballantyne, R.R. and Oelofse, C.G. (1989). 'Implementing Environmental Education Policy in South African Schools.' South African Journal of Education 9 (1).
- Barrett, K. and van der Merwe, C. (1993). Inside the Earth Summit: Environment and Development Education. Frontline Communication, Auckland Park, RSA.
- Beck, U. (1992). Risk Society. Sage, London.
- Beddis, R. (1983). 'Geographical education since 1960: A personal view' in Huckle, J. (ed) (1983) Geographical Education Reflection and Action. Oxford University Press, Oxford.

- Bell, J (1993) Doing your Research Project A Guide for first-time researchers in Education and Social Science. Open University Press, Buckingham, United Kingdom.
- Best, J.W. (1977) Research in Education, 3rd edition, Prentice-Hall Inc, Englewood Cliffs, New Jersey.
- Blignaut, J.B. (1991). Environmental Education within Formal Education. Discussion Document (First draft).
- Blignaut, J.B. (1992). 'Existing constraints and attitudes towards the implementation of environmental education in Cape Schools' in South African Journal of Education. 1992, 12 (3).
- Blignaut, J.B. (1994). The Implementation of the Process of Environmental Education in Formal Education. A Working Document, UCT, Cape Town.
- Bodin, P. (1976). Developments in Geography Teaching. Open Books, London.
- Brandt, W. (1983). Common Crises North South : Co-operation for world recovery. The Brandt Commission. Pan Books, London.
- Briceno, S and Pitt, D.C. (ed.) (1988) New Ideas in Environmental Education, Croom Helm, London.
- Burke, J.D. (1983). 'Teaching styles in college geography.' Journal of Geography, 82, 255-256.
- Clacherty, A.J. (1993). The Incorporation of Environmental Education into Formal Education. A Management Summary, Johannesburg.
- Clacherty, A.J. (1994). Perspective of Environmental Education in Formal Education and Training. EEPI, Johannesburg.
- Clacherty, A.J. (1994). The Environmental Education Policy Initiative (E.E.P.I). Environmental Education Bulletin, 9, November.
- Clacherty, A.J. (ed) (1995). Environmental Education Policy Options for Formal Education and Training. EEPI, Johannesburg.
- Clark, E.A.G. (1989). 'Geography as a School Subject in South Africa, 1839 - 1989' in South African Geographical Journal, Vol 71, No 1, 1989.
- Cohen, L and Manion L (1989) Research Methods in Education 3rd Edition, Routledge, London.
- Cohen, L and Manion, L (1994) Research Methods in Education 4th Edition, Routledge, London.
- Council for the Environment (1989). White Paper on Environmental Education 'F' of 1989. Department of Environment Affairs, Pretoria.

- Council for the Environment (1993). The Development of a Core Syllabus for Environmental Education in South Africa. Pretoria.
- Coutts, A. (1992). Multi-Cultural Education: The Way Ahead. Shuter and Shooter, Pietermaritzburg.
- Cowie, T.L. (1988). 'Environmental Studies in the new Natal Education Department Third and Fourth Phase Geography Syllabus with Particular Reference to the Standard Ten Syllabus.' Unpublished M Ed thesis, University of Natal, Durban.
- Cowie, T.L. (1993). Geography in South African Secondary Schools. Unpublished paper presented to a seminar organised by the Natal Geographical Association.
- Cowie, T.L. (1994). The Place of Secondary School Geography in a Changing South Africa. in A Case for Geography in the New South Africa. Ed. L.B. Hurry, A GCISA Publication, Pietermaritzburg.
- Department of Education, Queensland, Australia (1993). Environmental Education Curriculum Guide p.12.
- Department of Environment Affairs (1989). White Paper on Environmental Education. Government Printer, Pretoria.
- Department of National Education (1983). Final Core Syllabus for Geography Standards 8, 9 and 10 Higher Grade. Pretoria.
- DES (1985). Better Schools. HMSO, London.
- Diepeveen, W.M. (1987). Teaching for Environmental Conservation. Guide to Teachers. Cape Province Department of Education.
- Dostal, E. and Vergani, T. (1984). Future perspectives on South African education. University of Stellenbosch, Institute for Futures Research, Occasional Paper 4.
- Dyer, J.R (1979) Understanding and Evaluating Educational Research. Addison-Wesley Publishing Company, Reading, Massachusetts, U.S.A.
- E.E.A.S.A. (1993). Discussion document on the Incorporation of Environmental Education into the Formal Education System. Johannesburg.
- E.E.A.S.A. (1993). Proceedings of the E.E.A.S.A. 1993 Workshop. EEASA, Howick.
- E.E.A.S.A. (1994). Proceedings of the E.E.A.S.A. 1994 Workshop. EEASA, Howick.
- E.E.P.I. (1994). Environment and Development Education : Some Policy Options for South Africa. Share-net, Howick.
- Earle, J. (1976). 'The New Geography Syllabus : From Birth to Infancy' in SA Geographer, Vol 3, April.

- Earle, J. (1993). Graphs, tables and other statistics obtained from the 1992 DET Annual report plus other reports and documentation. Information copyright and gratefully used in this study with acknowledgement.
- Education Working Group (1994). The Integration of Environmental Education into Formal Education. Discussion Document, First draft. EEPI, Johannesburg.
- Edynbury, D. Hellyer, M.J. and Turner, P.M. (1977). 'Attitudes and Values in Geography Teaching.' Geography, 62:205-208.
- Enviroteach (1993). The Institute of Natural Resources, Vol 2 No. 3, November.
- Enviroteach (1994). Enviro Forum. What is environmental education? No 1 The Communications Group, Johannesburg.
- Fairhurst, N.J. and Hattingh, P.S. (ed) (1993). A Future for Geography in Education. Department of Geography, University of Pretoria publication, October.
- Fien, J. (1985). 'Geography as Environmental Experience, in Teaching Geography, June, The Geographical Association, Sheffield, England.
- Fien, J. (1986). Introduction. In J. Fien and R. Gerber (Eds). Teaching Geography for a Better World. 1-2. Brisbane, Jacaranda Press.
- Fien, J. (1993 a). 'Education for Sustainable Living : An International Perspective on Environmental Education.' South African Journal of Environmental Education, No 13.
- Fien, J. (ed) (1993b). Teaching for a Sustainable World. Australian Association for Environmental Education Inc Brisbane.
- Fien, J. (ed) (1993c). Education for the Environment Critical Curriculum Theorising and Environmental Education. Deakin University Press, Geelong.
- Gamble, F.M. (1992). 'Geographers and the Environment in a Changing Southern Africa.' S A Geographical Journal, 74 (2), September.
- Geography Syllabus for Kenya.
- Goodall, S (ed.) (1994) Developing Environmental Education in the Curriculum. David Fulton Publishers, London.
- Goodson, I. (1987) School Subjects and Curriculum Change. Studies in Curriculum History. Falmer Press, London.
- Goodson, I. (1988) The Making of Curriculum. Collected Essays. Falmer Press, London.
- Graves, N.J. (ed) (1980). 'The field of Geography in Education,' in Geography in Education. Heinemann Educational Books Ltd., London.

- Graves, N.J. (1981). 'International aspects of geographical education,' in Journal of Geography, 80.
- Graves, N.J. (1985). 'Geography in Education : A Review' in Kent, A. (ed) (1985). Perspectives on a changing Geography. The British Geographical Association, Sheffield.
- Greig, S. Pike, G. and Selby, D. (1987) Earthrights. Education as if the Planet really mattered. World Wildlife Fund/Kogan Page, London.
- Gussow, A. (1971). A Sense of Place. Delta, New York.
- Hall, D. (1982). 'Changing outlooks in Geography' in Wiegand, P. and Orell, K. (ed) New Leads in Geographical Education. The Geographical Association, Sheffield, England.
- Harber, C. (1996) 'Using Documents in Qualitative Educational Research in Africa' in Crossley, M and Vulliamy, G (eds.) (1996). Qualitative Educational Research in Developing Countries. Garland, New York.
- Hartshorne, K. (1986). 'Back to basics.' Leadership South Africa, 5.
- Henning, J. (1984). 'The Curriculum and Geography,' in South African Geographical Journal, Vol 66, No 1, 1984.
- Her Majesty's Inspectorate (1978). The Teaching of ideas in Geography. Her Majesty's Stationery Office, London.
- Hicks, D. and Townley, C. (1982). 'The need for global literacy,' in Hicks, D. and Townley, C. (eds) Teaching World Studies : An Introduction to Global Perspectives in the Curriculum. Longman, London.
- Holmes, H. (1976). 'Contemporary views in education with special emphasis on teachers and training,' in De Villiers, A. (ed) English speaking South Africa today. Oxford University Press, Cape Town.
- Huckle, J. (1983). 'Environmental education' in Huckle, J. (ed) Geographical Education Reflection and Action. Oxford University Press, London.
- Huckle, J. (1983). Geographical Education Reflection and Action. Oxford University Press, Oxford.
- Huckle, J. (1986). 'Ecological Crises : Some Implications for Geographical Education,' in Contemporary Issues, Vol 2, No 2.
- Hurry, L.B. (1977). 'Conservation awareness and Geography Teaching in South Africa,' in SA Geographer, 7 (1), April.
- Hurry, L.B. (1987). 'Geographical Perspectives? Ecological Perspectives!' in SA Geographer, 14 (1/3), September 1986/April 1987.

- Hurry, L.B. (1989). Geography Teaching in Southern Africa. Unpublished discussion paper.
- Hurry, L.B. (1990). Proceedings of a workshop on Development Studies held under the auspices of the Deved Trust in Johannesburg.
- Hurry, L.B. (1992). 'Development Education : Core Concept - Discussion Document,' in Bulletin of the Environmental Education Association of South Africa, No 6, August.
- Hurry, L.B. (ed) (1994). A Case for Geography in the new South Africa. Geography Curriculum Initiative in South Africa, Institute of Natural Resources, Pietermaritzburg.
- I.U.C.N. Commission on Education and Communication (1993). Education for Sustainability - A Practical Guide to Preparing National Strategies. Draft. Gland, Switzerland.
- I.U.C.N., U.N.E.P. and W.W.F. (1980). World Conservation Strategy. International Union for the Conservation of Nature. Gland, Switzerland.
- I.U.C.N., U.N.E.P. and W.W.F. (1991). Caring for the Earth. A Strategy for Sustainable Living. International Union for the Conservation of Nature. Gland, Switzerland.
- Independent Examination Board (1994). Handbook for Geography. G.E.C. Examination 1994. Johannesburg.
- Institute of Natural Resources (1993). Towards Partnership in Development: A handbook for Participatory Rural Appraisal Practitioners. PRA Training Workshop: Bulwer, Natal.
- Irwin, P.R. (1983). The Concept and Scope of Environmental Education. Unpublished paper.
- Irwin, P.R. (1990). 'The Concept of Environmental Education and the Development of Environmental Education in South Africa,' in Southern African Journal of Environmental Education, No 11.
- Irwin, P.R. (1993). 'Modern trends in the concept of environmental education,' in Environmental Education. National Cultural History Museum, Pretoria.
- Janse van Rensburg, E. and Shongwe, D. (1994). 'Environmental Education as a Response to the Environment Crises,' in Environmental Education bulletin, 8, June.
- Khan, F. (1990). Involvement of the masses in Environmental Politics. Veld and Flora, June.
- Knamiller, G.W. (1981). 'Environmental Education and the North - South Dialogue,' in Comparative Education, Vol 17, No 1, March.
- Knight, C. (1976). 'Pupils perceptions of pedagogical processes: New Zealand.' In J Stoltman, (ed) International Research in Geographical Education. Western Michigan University, Kalamazoo.
- Kortin, D. (1990). People Centred Education. Working document for a Forum on People Centred development. Durban 21st February, 1990.

- Kuiper, J. (1994). A Survey of Environment Education in Zimbabwe's Formal Education Sector. Paper presented to SA Development Community Conference held in Windhoek, Namibia, March.
- Ledger, R.H. (1978). The New Geography in South African High School Teaching. Unpublished MA thesis, University of Cape Town.
- Ledger, R.H. (1980). 'Geography in South Africa High Schools - Findings of a recent Survey,' in SA Geographer, 8 (1), April, 1980.
- Levy, B.H. (1984). 'Geography Teaching in South African Schools for Whites C 1800-1980.' Unpublished M Ed thesis, University of the Witwatersrand. Johannesburg.
- Loubser, C.P. (1992). 'Environmental education : a field of study to be taught as subject during teacher training,' in Educare 21 (1) and 21 (2).
- Magi, L.M. (1981). 'Black University Geography Students' Perception of School Geography and the Geography Teacher,' in SA Geographer, 9 (2), September.
- Magi, L.M. (1990). Geography in Society : The Site of Struggle. Publication series A No 45 of the University of Zululand, 1990.
- Makuku, S.J. (1992) 'The Role of the School in Conservation,' in Geographical Education Magazine, Vol 15, No 1, March. The Geographical Association of Zimbabwe.
- Martin, E.S. et al (1993). 'Environmental Education in Sweden,' in The Environmentalist, Vol 13, No 3.
- Martin, P. (1993). 'Education, the Environment and Sustainable Development.' Southern African Journal of Environmental Education, No 12.
- Martin, P. (1993). 'Education, the Environment and Sustainable Development,' in Southern African Journal of Environmental Education, 13.
- Meadows, D.H. (1989). Harvesting One Hundredfold : Key Concepts and Case Studies in Environmental Education. U.N.E.P., Nairobi, Kenya.
- Meadows, M.E. (1985). 'Biogeography : A Happy Ending to the Fairy Tale?' in SA Geographical Journal, 67 (1), April.
- Moloi, D. (1994). 'Sowing the Seeds of Environmental Education,' in New Ground 17, Spring.
- Mtsetwa, D. (1994). A Review of Zimbabwe's National Action Plans and Policies relation to Environmental Education following the Rio Summit. Paper presented to the International Development Research Centre, June.
- Mutimba, J. (1994). Environmental Education in Zimbabwe. Paper presented to SA Development Community Conference held in Windhoek, Namibia, March.

- Muyanda-Mutelu, P. and Yiga-Matovu, M. (ed) (1993). Environmental Educational for Sustainable Development for Primary School Teachers and Teacher Education in Africa. The ASESP Secretariat, Nairobi, Kenya.
- Naidoo, P. and Keogh, M. (1993). Strategies for resisting change: The case of the proposed Council for the Environment core syllabus for environmental education. University of Durban Westville, Kwazulu-Natal.
- Naidoo, P., Kruger, J. and Brookes, D. (1990). 'Towards Better Education : Environmental Education's Pivotal Role in the Transformation of Education,' in South African Journal of Environmental Education, No 11.
- Namibia Ministry of Education and Culture (1994). Environmental Education in Namibia. Paper presented to SA Development Community Conference held in Windhoek, Namibia, March.
- Natal Wildlife (1991). November issue.
- Ncube, V.S. (1994). Campfire as an Environmental Education Example. Paper presented to SA Development Community Conference held in Windhoek, Namibia, March.
- New Ground (1993). Zimbabwe's Campfire benefits people, in People and Parks. A new Ground supplement, Spring. The Communication Group, Johannesburg.
- Nicol, J.G. (1974). 'Geography teaching for the seventies,' in South African Geographical Journal, 56.
- Nightingale, C.S. (1977). 'Environmental Education in Schools.' Unpublished paper based on M Ed thesis, University of Cape Town.
- Nightingale, C.S. (1985). 'The New School Geography Syllabus - a Missed Opportunity.' South African Geographer, 13.
- Nightingale, C.S. (1992). Responses to the First Round of Comments on Draft Std 8, 9 and 10 Geography syllabus.
- Nightingale, C.S. (1994). A new Syllabus for a new South Africa - Responding to the challenge. Unpublished paper.
- O'Donoghue, R and McNaught, C. (1989). 'Environmental education. The Development of a curriculum through 'grass roots' Reconstructive Action,' in Southern African Journal of Environmental Education, No 10.
- O'Donoghue, R. (1991). An Overview of Some Trends in Environmental Education. Unpublished paper.
- O'Donoghue, R. (1993). 'Clarifying Environmental Education : A Search for Clear Action in Southern Africa,' in Southern African Journal of Environmental Education, No 13.

- O'Donoghue, R. (ed) (1993). The Environment, Development and Environmental Education. Sources and Perspectives for Policy and Curriculum Initiatives in Formal Education. Share-net, Howick.
- O'Donoghue, R. (1994). Environmental Education in South Africa : Some Historical Trends and Recent Developments. Unpublished paper.
- O'Donoghue, R. and Ashwell, A. (1994). 'Trends and Patterns in Environmental Education and their links to Approaches to Learning, Teaching and Evaluation,' in Environmental Education Bulletin, 9, November.
- O'Riordan, T. Environmentalism. Pion Ltd., London.
- Olivier, C. (1994). Policies and Curriculum in Namibia Environment Education for Youth. Paper presented to South African Development Community Conference held in Windhoek, Namibia, March.
- Opie, F.W.J. (1993). Rousing the Sleeper. Maskew Miller Longman, Cape Town.
- Otiende, J.E. and Karugu, A.M. (1994). The State of Environmental Education in Kenya. Paper presented to SA Development Community Conference held in Windhoek, Namibia, March.
- Popkewitz, T. (1984). Paradigms and ideology in education research. Falmer Press, London.
- Preston-Whyte, R.A. (1979). 'Reflections on the Geography syllabus for Senior Secondary level,' in Natal Geography Teacher, 43 (June).
- Preston-Whyte, R.A. (1983). 'Environmentalism in Geography : The Missing Link,' in SA Geographical Journal, 65 (1), April.
- Proceedings of a conference held under the auspices of the Natal Geographical Association to determine teacher viewpoints on guidelines for a new secondary school syllabus. Held at Edgewood College of Education, KwaZulu-Natal on 19 February 1994 (a).
- Proceedings of a conference titled Teaching Geography in a Changing South Africa held at Tweedie, KwaZulu-Natal on 19 June 1992, under the auspices of the Natal Geographical Association.
- Proceedings of a workshop on Environmental Education in Southern Africa held under the auspices of the Southern African Development Community in Windhoek, Namibia, in June 1994 (c).
- Proceedings of a workshop on Research Issues in Environmental Education in Eastern and Southern Africa held in Nairobi, Kenya in August/September 1994 (b).
- Proceedings of a Workshop on the General Science Syllabus held by the Science Curriculum Initiative in South Africa (SCISA) at Michaelhouse School, KwaZulu-Natal on 11-12 January 1989.

- Proceedings of a workshop titled The Future of Geography in the South African School Curriculum : Reality, Relevance and Response (A Changing Geography for a Changing South Africa) held in Durban on 16-17 June 1993 (b). Held under the auspices of Geography Curriculum Initiative in South Africa (GCISA).
- Proceedings of the Society for Geography conference held at the University of Port Elizabeth on 4-8 July, 1993 (c).
- Proceedings of the South African Independent Schools Geography Conference held at Michaelhouse School, KwaZulu-Natal on 22-26 March, 1993 (a).
- Ranby, P. (1994). 'Going Places with Geography - Developments in Junior Secondary Geography Courses at Sacred Heart College Johannesburg,' in Hurry, L.B. (ed) (1994) A Case for Geography in the New South Africa. A GCISA publication, Pietermaritzburg.
- Randle, D (ed.) (1992) Issues in Green Education. Education Now Books, Tichnall, Derbyshire.
- Rautenbach, W. (1983). Education in SA criticized. Cape Times. 19 August 1983.
- Rawling, E. (1993). 'School Geography : Towards 2000,' in Geography, no 339, Vol 78, Part 2, April.
- Renwick, M. (1988). 'Environmental Education and Geography,' in Environmental Education and the School Curriculum. World Wildlife Fund publication,. Kingprint, Ltd., Surrey, England.
- Richardson, R. (1983). 'Daring to be a teacher,' in JH Huckle (ed) Geographical Education - Reflection and action. Oxford University Press, London.
- Robottom, I. (ed) (1987). Environmental Education : Practise and possibilities. Deakin University, Victoria, Australia.
- Rogerson, C.M. (1991). 'A New Southern Africa - geographical perspectives,' in Tydschrift voor Economische en Sociale Geografie, 82.
- Rogerson, C. and McCarthy, J. (1992). Geography in a Changing South Africa : Progress and prospects. Oxford University Press, Cape Town.
- Rogerson, C.M. (1993). 'A New South Africa - A New South African Geography?' in Geography Journal, 22.3.
- Rogerson, C.M. (1993). 'South African Geography and Post-Apartheid Reconstruction,' in Geography Journal, 30.1.
- Schreuder, D. (1994). Environmental Education and Educational Reconstruction in Southern Africa. E.E.P.I., Johannesburg.
- Scott, J (1990) A Matter of Record Oxford, Blackwell.

- Scott, J. (1990) A Matter of Record. Documentary Sources in Social Research. Polity Press, Cambridge.
- Slater, F. (1976). 'Student perception of teacher style in geography: an exploratory study in London,' in J. Stollman (ed) International Research in Geographical Education. Western Michigan University, Kalamazoo.
- Smit, A. (1985). 'The influence of Afrikaans educational theory and philosophy on South African education.' Matlhasedi, 4: 4-5.
- South African Geographical Society Newsletter (1993) October.
- Stevenson, R.B. (1987). 'Schooling and environmental education: Contradiction in purpose and practice,' in Robottom, I. (ed) Environmental Education - Practice and Possibility. Deakin University Press, Geelong.
- Swan, J.A. and Stapp, W.B. (ed.) (1974) Environmental Education. Strategies toward a more livable future. John Wiley and Sons, New York.
- Taylor, J (1989) 'The White Paper on Environmental Education and the Wildlife Society's role' in African Wildlife. Volume 43 No. 4.
- Taylor, J. and Paxton, L. (1994). 'The Environment and the Environment Crisis.' Environmental Education Bulletin, 8, June.
- Taylor, J., O'Donoghue, R and Clacherty, A. (1993). 'A Critique of the Proposed Council for the Environment National Core Syllabus for Environmental Education in South Africa.' Southern African Journal of Environmental Education, No 13.
- Taylor, S.M. (1994). 'A Case for Geography in South African Senior Primary Schools : An Analysis and Evaluation of Current Geographical Thinking and Practice.' Unpublished M Ed thesis, Rhodes University.
- Transvaal Teachers' Association Geography Interest Group (1992) Response and Recommendations on the Curriculum Model of South Africa.
- U.N.C.E.D. (1992). Promoting education and public awareness and training,' in Agenda 21. United Nations Conference on Environment and Development, Conches, ch. 36.
- U.N.E.S.C.O.- U.N.E.P. (1986). Environmental Education Module for Pre-Service Training of Teachers and Supervisors for Primary Schools. International Environmental Education Programme.
- Van Dalen, D.B. (1979) Understanding Educational Research An Introduction. 4th edition, McGraw-Hill, New York.
- Van der Merwe, A.J. (1982). 'Geography in the South African Curriculum in Relation to Developments in the Teaching of the Subject Overseas.' Unpublished M Ed thesis, Rhodes University.

- Viljoen, H. and Fenn, B. (1990) 'Implications and Implementation of the White Paper on Environmental Education' in the Environmental Education Bulletin No. 3 November.
- Vulliamy, G. Lewin, K. and Stephens, D. (1990) Doing Educational Research in Developing Countries. The Falmer Press, London.
- W.C.E.D. (1987). Our Common Future. Oxford University Press, Oxford.
- W.W.F. (1993). Reaching Out. In Service. Geography Sessions 6 - 10.
- Walford, R. (1973). 'Decision making,' in J. Bale & N. Graves & R. Walford (eds) Perspectives in Geographical Education. Oliver and Boyd, London.
- Walford, R. (1982). 'British School Geography in the 1980s : an easy test?' in Journal of Geography in Higher Education, Vol 6, No 2.
- Walford, R. (1984). 'Geography and the future.' Geography 69.
- Walford, R. (ed) (1973). New Directions in Geography Teaching. Longmans, London.
- Walford, R. (ed) (1981). Signposts for Geography Teaching. Longman, London.
- Walford, R. and Haggett, P. (1995). 'Geography and Geographical Education. Some Speculations for the Twenty-first Century.' Geography. No 346, Vol 80 (1), January.
- Wanaswa, E.A. (1993). 'The State of Environmental Education in Kenya : Past,
- Wesso, H. and Parnell, S. (1992). 'Geography education in South Africa: Colonial roots and prospects for change,' in Rogerson, C. and McCarthy, J. (ed) (1992) Geography in a Changing South Africa. Progress and Prospects. Oxford University Press, Cape Town.
- Wiegand, P. (1987). 'Expectations in Geography,' in Bailey, P. and Binns, T. (eds) (1987) A Case for Geography. British Geographical Association, Adlard and Sons Ltd., The Garden City Press, Letchworth, Herts.

APPENDIX I

SURVEY ON TEACHING ENVIRONMENTAL CONCEPTS, ATTITUDES AND BEHAVIOUR THROUGH GEOGRAPHY EDUCATION

LIST OF SCHOOLS SURVEYED

No.	NAME OF SCHOOL	TEACHERS TEACHING GEOGRAPHY
1	AMDN	3
2	BRETTONWOOD	4
3	DURBAN GIRLS' HIGH	6
4	GLENWOOD BOYS' HIGH	6
5	GREYTOWN	2
6	GROSVENOR BOYS'	3
7	HOWICK	4
8	KEARSNEY	5
9	LADYSMITH HIGH	4
10	LINPARK	3
11	NORTHLANDS GIRLS'	4
12	PORT NATAL HOER	3
13	RIDGE PARK COLLEGE	3
14	SCOTTBURGH HIGH	2
15	WERDA	4
16	GELOFTE	2
17	QUEENSBURGH GIRLS HIGH	2
18	PIETERMARITZBURG GIRLS	5
19	MARITZBURG COLLEGE	5
20	STANGER	3
21	QUEENSBURGH BOYS' HIGH	2
22	IXOPO	2
23	MICHAEL HOUSE	4
24	EMPANGENI	3
25	RICHARDS BAY	2
26	KOKSTAD	1
27	VOORTREKKER	2
28	PORT SHEPSTONE HIGH	4
29	VRYHEID	4
30	FERRUM	4
31	HILLCREST	5
32	NORTHWOOD	4

This survey is based on a survey by Dr. Roy Ballantyne and Ms Carol Fortino (Queensland University of Technology) for science teachers. It investigates geography teachers' understanding of the aims of environmental education and its place in the teaching of geography

Please indicate your current position, e.g. Geography Teacher, HOD: _____

No. of years experience as a geography teacher : _____

Please indicate the high school subject with which you have had most experience and REFER TO THAT SUBJECT in responding to the following questions : _____

[1] How important is it to teach the following aspects of environmental education in geography lessons.

	not important		important			extremely important	
A. developing environmental knowledge/concepts (natural systems, human impacts)	1	2	3	4	5	6	7
B. exploring environmental issues	1	2	3	4	5	6	7
C. environmental attitudes	1	2	3	4	5	6	7
D. teaching skills of environmental investigation/thinking	1	2	3	4	5	6	7
E. influencing students' environmental behaviour	1	2	3	4	5	6	7
F. encouraging active commitment to environmental causes	1	2	3	4	5	6	7
G. teaching fieldwork skills (data collection and field investigation)	1	2	3	4	5	6	7
H. developing environmental awareness	1	2	3	4	5	6	7
I. developing a personal environmental ethic	1	2	3	4	5	6	7
J. developing motivation/skills for participation in environmental improvement	1	2	3	4	5	6	7
K. promoting a willingness to adopt life styles compatible with the wise use of environmental resources	1	2	3	4	5	6	7
L. developing an empathy for environmental issues	1	2	3	4	5	6	7
M. developing solutions to environmental problems	1	2	3	4	5	6	7
N. other (please specify) _____							

[2] Geography classes should focus on environmental themes : (Circle your response)

- 5 in almost every lesson (80-100%)
- 4 in the majority of lessons (60-80%)
- 3 in about half of the lessons (40-60%)
- 2 in some lessons (20-40%)
- 1 rarely if ever (0-20%)

	never	occasionally			often		
A. teacher presentation	1	2	3	4	5	6	7
B. class discussion	1	2	3	4	5	6	7
C. textbooks	1	2	3	4	5	6	7
D. worksheets	1	2	3	4	5	6	7
E. videos	1	2	3	4	5	6	7
F. small group discussion	1	2	3	4	5	6	7
G. field experiences	1	2	3	4	5	6	7
H. investigating local controversial issues	1	2	3	4	5	6	7
I. environmental action	1	2	3	4	5	6	7
J. student projects	1	2	3	4	5	6	7
K. exploring attitudes/values	1	2	3	4	5	6	7
L. computers	1	2	3	4	5	6	7
M. other (please specify) _____							

[4] How well did your preservice geography education course prepare you for teaching environmental education? (Circle your response)

	poorly		adequately			excellently	
	1	2	3	4	5	6	7

Comments : _____

[5] How important have the following experiences been in contributing to your knowledge/skills in environmental education?

	not important		important			extremely important	
A. in-service courses	1	2	3	4	5	6	7
B. conferences	1	2	3	4	5	6	7
C. personal reading	1	2	3	4	5	6	7
D. videos/films	1	2	3	4	5	6	7
E. environmental groups	1	2	3	4	5	6	7
F. curriculum guides	1	2	3	4	5	6	7
G. prepared teaching materials	1	2	3	4	5	6	7
H. recreation/leisure activities	1	2	3	4	5	6	7
I. field-based courses	1	2	3	4	5	6	7
J. other (please specify) _____							

		Environmental Education?						
		not competent		adequate competence			extremely competent	
A.	developing environmental knowledge/concepts (natural systems, human impacts)	1	2	3	4	5	6	7
B.	exploring environmental issues	1	2	3	4	5	6	7
C.	environmental attitudes	1	2	3	4	5	6	7
D.	teaching skills of environmental investigation/thinking	1	2	3	4	5	6	7
E.	influencing students' environmental behaviour	1	2	3	4	5	6	7
F.	encouraging active commitments to environmental causes	1	2	3	4	5	6	7
G.	teaching fieldwork skills (data collection and field investigations)	1	2	3	4	5	6	7
H.	developing environmental awareness	1	2	3	4	5	6	7
I.	developing a personal environmental ethic	1	2	3	4	5	6	7
J.	developing motivation/skills for participation in environmental improvement	1	2	3	4	5	6	7
K.	promoting a willingness to adopt lifestyles compatible with the wise use of environmental resources	1	2	3	4	5	6	7
L.	developing an empathy for environmental issues	1	2	3	4	5	6	7
M.	developing solutions to environmental problems	1	2	3	4	5	6	7

[7] Indicate the extent of commitment you have for promoting the following in geography lessons.

		not committed		committed			extremely committed	
A.	environmental knowledge	1	2	3	4	5	6	7
B.	environmental skills	1	2	3	4	5	6	7
C.	critical evaluation skills	1	2	3	4	5	6	7
D.	environmental attitudes and values	1	2	3	4	5	6	7
E.	responsible environmental behaviour	1	2	3	4	5	6	7
F.	active involvement in local environmental issues	1	2	3	4	5	6	7

[8] Do you believe that geography teachers should promote a particular environmental ethic or attempt to display a neutral, unbiased approach? (Circle your response)

- 5 strong belief in promoting environmental ethic
- 4 belief in promoting environmental ethic
- 3 undecided
- 2 belief in displaying a neutral approach
- 1 strong belief in displaying a neutral approach

		of Environmental education in geography classes?						
		not important		important			extremely important	
A.	lack of teaching resource materials	1	2	3	4	5	6	7
B.	not emphasised in syllabuses/curriculum	1	2	3	4	5	6	7
C.	teachers' lack of knowledge/training in environmental education	1	2	3	4	5	6	7
D.	time constraints	1	2	3	4	5	6	7
E.	personal heavy workload	1	2	3	4	5	6	7
F.	lack of school support for environmental education	1	2	3	4	5	6	7
G.	difficult to examine	1	2	3	4	5	6	7
H.	political nature of environmental content	1	2	3	4	5	6	7
I.	opposition to teaching environmental values	1	2	3	4	5	6	7
J.	opposition to student involvement in environmental action	1	2	3	4	5	6	7
K.	other (please specify) _____	1	2	3	4	5	6	7

[10] How important are the following in enhancing the incorporation of environmental education in geography classes?

		not important		important			extremely important	
A.	Geography textbooks	1	2	3	4	5	6	7
B.	Geography syllabuses/curriculum	1	2	3	4	5	6	7
C.	videos	1	2	3	4	5	6	7
D.	computer games/simulations	1	2	3	4	5	6	7
E.	Geography preservice education	1	2	3	4	5	6	7
F.	Geography in-service teacher education	1	2	3	4	5	6	7
G.	Geography post-graduate teacher education	1	2	3	4	5	6	7
H.	access to special equipment	1	2	3	4	5	6	7
I.	opportunities for field trips	1	2	3	4	5	6	7
J.	other (please specify) _____	1	2	3	4	5	6	7

[11] Indicate how strongly you agree/disagree with the following statements.

		strongly disagree		undecided			strongly agree	
A.	The aims of environmental education and geography are similar	1	2	3	4	5	6	7
B.	Courses in "Geography and the Environment" should be included as a subject in the geography curriculum	1	2	3	4	5	6	7
C.	Environmental education should be taught in all subjects across the curriculum	1	2	3	4	5	6	7

APPENDIX III

DEPARTMENT OF ENVIRONMENT AFFAIRS

**WHITE PAPER ON
ENVIRONMENTAL EDUCATION**

1989

ISBN 0-621-12454-0

Local **53c**
Plus GST

Other countries **66c**
Post free

CONTENTS

	<i>Page</i>
1. Aim	5
2. Background	5
2.1 The basis for the policy	5
2.2 Provision for existing environmental education initiatives	5
3. Aims, objectives and principles of environmental education	5
3.1 Aims	5
3.2 Objectives	5
3.3 Principles	5
4. General aim	6
5. Implementation of the aims	6
5.1 Responsibility	6
5.2 Environmental education: General	6
5.3 Formal education	6
5.4 Non-formal education	7
5.5 Research	8
5.6 Co-ordination of environmental awareness campaigns	8

WHITE PAPER ON ENVIRONMENTAL EDUCATION

1. AIM

This White Paper formulates the objectives of environmental education for the promotion of actions at all government levels, including all formal education authorities and individuals and institutions concerned with non-formal and informal education.

2. BACKGROUND

2.1 The basis for the policy

The White Paper on a National Policy regarding Environmental Conservation, published in 1980, gives prominence to environmental education and lays down broad policy guide-lines in this regard. The Government has already committed itself to the implementation of this policy.

In addition to incorporating the guide-lines in the White Paper on Environmental Conservation and in the Environmental Conservation Act, 1982 (Act 100 of 1982), regard was also had to the relevant resolutions in the White Paper on the Provision of Education in the Republic of South Africa, 1983, in formulating the aims for environmental education. These guide-lines are also in line with those for effective environmental education adopted by the international conferences on environmental education held in Belgrado (1975) and Tbilisi (1977).

2.2 Provision for existing environmental education initiatives

These aims are complementary to the present initiatives in formal education at the primary, secondary and tertiary level and in non-formal and informal education undertaken by public and private organisations. The aims are indicative rather than regulatory and are intended to promote and not prescribe on actions that will foster co-operation within and between bodies involved in formal and non-formal environmental education activities.

3. AIMS, OBJECTIVES AND PRINCIPLES OF ENVIRONMENTAL EDUCATION

3.1 Aims

To stimulate education processes that develop responsible life-styles in harmony with the environment as a whole, on the part of all the inhabitants of the RSA, and that make them aware of the fact that an acceptable quality of life is dependent on their judicious utilisation of the environment.

3.2 Objectives

3.2.1 To make the population aware of the various elements of the environment and their interrelationships, and of the need for a healthy environment for the survival of mankind.

3.2.2 To motivate people to accept responsibility for the environment and to cultivate the necessary knowledge and values in order that solutions may be found for identified problems.

3.3 Principles

Environmental education should—

3.3.1 consider the environment in its totality; natural and manmade phenomena, their interdependence and the ecological; socio-economic and cultural processes that affect them, that is all elements that have a bearing on human lives and the relationships between these elements;

(a) the clear definition of the concept of environmental education;

(b) the integration of the objectives of environmental education into the core syllabuses of all applicable subjects; and

(c) the optimum use of all available educational facilities, including urban and rural environmental education centres.

5.3.2 With regard to the training of teachers the attention of the education authorities is drawn to the need for—

(a) all student teachers to be made aware of the aims, principles and methodology of environmental education;

(b) specialised programmes on environmental education to be included in teacher training courses; and

(c) skills and techniques necessary for environmental education outside the classroom to be stressed in the training of teachers.

5.3.3 With regard to serving teachers the attention of the education authorities is drawn to the need for—

(a) in-service training of teachers in environmental education and the possible institution of a training programme on environmental education;

(b) seminars and work sessions on environmental education with a view to updating the teacher's knowledge; and

(c) experienced teachers to be made available to approved urban and rural environmental education centres to optimise the use of such centres, and to develop teaching aids that could be made available locally for environmental education.

5.3.4 In regard to teaching aids and facilities the Department of Environment Affairs will—

(a) be willing to undertake research and to assist the education authorities in the production of handbooks for teachers, workbooks for pupils and audio-visual aids for use in environmental education programmes;

(b) promote the expansion of environmental education centres, available to all education and conservation authorities, on a regional basis; and

(c) make teaching aids readily available to schools and teacher training colleges as far as possible and make recommendations to promote the distribution and use of such aids.

5.3.5 With regard to tertiary education the attention of universities and technikons is drawn to the need for the presentation and adaptation of teaching programmes relating to the environment.

5.4 Non-formal education

5.4.1 With regard to government bodies—

(a) the objectives and principles of environmental education should be integrated into all existing and future interpretation and information services;

THE DEVELOPMENT
OF A CORE SYLLABUS
FOR ENVIRONMENTAL
EDUCATION IN
SOUTH AFRICA

COUNCIL
FOR THE
ENVIRONMENT



FOREWORD	3
BACKGROUND	5
1. RATIONALE: SOME DIMENSIONS OF ENVIRONMENTAL EDUCATION	5
2. WHY ENVIRONMENTAL EDUCATION DESERVES TO HAVE THE STATUS OF A DISCRETE SUBJECT AT TERTIARY LEVEL	6
3. EVALUATING ENVIRONMENTAL EDUCATION	7
4. PRINCIPLES TO OBSERVE IN THE DEVELOPMENT OF AN ENVIRONMENTAL CURRICULUM	8
IDENTIFICATION OF OBJECTIVES	9
1. PRINCIPLES OF ENVIRONMENTAL EDUCATION	9
2. OBJECTIVES OF AN ENVIRONMENTAL EDUCATION COURSE	10
CONCERNING LIFE	11
CONCERNING RESOURCES	11
CONCERNING LIFE SKILLS	12
CONCERNING PERSONAL VALUES	12
DETERMINING THE SCOPE OF THE COURSE	13
DEVELOPING TEACHING AND LEARNING METHODS	21
REFERENCES	24

*THIS DOCUMENT IS NOT A CORE SYLLABUS PROPOSAL.
IT IS A TOOL KIT FOR PLANNERS AND HEADS OF
DEPARTMENTS RESPONSIBLE FOR REGIONAL AND
INSTITUTION-BASED COURSE DEVELOPMENT IN
ENVIRONMENTAL EDUCATION*

FOREWORD

During 1992 the Council for the Environment's Committee for Environmental Education undertook a survey of environmental education programmes at tertiary level in South Africa. The committee's original brief was to start a process whereby an holistic environmental education programme could be generated. This document is a contribution towards a broader concept of environmental education than is presently being realised in the programmes offered at many institutions.

It was envisaged that this working document might serve as a catalyst to enable the effective implementation of specialist environmental education courses at colleges of education at Higher Diploma in Education level, at Further Diploma in Education level, and at graduate and post graduate levels.

The significance of providing a framework for local reinterpretation is as much a recognition of the importance of global issues being linked to local needs, as the growing need for increased participatory cooperation in the educational planning process.

In recognition of these objectives the following suggestions are loosely framed in the form of an educational dialogue, subject to revision and adaptations at all levels of planning and implementation.

This process was initiated in April 1993 when a first draft of this document was circulated to all members of the Committee for Environmental Education for comment, additions, amendments and general revision prior to wider circulation.

This document was produced after preliminary consultations with a group of education planners at a national conference convened under the auspices of the Department of Environment Affairs and the Environmental Educator's Association of South Africa at the Dikhololo Conference Centre, Brits, during August 1993.

If this initiative is to have any value at all it must be reacted to by you. It needs to be considered, edited, added to, amplified and extended to accommodate all desired emphases, to become a national resource document for the development of local environmental syllabuses and programmes. Should you wish to make any comments please direct these to -

The Secretary
Council for the Environment
Private Bag X447
PRETORIA
0001

October 1993

BACKGROUND

1. RATIONALE: SOME DIMENSIONS OF ENVIRONMENTAL EDUCATION

Environmental education has been defined in many ways.

The purpose of environmental education is to develop responsible personal lifestyles in harmony with the environment. This implies education and responsible action based on sound environmental values.

While environmental education is commonly thought of as an educational approach well suited to infusion into the framework of existing curricula, experience has shown both abroad and throughout Africa that this implementation can and often does fail to do justice to what is increasingly perceived to be an issue of great global and local concern - the health of the total environment on which all life depends.

A synopsis of some commonly agreed dimensions of environmental education are appended below:

ENVIRONMENTAL EDUCATION is education...

- ...about the total environment [knowledge].
- ...through the total environment [activity methods].
- ...for the total environment [leading to positive behaviours]
- ...for sustainable living.
- ...which seeks to create responsible behaviour patterns and attitudes towards the environment.
- ...which aims to influence personal life style choices and social responsibility for living conditions.

- ...aimed at knowledge, values and skills culminating in appropriate environmental behaviours.
- ...aimed at self enlightenment and empowerment of individuals, groups and communities for joint environmental commitment.
- ...aimed at group and community participation in the decision-making process and beneficial policy outcomes.
- ...of people for environmental awareness and caring actions.
- ...for an interaction process between people and environment.

Environmental education is important because it focuses on the links between elements of the bio-physical and socio-political environment emphasising cause and effect connections rather than the reductionist analytical techniques of other related subject areas. It is widely perceived today to be one of the most relevant dimensions of the new emergent educations. It is both multi cultural and multi creedal and has a strong ethical base [values education].

It can be approached as a discreet subject or as an integrated task.

2. WHY ENVIRONMENTAL EDUCATION DESERVES TO HAVE THE STATUS OF A DISCRETE SUBJECT AT TERTIARY LEVEL

Since its inception in the late 1960's environmental education has tended to be viewed as an approach to promoting a fuller understanding of our environment and how we relate to it. This was implicit in the messages from international conferences [Stockholm 1972; Belgrade 1975; Tbilisi 1977; Moscow 1987; Rio 1990] and in the South African White

Paper on Environmental Education of 1989.

It is still implicit in the principles elaborated in this document.

However, in view of the tendency to marginalise curriculum areas which are everyone's responsibility and so no one's special responsibility, it is now seen as desirable that environmental education in South Africa should begin to be formalised into a discrete subject at tertiary level in step with similar initiatives elsewhere in the world. This working document is a contribution to the debate which has gained so much ground over the past five years.

Many countries have well developed environmental education modules and courses at primary, secondary and tertiary levels. The feeling of educators in the curriculum planning group at the Dikhololo National Conference on Environmental Education was supportive of -

- . an integrated cross curricula approach in the Primary Phase.
- . an integrated subject or modular approach in the Secondary Phase.
- . a discrete subject in the Tertiary Phase.

3. EVALUATING ENVIRONMENTAL EDUCATION

Undoubtedly part of the reason for marginalising environmental education has been the failure to evaluate it formally.

Environmental education is by nature holistic and contains a strong values and skills dimension as indicated in the objectives outlined in this document.

Product evaluation alone is insufficient to do justice to this subject. Process evaluation must also be used.

4. PRINCIPLES TO OBSERVE IN THE DEVELOPMENT OF AN ENVIRONMENTAL CURRICULUM

There is general consensus at world level [UNICEF 1988] that there is a clear path to the development of a local environmental programme. Some of these issues can be addressed at national level [see *] but others will necessarily depend upon local circumstances and implementation opportunities.

A MODEL FOR THE DEVELOPMENT OF AN ENVIRONMENTAL COURSE

[* = Initial development at national level]

1. Identify issues of local significance.
2. *Identify your objectives.
3. *Determine the scope of the course.
4. Analyse existing courses.
5. Select the content of your course.
6. *Develop teaching and learning methods.
7. Develop your own resources.
8. Plan for course evaluation.
9. Implement your course.
10. Evaluate and revise your course.

UNICEF Kenya 1988

This working document will focus on the areas of objectives, scope [content] and teaching methods.

IDENTIFICATION OF OBJECTIVES

1. THE PRINCIPLES OF ENVIRONMENTAL EDUCATION

There has been a great deal of clarification of the broad educational objectives of environmental education through the agency of several international conferences and countless educational conferences at national and local level. Broad principles have been agreed on and published widely, including locally, in the White Paper on Environmental Education of 1989.

These principles can be summed up as...

- **TOTALITY** - The whole environment of man (natural, built, cultural, political, technological, rural, etc.).
- **CONTINUITY** - A continuous process through life (hence integrated into all phases of formal education).
- **INTEGRATION** - Across all subjects.
- **HOLISTIC** - Emphasising values and skills as well as knowledge.
- **PARTICIPATIVE** - Involvement through action learning.
- **RELEVANT** - Focused on current and local issues in the light of international concerns.
- **INTERRELATIONSHIP** - People are seen as part of their environment, dynamically linked to its welfare and health.

These principles have been implemented to a greater or lesser degree world wide. While some principles received more attention than others where the focus of environmental education was narrow and limited [teaching about the environment], where a more balanced broader focus was adopted the chance of a more effective implementation of environmental education [teaching for the environment] occurred. It is doubtful that a completely balanced environmental education programme has to date been widely adopted anywhere in the world despite growing concern focused on the environment and human survival. In part traditional defensive stances inside formal education have accounted for much of this inertia. The approach adopted in this working document will be the broad focus, in which the role of man as an integral part of his total environment will be emphasised.

2. THE OBJECTIVES OF AN ENVIRONMENTAL EDUCATION COURSE

As the focus of environmental education moves increasingly closer to the role that man plays in the environment both as conservator and harvester of environmental resources, some educators have begun to reinterpret the principles as follows...

To promote:

GLOBAL THINKING
LOCAL ACTION
PERSONAL EXPLORATION AND INQUIRY
PERSONAL VALUING
CITIZENSHIP
A SENSE OF PLACE
A PATTERN OF HOLISTIC THINKING

Clearly these broad aims incorporate the educational aims of many current curriculum subjects, and hence it is not

difficult to associate the following objectives with specific subjects - yet this apparent strength of consensus may obscure a warning. Effective environmental education cannot be confined to any single disciplinary framework and still realise its broad aims. Attempts in recent years to accommodate its influence within Biology and Geography have generally resulted in a failure to move beyond objective "teaching about the environment" to values-rich "teaching for the environment".

The following objectives can be viewed as a check list against which the health of an existing environmental programme could be measured or alternatively form the basis of a new programme designed around selected objectives...

2.1 OBJECTIVES CONCERNING LIFE

- 2.1.1 To promote an awareness of place and surroundings.
- 2.1.2 To develop personal values for place.
- 2.1.3 To gain an awareness of relationships within the community of life.
- 2.1.4 To promote an awareness of the interdependence of living and non-living systems.
- 2.1.5 To promote an awareness of the need to protect water and land ecosystems.
- 2.1.6 To promote an awareness of the food chains of life.
- 2.1.7 To promote an appreciation of changes in nature.

2.2 OBJECTIVES CONCERNING RESOURCES

- 2.2.1 To promote an awareness of human uses of natural

environments.

- 2.2.2 To gain an awareness of the origins of natural resources.
- 2.2.3 To promote an awareness of human dependence on natural resources.
- 2.2.4 To promote an awareness of the sustainable use of resources.
- 2.2.5 To promote an awareness of the need to conserve power.
- 2.2.6 To promote an awareness of the options of alternative technologies.
- 2.2.7 To promote an awareness of the consequences of exhausting resources.
- 2.2.8 To promote an appreciation of human resources.
- 2.2.9 To promote an understanding of the need to optimise the quality of life of humans within sustainable limits.

2.3 OBJECTIVES CONCERNING LIFE SKILLS

- 2.3.1 To learn co-operative teamwork skills.
- 2.3.2 To promote creativity in thinking.
- 2.3.3 To promote effective communication skills in decision making.
- 2.3.4 To promote inquiry learning skills.
- 2.3.5 To promote problem-solving skills in local contexts.
- 2.3.6 To promote moral dilemma analysis skills.
- 2.3.7 To trace the consequences of political and management decisions on the environment.

2.4 OBJECTIVES CONCERNING PERSONAL VALUES

- 2.4.1 To promote an awareness of personal values systems as they relate to the environment.
- 2.4.2 To promote involvement in a environmental community project.
- 2.4.3 To promote an awareness of local environmental policy making and citizens rights and responsibilities.

- 2.4.4 To promote an awareness of the connection between faith and nature.
- 2.4.5 To promote an awareness of other cultural positions.
- 2.4.6 To promote an appreciation for different positions and perspectives from our own.
- 2.4.7 To promote a positive attitude towards others and the earth which sustains all life.

DETERMINING THE SCOPE OF THE COURSE

The content of environmental courses needs to be matched to the objectives selected based on perceived local needs. While it is not possible to predict items of local significance, the following suggestion list may help. It might be used as a check list to identify needs in communities and trace them back to the organising concepts.

A FRAMEWORK FOR SOME MAJOR ORGANISING CONCEPTS IN ENVIRONMENTAL EDUCATION

1.0 Personal development

- 1.1 Awareness of life
 - 1.1.1 Basic needs
- 1.2 Awareness of community
 - 1.2.1 Sharing spaces
 - 1.2.2 Sharing resources
 - 1.2.3 Altering environments

1.3 Awareness of responsibility

- 1.3.1 Valuing life
- 1.3.2 Stewardship/custodianship

2.0 Natural systems

2.1 Essential factors for survival

- 2.1.1 Basic needs [food, air, water, shelter, safety, security]

2.2 Natural communities around us

- 2.2.1 Ecological systems
 - Energy in ecosystems
- 2.2.2 Variation and change
 - Ecological succession
- 2.2.3 Adaptation
- 2.2.4 Reproduction
 - Population dynamics
 - Carrying capacity

2.3 Human communities

- 2.3.1 Human ecology [use headings in paragraph 2.2 above]
 - Age structures in populations
 - Family planning and birth control

2.4 Limits to natural resources

- 2.4.1 Population numbers
 - Famine
- 2.4.2 Renewable and non-renewable resources
 - Wastage and thrift
 - Littering and cleaning
 - Life styles
 - * Consumerism and advertising
 - * Environmentally ethical life styles

- 2.5 Culture and community
 - 2.5.1 Agricultural and Industrial societies
 - Differing attitudes and values
 - * Land use
 - * Conservation
- 2.6 Caring for things
 - 2.6.1 Conservation of nature
 - Aesthetic appreciation
 - * Beautifying
 - * Protecting
 - Controlling poaching
 - Extinctions
 - Sustainable harvesting
 - 2.6.2 Conservation of people and places
 - Built environment
 - * Historical places
 - * Urban spaces
 - * Informal housing
- 2.7 Progress and conflict with living communities
 - 2.7.1 Competition
 - Dolphins, seals, birds, land mammals and birds
 - 2.7.2 Pollution
 - Water
 - * Toxic spills
 - * Water borne parasites
 - * Pesticides and over-fertilisation
 - * Impact on health and nature
 - Air
 - * Discharges and air quality
 - Industrial (smogs, gasses, acid rain)
 - Rural (pesticide sprays)
 - Urban traffic (fumes)
- Informal housing (smoke)
 - Mining (dust and fibres)
 - * Impact on health and nature
 - Urban
 - * Slum development
 - * Sound (noise levels)
 - * Advertising on hoardings
 - * Impact on health and nature
 - Oceans
 - * Dumping (hazardous waste disposal)
 - * Oil spills
 - * Plastic pollution
 - Gill nets
 - Plastic sand
 - Plastic waste
 - * Impact on health and nature
- 2.7.3 Wastage
 - Soil losses
 - * Crop failure
 - * Flooding
 - * River siltation
 - * Dust storms and dust bowls
 - * Desertification
 - Consumerism
 - * Consumer ethics
 - * Inflation, credit and thrift
 - Bio-diversity losses
 - * Vanishing species
 - * Vanishing habitats
 - Rain forests
 - Wetlands
 - * Hunting to extinction
 - The shrinking gene pool
 - Energy resources and consumption

- * Wood
 - Spreading deserts
 - Deforestation
 - * Electrification
 - Coal mining and burning
 - Global warming
 - Nuclear power
 - Radiation accidents
 - Safety factors
 - Decommissioning and waste disposal
 - Water supply and wastage
 - * Dropping water tables
 - * Solid waste disposal in water
 - Sanitation
 - Clean potable water
 - Urban space management
 - * Town planning
 - * Services
 - * Informal housing developments
- 2.8 Interrelationships
- 2.8.1 Food chains, energy and nutrient cycles
- 2.8.2 Economic chains and resource cycles
- 2.9 Local, regional and global pressure points relating to the biosphere
- 2.9.1 Ozone depletion theory
- 2.9.2 Acid rain
- 2.9.3 Nuclear fall out
- 2.9.4 Global warming theory
- 2.9.5 Climate change
- 2.9.6 Epidemic diseases
- 2.9.7 Disasters
- 2.9.8 Urbanisation

3.0 Development

- 3.1 Managing natural resources
- 3.1.1 The green revolution
- 3.1.2 Soil erosion and dust bowl formation
- 3.1.3 Overstocking and overgrazing
- 3.1.4 Veld burning
- 3.1.5 Monocropping, insect plagues and control
- 3.1.6 Water rights and access
- 3.2 Sustainable development
- 3.2.1 Permaculture (organic agriculture)
- 3.2.2 Agroforestry
- 3.2.3 Recycling and reusing
- 3.3 Decisions and trade-offs
- 3.4 International trade
- 3.4.1 Food supply
- 3.4.2 Multi nationals and agribusiness
- 3.4.3 Pesticides and green wonder crops
- 3.4.4 Food aid
- 3.4.5 Oil power
- 3.5 Health and nutrition
- 3.5.1 Malnutrition
 - Infant mortality
- 3.5.2 Additives in food
- 3.5.3 Population growth rates
- 3.5.4 Spread of informal housing
- 3.5.5 Industrial safety
- 3.5.6 Spread of infectious diseases
 - HIV and AIDS

- Malaria/yellow fever
- Tuberculosis
- Cholera
- Bilharzia

4.0 Peace and conflict

4.1 Economic weapons and barriers

4.1.1 Boycotts

4.1.2 Sanctions

4.1.3 Price wars

4.1.4 Tariff barriers

4.2 Poverty

4.2.1 Slum development and spread

4.2.2 Break up of tradition structures

4.2.3 Chemical abuse

4.3 Unemployment

4.3.1 Debt crises

4.3.2 Crime

4.3.3 Social and labour unrest

4.4 Social violence

4.4.1 Structural violence

4.4.2 Historical factors

4.4.3 Economic factors

4.4.4 Political factors

4.5 War

4.5.1 Refugees

4.5.2 Migration

4.6 Access to land

4.6.1 Land rights

5.0 Human rights

5.1 Freedom

5.1.1 Ethical investments

5.2 Prejudice

5.2.1 Segregation and racial prejudice

5.2.2 Cultural prejudice

5.2.3 Gender based (sexism)

5.2.4 Generation based (caring for the aged)

5.2.5 Genocide

5.2.6 Infanticide (abortion)

5.2.7 Euthenasia (the right to die)

5.3 Self determination

5.3.1 Democracy and freedom

5.4 Environmental rights

5.4.1 Environmental law

5.4.2 International agreements

6.0 Futures

6.1 Sustainable life styles

6.2 Future scenario's

DEVELOPING TEACHING AND LEARNING METHODS

By now it should be self-evident, on content alone, that no single existing current discipline can naturally host environmental education by itself, it is a multi-disciplinary task or where this fails through lack of commitment, the task of a new course which is multi-disciplinary in nature. Such a course will not only pursue the elements of knowledge that are mutual to a single host discipline plus environmental education, but extend itself across the whole domain of the man-environment interface.

Expressive disciplines will be needed along with communicative and cultural disciplines to convey and embody the affective elements developing as values responses to local environmental issues.

The teaching methods required also imply a greater field of teaching methodologies than are traditionally associated with any single discipline. The broad, participative nature of environmental education makes this a necessity.

An environmental educator soon finds that the very variety of teaching approaches is an enormous challenge which cannot be professionally ignored if the principles and subsequent objectives of environmental education are to be treated seriously with more than lip-service. The following structure suggests some of the relevant methods and processes that will need to be employed from time to time...

METHODS	AMPLIFICATION
DISCOVERY [finding out]	- QUESTIONING, PROBLEM SOLVING, PLAYING, MOVING, ARRANGING
ADVENTURE [finding out]	- FIELDWORK, CAMPS, HIKES, EXPLORATIONS, SURVIVAL HIKES, OUTINGS, EXCURSIONS
COMMUNICATION [telling others]	- DIAGRAMS, BROCHURES, ADVERTS, WORDS, MAGAZINES, BULLETIN BOARDS, COMIC BOOKS, SCRAP BOOKS, JOURNALS, MOCK NEWSCASTS, COURT CASES, DEBATES, DIARY
UNDERSTANDING [making sense]	- FACSIMILES, TELEVISION, TELEPHONE, DEMONSTRATIONS, KITS, TASK CARDS, PROJECTS, CASE STUDIES, SURVEYS, PROBLEM SOLVING, CONSEQUENCES, SCENARIO'S, CYCLES, DATABASES, FLOW CHARTS, MODELLING, SIMULATIONS
CREATIVITY [telling self and others]	- SONG, POEMS, DRAWINGS, CARTOONS, CARVINGS, MODELLING, PATTERN MAKING, PAINTING, FRIEZES, MURALS, RURAL CRAFTS [WEAVING, POTTERY]
SENSORY [finding out]	- LISTENING, ALONENESS, SEEING, TOUCHING, TASTING, SMELLING, ALL SENSES TOGETHER
FANTASY [making meanings]	- STORY TELLING, CREATIVE WISHING, THEATRE, ROLE PLAY, FABLE, IMPROMPTU DRAMA, FOLKLORE, TALL TALES, STORIES IN THE ROUND, LEGENDS, SOUVENIRS, TOTEMS
VALUING COMMITMENT [Judging]	- CONSENSUS, RIGHTS, BELIEFS, PRAYERS, CODES, FEELINGS, FEARS, HOPES, PREJUDICES, JUDGING, CONSULTING, NEGOTIATION, LEADING, FOLLOWING

This could be reinterpreted according to developmental stages...

DEVELOPMENTAL STAGES			
METHOD CATEGORY	MATURITY	ADOLESCENCE	EARLY CHILDHOOD
CREATIVE FANTASY	ART, DRAMA THEATRE	ART, DRAMA STORY MAKING	ART, ROLE PLAY STORY TELLING
SENSORY AWARENESS	AESTHETIC APPRECIATION	COMPLEX MULTISENSORY	SIMPLE EXPERIENTIAL
DISCOVERY	COMMUNITY PROJECTS	PROBLEM SOLVING INQUIRIES	QUESTIONING CURIOSITY
ADVENTURE CHALLENGE	COMMUNITY PROJECTS	INQUIRY SKILLS OUTDOOR ADVENTURES	EXPLORATION
VALUES COMMITMENT	ACTING ON VALUES	CLARIFYING PERSONAL VALUES	MODELLING VALUES
UNDERSTANDING	GLOBAL/LOCAL CONCEPTS	REGIONAL/LOCAL CONCEPTS	NATIONAL/LOCAL CONCEPTS
COMMUNICATIVE SHARING	CITIZEN ACTION	DEMOCRATIC NEGOTIATION	GROWTH OF TOLERANCE OF OTHER POSITIONS IDENTIFYING OWN POSITION

REFERENCES

Caduto, M J 1985: A Guide to Environmental Values Education. Environmental Education series No.13 UNESCO - UNEP International Environmental Education Programme. Paris.

Caring for the Earth 1991: A strategy for sustainable living. Published jointly by The World Conservation Union, United Nations Environment Programme and World Wide Fund for Nature. Gland. Switzerland.

Cornell, J B. 1979: Sharing Nature with Children. Ananda Publications, California.

Cornell, J B. Sharing the Joy of Nature. Dawn Publications. Nevada City. 1989.

Davies, B R and J A Day 1986: The Biology and Conservation of South Africa's Vanishing Waters. The Centre of Extra-Mural Studies. University of Cape Town.

Earthworks Group. 1989: 50 Simple Things You Can Do to Save the Earth. Hodder and Stoughton.

Enviro Facts 1992: Wildlife Society Umgeni Valley Project for Pick 'n Pay and Nampak Ltd. Howick.

Enviro-Teach 1992: An Environmental Education resource. The Communications Group (Pty) Ltd Johannesburg.

Gough, N. 1992: Blueprints for Greening Schools. Principles, policies and practices for environmental education in Australian secondary schools. The Gould League. Victoria.

- Gould League 1983: A Model Primary Environmental Education Program. A complete school approach. The Gould League of Victoria. Victorian Association for Environmental Education. Melbourne.
- Grieg, S, Pike, G and D Selby. 1990: Earthrights: Education as if the planet really mattered. Co-published by the World Wildlife Fund and Kogan Page Ltd London.
- Huntley, B, Siegfried, W R and C Sunter. 1989: South African Environments into the 21st Century. Human and Rousseau. Tafelberg. Cape Town.
- Keep South Africa Beautiful 1988. Series published by the Department of National Health and Population Development. Pretoria.
- Land Service Movement 1993: Healthy Soil - Happy Life.
- Litvinoff, M 1990: The Earthscan Action Handbook for People and Planet. Earthscan Publications Ltd Cox and Wyman Ltd Reading.
- Muyanda-Mutebi, P and B Rego [Ed] 1987: Teaching/Learning Methodology for Environmental Education including Population Education in Eastern and Southern Africa. UNICEF/UNESCO Cooperative programme. Nairobi.
- Myers, N [Ed] 1985: The Gaia Atlas of Planet Management. Pan Books. London.
- Opie, F W J 1992/3: Be Prepared for Life Kits
 Kit 1: There's no place like home.
 Kit 2: At home in the city.
 Kit 3: Food for life.
 Kit 4: Water for life
 Boy Scouts of South Africa [SA Headquarters]. P O Box 4251. Cape Town 8000.
- Opie F W J and M Schuil 1993: The Dawn Years: An environmental resource manual for the preprimary and junior primary teacher. Song of Earth Series No. 2. Maskew Miller Longman. Cape Town. [in press].
- Opie, F W J 1993: The Global Scout: Scouting for Nature and the Environment. World Organisation of the Scout Movement. Maskew Miller Longman. Cape Town.
- Pike, G and D Selby, 1988: Global Teacher, Global Learner. Hodder and Stoughton. London.
- Preston-White, R et al. Rotating the Cube: Environmental Strategies for the 1990's. Department of Geographical and Environmental Sciences, University of Natal.
- Project Learning Tree 1990: Supplementary Activity Guide for grades KG through 12. The American Forestry Council. Washington DC.
- Project Wild 1983: Elementary and Secondary Activities Guides. Western Regional Environmental Education Council. Colorado.
- Ramsey, J M, Hungerford, H R and T L Volk 1992: Environmental Education in the K - 12 Curriculum: Finding a niche. Journal of Environmental Education. 23[2]. 35-45.

- Randle, D. 1989: Teaching Green: A parent's guide to education for life of earth. Green Print. London.
- Roos M 1992: The Greenhouse Effect: A teacher's manual. Wildlife Society of Southern Africa. Linden.
- Semour, J and Girardet, H. Blueprint for a Green Planet:How you Can Take Practical Action Today to Fight Pollution. Dorling Kindersley Ltd. London. 1987.
- Stapp, W B 1988: Education in Action: Community Problem Solving Program for Schools. University of Michigan.
- Van Matre, S 1974: Acclimatizing: A personal and reflective approach. American Camping Association. Martinsville. Indiana.
- Van Matre, S and B Weiler 1987: The Earth Speaks: An acclimatization journal. The Institute of Earth Education. Warrenville.
- We Care: Education Manuals 1988 and 1991: [Senior and Junior Primary manuals available]. South African Nature Foundation. Stellenbosch.

THE ENVIRONMENT, DEVELOPMENT AND ENVIRONMENTAL EDUCATION



An Environmental Education

Policy Initiative (EEPI)

working document of sources

for policy and curriculum initiatives in formal education.

PARTICIPANTS AND CONTRIBUTORS

Convener Rob O'Donoghue
Editors Eureka van Rensburg and Jim Taylor
Working Group Joe Memella
Margaret Keogh EEPI,
Jim Taylor P.O.Box 613,
Alan Pillay AUCKLAND PARK 2006.
Mba Manqele
Juggie Govender
Lynn Hurry

Respondents: Danie Schreuder, Heila Lotz, Linda Paxton, Prem Naidoo, Alistair Clacherty, Doc Schongwe and Tinus Joubert.

Note:

This booklet is an attempt to support policy and curriculum initiatives with an overview of positions on and trends in environmental education. It provides a summary of many key issues and sources. Every effort has been made to put in the ideas of all who responded. The compilers apologise to anyone who may feel that a particular perspective is not adequately reflected in the text. The document is available in DOS or Word Perfect text to people who wish to modify it to their own needs.

The booklet attempts to locate trends historically, to map shifts and to portray the multiple narratives of environmental education in southern Africa. The depth and range of responses received is testimony to the dedication and the quality of the debate in environmental education. This document will be expanded and remodelled around new submissions and ongoing consultative workshops.

Printed by Share-Net, P.O.Box 394, HOWICK 3290 for the Environmental Education Policy Initiative (EEPI).

BACKGROUND

This resource explores some key ideas and trends in environmental education. It was prepared to support participants involved in education reform and curriculum development initiatives in formal education. Its purpose is not to present answers but to list sources and to explore key ideas and trends for a wider consultative process to improve education. Each section has been linked to materials that may be useful for policy development and curriculum reform initiatives.

The Natal committee of the Environmental Education Policy Initiative (EEPI) produced this document as a contribution to an ongoing consultative process. This was done after a national workshop at Brits (Dikhololo) in August, 1993. The Dikhololo workshop tasked an EEPI working group with fostering environmental education through broader consultation within the regions and through participation in policy and curriculum initiatives in formal education.

1.4 *Some international developments*

After a decade of isolated voices calling for global action about environmental problems, world government structures held the Stockholm Conference in 1972 and produced the Belgrade Charter in 1975. Soon after this the United Nations Environment Programme (UNEP) was established and since then there have been a series of notable conferences and publications (eg Tbilisi, 1977; The Brundtland Report, 1987). These have all addressed the environment, development and environmental education issues. More recently, the Rio Earth Summit (UNCED), once again put the environment crisis at the centre of global concern for policy development and action.

Many of the early international initiatives may not be particularly useful in southern Africa, having been built around behaviourist and 'social engineering' perspectives of education and change. More recently these approaches have been questioned and are being displaced by a concern for participatory and 'social-process' approaches.

SOME LANDMARK INTERNATIONAL EVENTS

- 1975 The Belgrade Charter**
...the foundations must be laid for a world wide environmental education programme. (UNESCO-UNEP 1976: pp. 1 - 2).
- 1977 Tbilisi Declaration**
...environmental education should further the development of conduct compatible with the preservation and improvement of the environment. (UNESCO-UNEP 1987: p. 2).
- 1980 World Conservation Strategy**
Ultimately, the behaviour of entire societies must be transformed (IUCN, UNEP and WWF 1980)
- 1987 Moscow conference**
All of these (environmental) problems unquestioningly result from socio-economic situations and inappropriate human behaviour patterns (poverty; uncontrolled economic growth; squandering of natural resources) (UNESCO-UNEP 1988: 6).
- 1987 Brundtland Report**
...the world's teachers...have a crucial role to play in helping to bring about the extensive social changes needed for sustainable development (p. xiv).
- 1991 Caring for the Earth: A strategy for sustainable living.**
...living sustainably depends on accepting a duty to seek harmony with other people and with nature (p. 8). We will need to ensure that education programmes reflect the importance of an ethic for living sustainably. (IUCN, UNEP and WWF, 1991, p. 5).
- 1992 Agenda 21 (Chapter 36)**
Education is critical for promoting sustainable development (UNCED 1992, Chapter 36, p. 2)

(Adapted from a hand-out by John Fien, 1993)

1. KEY QUESTIONS AND ISSUES

1.1 *Why start an environmental education initiative?*

Current education reform proposals have rightly emphasised the importance of technology and vocational education for a reconstructive policy of redress and development. They have failed, however, to include the environment, development and environmental education as interdependent policy issues.

If education for technological development and job creation fails to integrate environment and development issues, it can only produce a 'boom and bust economy' with even greater environmental destruction and poverty than has accompanied past policies of separate development.

SOME STARTING POINTS

THE ENVIRONMENT:

The physical, biological and social world around us, as we know it.

THE ENVIRONMENT CRISIS:

The declining capacity of a degraded environment to support us with a good quality of life.

ENVIRONMENTAL EDUCATION:

Planned processes which enable participants to explore the environment, to investigate recognised concerns and to take action to make the world a better place for all living things.

POLICY:

An agreed expression of principles and values to guide action.

CURRICULUM:

All the learning experiences which happen between teachers and pupils in schools.

SYLLABUS:

A document providing policy and programme frameworks to guide curriculum decisions at schools.

SUSTAINABLE LIVING:

Living so as not to restrict the freedom of present and future generations by harming the environment in which we must live and develop. Here development is seen as both 'health and wealth.'

CURRENT POLICY AND CURRICULUM CHALLENGES

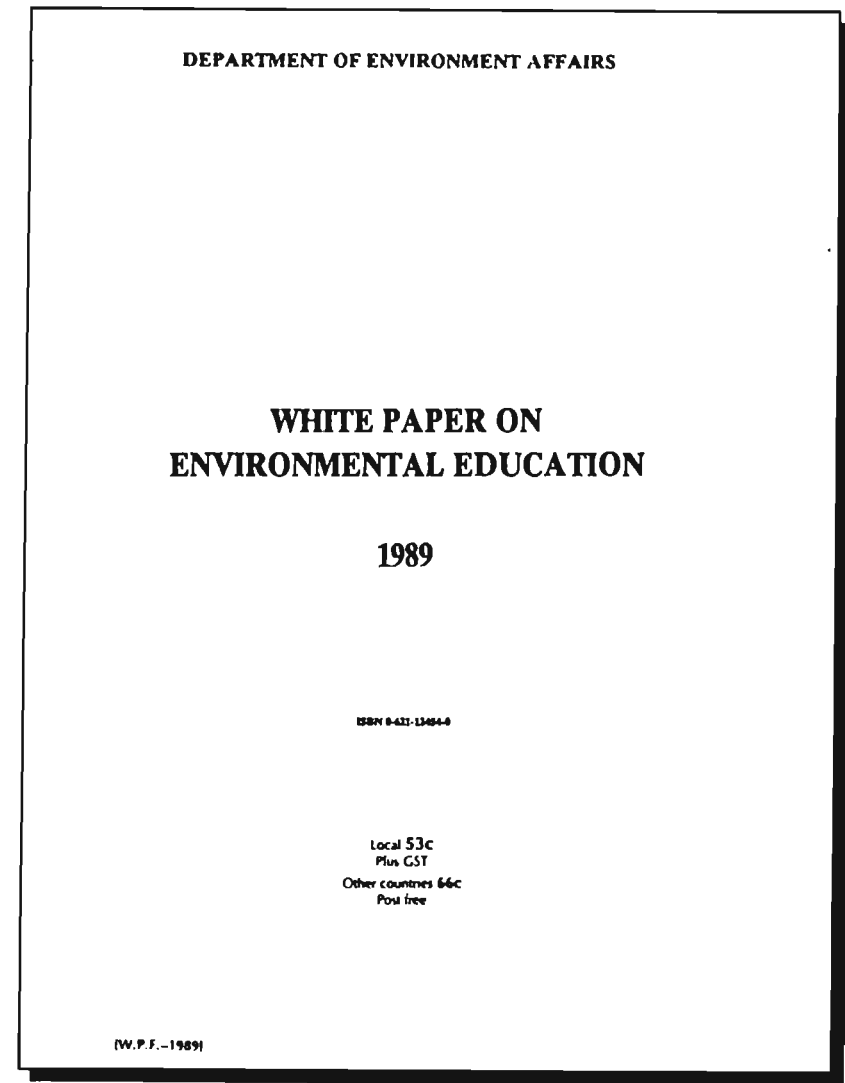
South Africa has a history of policies and curriculum structures that have been developed by experts outside the schools and handed down to teachers. Policy and curriculum thus need both process and structural reform.

1.2 *Why has environmental education been overlooked?*

Current education reform proposals have overlooked the White Paper on environmental education. The document has no popular legitimacy, having been developed through a closed process of mainly specialist consultation within apartheid structures. After numerous revisions and extended delays it was released in 1989. Little has, however, come of it. Despite its somewhat checkered history, some of its references to international developments may provide some useful background for current policy development initiatives.

Environmental education may also have been overlooked because nature experience approaches have dominated many of the early initiatives. These have decreasing relevance in a country of increasing poverty, unemployment and violence.

This document explores alternatives to these narrow approaches and the orientations of the White Paper on environmental education.



3.1 Aims

To stimulate education processes that develop responsible life-styles in harmony with the environment as a whole, on the part of all the inhabitants of the RSA, and that make them aware of the fact that an acceptable quality of life is dependent on their judicious utilisation of the environment. (Page 5)

1.3 *Some limitations of past perspectives.*

Developing a relevant policy framework for environmental education is particularly challenging for South African education reform initiatives.

Many approaches have been weak owing to very narrow perspectives on environmental problems and on communication, learning and change.

Firstly, the environment crisis has tended to be treated as resource destruction, pollution and conservation issues, to the exclusion of **social, political and economic** concerns. Secondly, the dominant approaches have been:

1. the communication of information to create public awareness; and,
2. nature study fieldwork experiences to change values and attitudes.

These perspectives are outdated and narrow so this booklet explores:

- * Some key international developments (1.4).
- * A wider vision of environmental issues (2.1 & 2.2).
- * An enhanced position on the environment (2.3);
- * Some emerging trends in environmental education (3); and
- * Some policy and curriculum options (4).

SOME KEY TRENDS IN ENVIRONMENTAL EDUCATION

1970's	Conservation education (Teaching about nature and conservation problems)
	Show-and-tell (Expert-led fieldwork on ecology and problems)
	Experiential fieldwork in nature (Free exploration for nature awareness)
	Environmental education centres (Centres for awareness through nature experiences)
	Values education (The experiential clarifying of values)
1990's	Action research and community problem solving (Pupil-led problem solving fieldwork by schools.)
	Empowerment, sustainability and social justice (Capacity building, problem solving and action taking around socio-ecological concerns.)

THE CHALLENGE OF MORE RELEVANT APPROACHES

Past approaches to environmental education have been many and varied. They have also changed with our understanding of education, the environment, development and environmental issues. These trends need to be clarified within current policy and curriculum reform processes in southern Africa.

1.4 *Some international developments*

After a decade of isolated voices calling for global action about environmental problems, world government structures held the Stockholm Conference in 1972 and produced the Belgrade Charter in 1975. Soon after this the United Nations Environment Programme (UNEP) was established and since then there have been a series of notable conferences and publications (eg Tbilisi, 1977; The Brundtland Report, 1987). These have all addressed the environment, development and environmental education issues. More recently, the Rio Earth Summit (UNCED), once again put the environment crisis at the centre of global concern for policy development and action.

Many of the early international initiatives may not be particularly useful in southern Africa, having been built around behaviourist and 'social engineering' perspectives of education and change. More recently these approaches have been questioned and are being displaced by a concern for participatory and 'social-process' approaches.

SOME LANDMARK INTERNATIONAL EVENTS

- 1975 The Belgrade Charter**
...the foundations must be laid for a world wide environmental education programme. (UNESCO-UNEP 1976: pp. 1 - 2).
- 1977 Tbilisi Declaration**
...environmental education should further the development of conduct compatible with the preservation and improvement of the environment. (UNESCO-UNEP 1987: p. 2).
- 1980 World Conservation Strategy**
Ultimately, the behaviour of entire societies must be transformed (IUCN, UNEP and WWF 1980)
- 1987 Moscow conference**
All of these (environmental) problems unquestioningly result from socio-economic situations and inappropriate human behaviour patterns (poverty; uncontrolled economic growth; squandering of natural resources) (UNESCO-UNEP 1988: 6).
- 1987 Brundtland Report**
...the world's teachers...have a crucial role to play in helping to bring about the extensive social changes needed for sustainable development (p. xiv).
- 1991 Caring for the Earth: A strategy for sustainable living.**
...living sustainably depends on accepting a duty to seek harmony with other people and with nature (p. 8). We will need to ensure that education programmes reflect the importance of an ethic for living sustainably. (IUCN, UNEP and WWF, 1991, p. 5).
- 1992 Agenda 21 (Chapter 36)**
Education is critical for promoting sustainable development (UNCED 1992, Chapter 36, p. 2)

(Adapted from a hand-out by John Fien, 1993)

2. KEY CONCERNS

2.1 The global crisis

Human numbers and activities are changing the environment more rapidly this century than at any time in our history. Global environment problems are thus both numerous and complex. There is no clear agreement on each issue but a sense that something must be done and that education is a priority.

To be effective, environment and development education should deal with the dynamics of both the physical/biological and socio-economic environment, and human (which may include spiritual) development, should be integrated in all disciplines, and should employ formal and non-formal methods and effective means of communication.

Chapter 36.3, Agenda 21 (UNCED, Rio de Janeiro, 3-14 June, 1992)

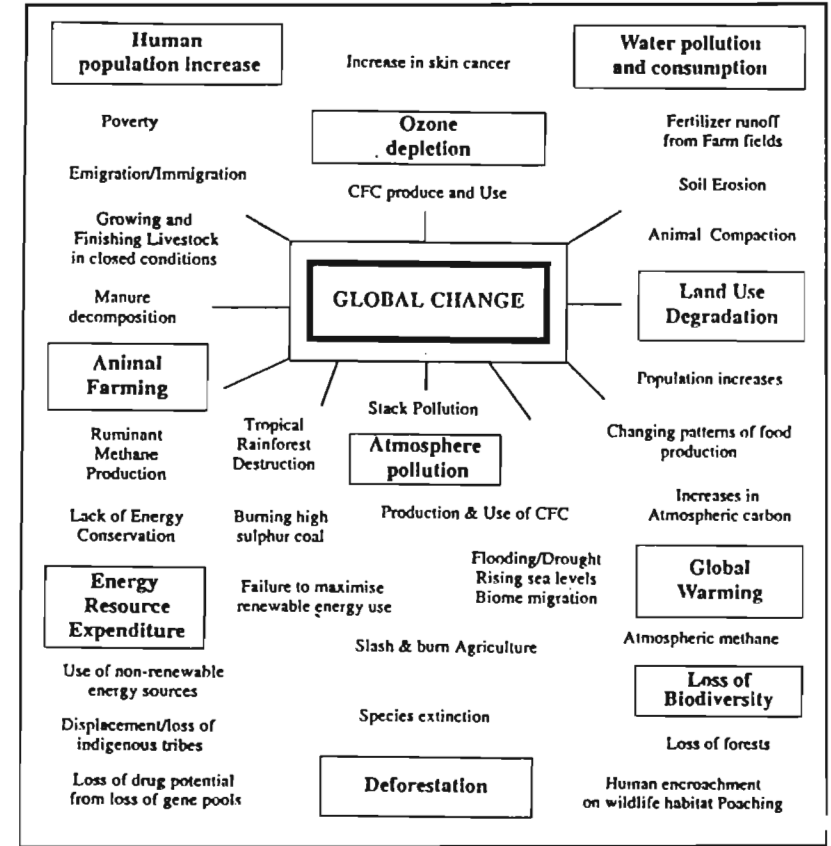
Early on, the environment crisis was seen as global stresses resulting from human impact. From this, four interlocking themes of a global

environmental crisis have more recently emerged:

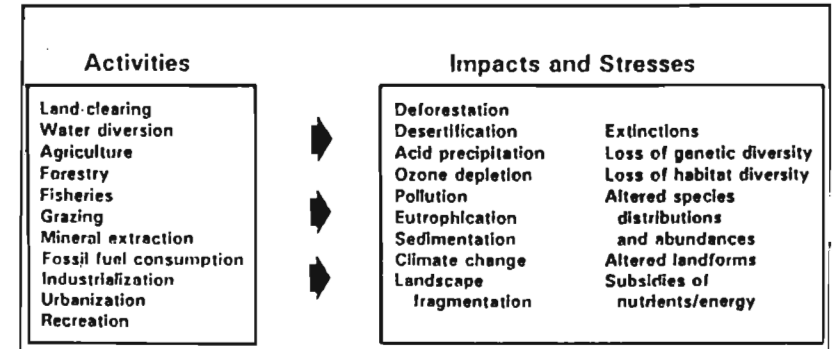
- * *The arms race, violence and world peace.*
- * *First / Third World consumption, economics / poverty.*
- * *Pollution, extinctions and habitat / life support degradation.*
- * *Human rights, repression and social justice. (Ekins, 1993)*

These challenges need to be seen in terms of the environment crisis in South Africa.

GLOBAL CHANGE AND ISSUES (UNESCO-UNEP, 1993)



HUMAN ACTIONS AND IMPACTS (Env. Comm. Aug. 93)



2.2 The crisis in southern Africa

Overcrowded townships, the air heavy with smog: barren soils, scarred by ravines and bereft of vegetation; people and land under threat from toxic waste dumps, polluted rivers and pesticides. South Africa is suffering from decades of environmental mismanagement, aggravated and often institutionalised by apartheid, which forced people to live in rural and urban areas unable to sustain themselves.

Mamphela Ramphela, *Restoring The Land*, 1991.

At present South Africa faces a crisis of alarming proportions. The interrelated problems on the political front, where negotiations to establish a democracy are stalling, are compounded by an over exploited, abused and deteriorating bio-physical environment. The economy is in severe recession and social problems are manifesting across the wide spectrum of society.

Wildlife Society of Southern Africa, 1993.

The environment and development realities described above are key policy and curriculum development concerns. Relevant environmental education policies and curriculum initiatives should thus engage with political empowerment, social stability, economic development and the sustainability of socio-ecological life-support systems. These are all necessary for sustainable living where all people can enjoy a good quality of life in a healthy environment.

A clear conception of the environment is vital for such an undertaking.

THE SOUTH AFRICAN ENVIRONMENT

African National Congress (1991) *Mayibuye iAfika - An introduction to ANC environment policy*. ANC, Johannesburg.

Cock, J. and Koch, E. (1991) *Going Green: People, politics and the environment in South Africa*. Oxford University Press, Cape Town.

Hallowes, D. (ed.) (1993) *Hidden Faces. Environment, Development, Justice: South Africa and the global context*. Earthlife Africa, Russell Friedman Books, Johannesburg.

Huntley, B. Siegfried, W. and Sunter, C. (1989) *South African Environments into the 21st Century*.

Ramphela, M. (Consultant Editor) with Mc Dowell, C. (1991) *Restoring the land*. The Panos Institute, London.

Yeld, J. (1993) *Caring for the Earth South Africa: A strategy for sustainable living*. Southern African Nature Foundation (SANF) and SA Nature Foundation (WWF), Stellenbosch.

Enviro-Facts. A loose-leaf library of 60 information sheets on environmental issues in southern Africa. Share-Net, Howick.

CONSTRUCTING A SUITABLE PERSPECTIVE:

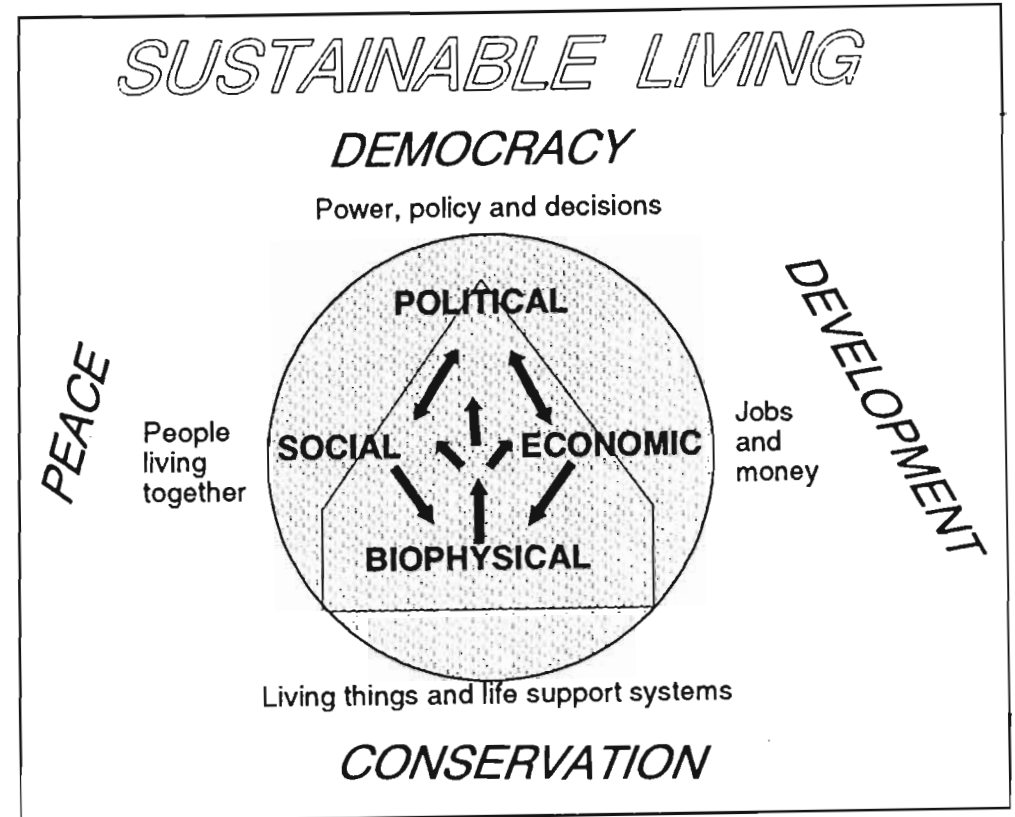
All of the above publications contain a wide range of contested perspectives that are useful for policy and curriculum development initiatives in formal education.

2.3 The environment

In everyday and scientific usage the *environment* refers to the physical world and its problems. For environmental education, central within any understanding of the environment are people who both contribute to and experience much of the current degradation. An inclusive picture of the environment might include **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 that it presents us (*socio-ecological problems*).

The environment is thus not just plants, animals and the physical world but also people and social structures. The picture opposite shows the environment as interacting patterns of political, social and economic factors within the biological and physical world. Around the picture are some of the issues that demand attention within environmental education policy and curriculum change initiatives in formal education.

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



The challenge of changing perspectives

Most early approaches to environmental education treated the environment as a physical world. The aim was to communicate information about problems so as to change people. As our understanding of the complexity of environmental interactions advances, so approaches to environmental education are changing to include not only conservation and sustainable development but also democracy and peace.

3. CHANGING PERSPECTIVES

3.1 From top-down messages to participatory action.

Scientists were among the first to identify environmental degradation on a global scale. When they understood the seriousness of the problems, they set out to 'get the message across' to others so that people's behaviour would be changed and the problems solved. This 'top-down' approach seemed the logical way to go about it at the time. However, it became apparent that although people became aware of the problems little was done about them.

More recently sophisticated media techniques of contrived participation or modify behaviour have also been poor at bringing about meaningful change. It took environmental educators a long time to realise that people are not simply empty buckets to be filled with information which would cause appropriate change.

A shift in thinking to more relevant participation was under way by the mid 1980's. Communication came to be equated more with 'community' than with information and messages, and participation came to be seen as 'partnerships' in decision making and action.

This has led to community and curriculum approaches where participants (eg teachers and their pupils) work together as a 'community of partners' to identify problems and to do something about them within democratic contexts (eg classrooms and community forums).

Going hand-in hand with this has been a shift from nature experience approaches to environmental education for local action research.

A key policy and curriculum question

How can policy and curriculum initiatives be undertaken to empower teachers and pupils with the capacity to exercise choice, to take responsibility and to engage in creative action to solve local environmental problems?

3.2 From early nature experience approaches to broader experiential / action learning.

A key theme of 'wildlife experience' approaches to environmental education has been that 'modern youth is out of touch with nature.' This has led to students being taken out to experience wild areas. 'Free experiential immersion and acclimatization' in nature became the cornerstones of early approaches to environmental education in the United States. These approaches, which have swept the world, were centred on changing the attitudes and values of the child. Although initially widely adopted by environmental educators in southern Africa, doubts soon emerged about the clarity of the educational thinking behind these 'nature experience and values education' approaches.

It must be careful not to simply adopt or reject the wisdom in many of these apparently extreme approaches to environmental education. There is a lot of sense in sharing nature with children and in giving them time and experiences to develop ideas that they can discuss and act on. Fortunately there has been a recent balancing out of extreme approaches with sound common sense. It is now generally accepted that

children come to understand and to act in the world through active learning in a wide range of social situations. Active learning involves a balance of direct experience and 'telling,' the use of appropriate tools for finding out about issues and the opportunities to develop the capacities to act on ideas. In most cases these 'action research' approaches to environmental education have enhanced classroom practice and are being seen as synonymous with better education that fosters more relevant learning.

These developments have accompanied an concern for not simply making people aware of conservation problems (top-down) but for participation in change towards sustainable living and social justice.

Some policy and curriculum issues

Policy and curriculum initiatives should give attention to active learning situations in varied environments ranging from the local neighbourhood to wildlife areas. The more real, active and challenging the work, the better.

3.3 From conservation of natural resources to sustainability and social justice

Much of the early environmental education in southern Africa was centred on teaching people to conserve natural resources like water and soil. There was also an orientation *to educate the illiterate masses to stop breeding and to decrease harmful land use practices*. An equally narrow approach has been *to educate and regulate the industrialists who pollute the environment*. These initiatives have seen education as a tool for conservation and environmental management. In these narrow approaches the environment crisis has been seen as *physical degradation*, the solution to this being *getting information across to create awareness and to modify behaviour*.

These social engineering models have underpinned most state and scientific approaches to environmental management. Similarly orientated curriculum designs involving values education and behaviour modification have dominated most early environmental education initiatives in formal education.

An alternative view is that environmental problems are a complex mix of socio historical trends and events. This understanding has given rise to the idea that human society undergoes continuous reconstruction and

that environmental education involves diverse processes of problem solving and change.

To address this reconstructive need, education policy might encourage courses of action to address societal problems. Curricula might thus be developed for pupils to address wide-ranging environmental issues of health, environmental quality, economic well-being, social justice and peace. For this, the goal of environmental education would be to enable people to recognise factors that influence the quality of their environment and to develop options for sustaining and enhancing their quality of life. This is not a top-down or a 'social engineering' approach but a local co-operative process through which people might develop the capacities to solve the pressing problems of sustainability and social justice that confront modern society.

Some policy and curriculum notes

Policy and curriculum development processes need to address global and local needs for environmental problem solving, social justice and change towards more sustainable living.

4. SOME OPTIONS FOR FORMAL EDUCATION

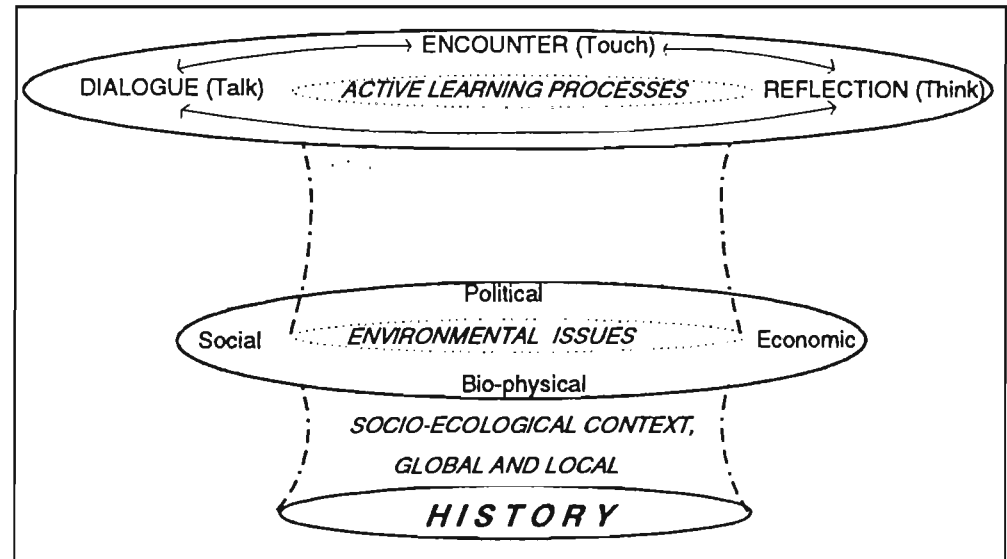
Approaches to education *about, in and for* the environment have developed rapidly. Many early approaches took a narrow nature experience view and attempted to establish environmental education as a specialist field. These approaches still have a lot to offer but have, unfortunately, lagged behind trends in education. The place of environmental education in formal education needs clarification. Some of the current curriculum reform options for environmental education are:

- Evaluation that brings into question and enhances current approaches to education (Critical processes);*
- The infusion of environment and development issues into all disciplines (Cross-curricular); and*
- A new subject (eg Environmental Studies) and modules (eg water quality monitoring) (Subjects & modules).*

Whether environmental education should be a critical process, a cross-curriculum theme or a separate subject/module might well be irrelevant.

One of these approaches may, in fact, complement each other within a more relevant curriculum where historical contexts and environmental issues underpin active learning opportunities.

ENVIRONMENTAL EDUCATION: Meaningful contexts and issues for active learning



Some concluding policy and curriculum challenges

Adding the environment to the curriculum reform agenda as a mode of critique, as a cross-curricular theme or even as a separate subject will not be enough. The way policy and curriculum initiatives go about placing the environment at the centre of education reconstruction will be crucial.

The key issue is likely to be how policy and curriculum change is undertaken by and with all stake-holders, particularly teachers and pupils.

5. FOCUS AREAS AND CURRENT INITIATIVES

The following focus areas have emerged for policy and curriculum initiatives in environment and development education:

5.1. Policy

A policy framework that locates environmental issues and sustainable living at the centre of education concerns along with vocational and science and technology education.

5.2. Research

Teacher working groups and research initiatives to locate environmental education in the curriculum.

5.3. Curriculum and resource development.

The development of southern African modules, units, materials and methodological frameworks for environmental education.

5.4. Teacher education

The development of pre-service and in-service environmental education programmes.

SOME CURRENT INITIATIVES

Policy

- * Environmental Education Policy Initiative (EEPI) EEASA Journal number 13. Alistair Clacherty.

Research

- * Research priorities in environmental education in southern Africa. Eureka Janse van Rensburg, Rhodes
- * Resource development and networking. Jim Taylor, Share-Net
- * Integrated development and resource management. Lynn Hurry, HSRC.
- * Curriculum development, Junior Primary. Heila Lotz, EEPUS, University of Stellenbosch.
- * Environmental information. Linda Paxton, Rhodes University.

Curriculum and resource development projects

- * SCISA writing circles (Margaret Keogh)
- * Council for the Environment draft curriculum proposal.
- * Primary school curriculum proposal. Education Departments Networking Group. - FLP
- * EEPUS, University of Stellenbosch and Jutta DAME SCHREIDER
- * Coalition of teacher colleges to develop cross-curricular materials for environmental education (Edgewood, Springfield and Indumiso colleges). ROB O' DONOGHUE
- * PROD, Institute of Natural Resources, University of Natal, Pietermaritzburg (Lynn Hurry)
- * Geography curriculum initiative (Lynn Hurry)
- * Be Prepared For Life: Boy Scout kits. Frank Opie, Cape Town.

Teacher Education Programmes

- * Natal College for Further Education proposal for a diploma course in 1995 (Ingrid van den Berg).
- * Gold Fields Participatory Course (Rhodes University)
- * B Ed course module, University of Natal, Pietermaritzburg. (Lynn Hurry)
- * H.D.E., B.Ed and M. Ed with EE options or focus. Rhodes, Stellenbosch, Cape Town and Pretoria Universities.

6. REFERENCES

The following references that have not appeared in the text have been grouped under headings that might assist readers to identify materials to meet their needs.

ENVIRONMENTAL EDUCATION INITIATIVE (EEPI)

Clacherty, A. (1992) *EEASA discussion document on environmental education in formal education*.

Clacherty, A. *A report on the EEPI policy initiative*. DEA.

Southern African Journal of Environmental Education. Number 13.

CURRICULUM AND RESOURCE DEVELOPMENT

Banach, E. (1991) Share-Net: People, Places and Publications for environmental education, a collaborative network. In *Innovation* no. 2, June 1991, pp. 25-28.

Blignaut, J. and Fuggle R.F. (In press) *The development of guidelines for the implementation of socio-environmental education at school level*. Department of Geographic and Environmental Sciences, Cape Town University.

Council for Environment (1993) *The development of a core syllabus for environmental education in South Africa*.

Fien, J. (1993) *Education for the environment: Critical curriculum theorising and environmental education*. Deakin University, Australia.

O'Donoghue, R. and Taylor, J. (1988) Towards participant-centred resource development in environmental education. *Southern African Journal of Environmental Education*. Number 7, April.

Taylor, J. and O'Donoghue, R. (1989) Towards a co-operative network for environmental education. *Southern African Journal of Environmental Education*.

HISTORICAL TRENDS

Irwin, P. (1989) *Modern trends in the concept of environmental education*. Unpublished mimeograph. Department of Education, Rhodes University, Grahamstown.

O'Donoghue, R. (1993) *In search of CLEAR ACTION in environmental education*. Southern African Journal of Environmental Education. Volume 13.

CHILDREN AND SOCIAL CHANGE

Uzzell, D. L. and Rutland, A. (1993) *Intergenerational social influence: Changing environmental competence and performance in children and adults*. Discussion paper for the Second International Workshop on "Children as Catalysts of Global environmental Change", CEFOPE, University of Braga, Portugal, 4-6 July 1993.

Wals, A. J. (1984) *Pollution Stinks: Young adolescents perceptions of nature and environmental issues with implications for urban settings*. Academic Book Centre, Netherlands.

MODERNISM, ENVIRONMENT AND SOCIAL CHANGE

Beck, U. (1993) *Risk Society; Towards a new modernity*. Sage, London.

Orr, D. W. (1992) *Ecological Literacy: Education and the transition to a postmodern world*. State University of New York Press, Albany.

EXPERIENTIAL AND VALUES EDUCATION

Caduto, M. (1985) *A guide to environmental values education*. Environmental Education Series, Number 13. UNESCO - UNEP International Environmental Education Programme, Paris.

Cornell, J.B. (1979) *Sharing Nature With Children*. Ananda Publications, California.

Van Matre, S. (1974) *Acclimatizing: A personal and reflective approach*. American Camping Association, Martinsville, Indiana.

ACTION RESEARCH

Robottom, I. and Hart, P. (1993) Learning from Experience: Some examples and principles of participatory research in environmental education. In *Research in environmental education: Engaging the debate*. Deakin and Griffith Universities, Course monograph.

Stapp, W. B. (1988) *Education in action: Community problem solving in schools*. University of Michigan.

Wals, A. et al (1993) *Action research and community problem solving*.

ENVIRONMENTAL AUDITING

Baczala, K. (1992) *Towards a school policy for environmental education: Environmental Audit*. National Association for Environmental Education, Wolverhampton University, UK. ISBN 0 907808 27 1

7. RESOURCE MATERIAL

Directory of low cost environmental education resources. In press by Linda Paxton, through Share-Net.

Hands-On Series. Two libraries of fieldwork handbooks of common plant and animal life. Developed with teachers through Share-Net with the support of Natal Parks Board, The Wildlife Society of Southern Africa and The Oceanographic Research Institute.

Be Prepared For Life Kits. Kits for project work by youth groups developed by Frank Opie. Boy Scouts of South Africa, P.O.Box 4251, Cape Town 8000.

Enviro-Facts. Sixty information sheets on environmental issues in southern Africa. A Pick'n Pay / SA Nature Foundation project coordinated through Share-Net by Linda Paxton.

The Outdoor Classroom. A teachers guide to effective fieldwork developed by Frank Opie. Maskew Miller Longman, Cape Town.

Enviro-Picture-Building. A series of charts of South African environments to be constructed by pupils. Developed with teachers through Share-Net with the support of The Green Trust, Natal Parks Board, The Wildlife Society of Southern Africa and HL&H Timbers.

GREEN water quality monitoring. School and community water quality monitoring materials developed through Share-Net by Umgeni Water (Project WATER), Stellenbosch University (SWAP), Rhodes University and the Natal Parks Board, with the support of the Southern African Nature Foundation.

We-Care. Environmental education activities books for schools developed by EEPUS, University of Stellenbosch with the support of SA Nature Foundation, Total South Africa and Juta Publications.

The Gaia Atlas Series: *Planet Management*
 Green Economics

o. SOME CASE STUDIES

Kruger, J. (1992) *The influence of children on decision makers in their homes: A case study in environmental education*. Unpublished M.Ed. thesis, Rhodes University, Grahamstown.

(A case study of a environmental education centre programme with standard 4 pupils and their home community.)

Levy, S. (1992) *Projects speak for themselves: A consultative survey of mathematics, science, biology and environmental education projects in South Africa*. Sharon Levy, P.O. Box 1578, Houghton 2041.

(A collection of descriptive case studies of resource and curriculum projects)

Naidoo, P. (1992) *Collaborative teacher participation in curriculum development: A case study in junior secondary general science*. Unpublished M.Ed. thesis, Rhodes University, Grahamstown.

(A case study of co-operative resource development and curriculum change with school-based teacher working groups)

O'Donoghue, R. and McNaught, C. (1991) Environmental Education: the development of a curriculum through 'grass-root' reconstructive action. *International Journal of Science Education*. Volume 13, Number 4 (pp 391 - 404)

(A report on a case study of a curriculum development project: The Action Ecology Project 1985 - 1990)

Extracts from discussion document *The Integration of Environmental Education in Formal Education (1994)*

GOALS AND OBJECTIVES FOR ENVIRONMENTAL EDUCATION IN FORMAL EDUCATION

- 7 -

6.2 Goals and objectives

Goal 1:

Perceptual awareness

To help students develop the ability to perceive and acquire an aesthetic sensitivity to both natural and human living environments and develop a conceptual awareness of how individual and collective actions may influence the relationship between the quality of life and the quality of the environment.

Objectives:

Environmental education should provide learners to conceptualize:

- ▣ how human cultural activities (eg religious, economic, political, social, etc) influence the environment from an ecological perspective
- ▣ how individual behaviours impact on the environment from an ecological perspective
- ▣ a wide variety of environmental issues and the ecological and cultural implications of these issues
- ▣ the alternative solutions available for solving environmental issues and the ecological and cultural implications of these solutions
- ▣ the need for environmental issue investigation and evaluation as a prerequisite to sound decision making
- ▣ the roles played by differing human values in issues and the need for personal values clarification as an integral part of environmental decision making
- ▣ the need for responsible citizenship action in resolving environmental issues

Goal 2:

Knowledge

To help students acquire a basic understanding of how the natural environment functions, how its functioning is affected by human activity and how harmony between activity and the natural environment may be achieved.

Objectives:

As a basis for making informed judgements about the environment pupils should develop knowledge and understanding of terminology, facts, trends and sequences, criteria, methodology, principles and theories about the environment, such as:

- ▣ the natural processes which take place in the environment
- ▣ the impact of human activities on the environment
- ▣ different environments, both past and present
- ▣ environmental issues such as the greenhouse effect, acid rain, air pollution
- ▣ local, national and international legislative controls to protect and manage the environment; how policies and decisions are made about the environment
- ▣ the environmental interdependence of individuals, groups, communities and nations - how for example power station emissions influence neighbouring areas
- ▣ how human lives and livelihoods are dependent on the environment
- ▣ the conflict which can arise about environmental issues
- ▣ how the environment has been affected by past decisions and actions
- ▣ the importance of planning, design and aesthetic considerations
- ▣ the importance of effective action to protect and manage the environment
- ▣ ecological sound decisions with respect to environmental issues
- ▣ environmental influences and limiting factors
- ▣ ecological sustainable development

Goal 3:

Environmental ethic

To help students develop a universal ethic based on the values of social justice and ecological sustainability on which they may act to defend, improve and sustain the quality of the environment.

Objectives:

Encouraging the development of the following attitudes to value and understand the role of safeguarding the future:

- ☞ appreciation of, and care and concern for the environment and for other living things
- ☞ a respect for evidence and rational argument
- ☞ develop tolerance of the views of others and a multiracial perspective in order to encourage positive social interaction
- ☞ acquire a set of positive social and environmental values as part of a general moral education provided by the family and other institutions
- ☞ develop a personal environmental ethic based on the realization that people are part of ecosystems, that what is good for ecosystems is also good for people, that the quality of the environment and the quality of life are directly related, and that people have a right to share in the benefits ecosystems provide
- ☞ develop the ability to function as morally literate person capable of making conscious, caring, responsible moral decisions
- ☞ satisfy their essential human needs in order that they eventually become a self-actualized, integrated person capable of being and willing to be concerned with social and environmental issues
- ☞ achieve greater awareness and understanding of their and other peoples' social and environmental values and how these affect behaviour
- ☞ learn to compare their personal values with those most beneficial to social and environmental welfare, thus encouraging further development of a personal environment ethic
- ☞ satisfy their essential human needs so that they may contribute to become a self-actualized, integrated, morally literate person concerned with and actively promoting both social and environmental welfare.

Goal 4:

Skills and action

To help students develop the skills needed to identify, investigate, and take action and to gain experience in applying acquired awareness, knowledge, environmental ethic, and citizen action skills in working toward the prevention and resolution of environmental issues at all levels, local through universal.

Objectives:

The purpose of citizen action is to develop in learners those skills that will permit them to effectively work toward ends that are consistent with their values and take either individual or group action when appropriate

☞ Communication skills

- expressing views and ideas about the environment through different media - oral, written, dramatic or artistic
- arguing clearly and concisely about an environmental issue
- investigate and communicate concern about environmental matters
- present information in oral, written and graphic form

☞ Numeracy skills

- collecting classifying and analysing data, eg carrying out an ecological survey
- interpreting statistics, eg about weather

☞ Study skills

- retrieving, analysing, interpreting and evaluating information about the environment from a variety of sources
- organising and planning a project, eg on the improvement of a part of the schools' environment
- view environmental matters from a variety of perspectives

☞ Problem-solving skills

- identifying causes and consequences of environmental problems
- forming reasoned opinions and developing balanced judgements about environmental issues
- develop divergent thinking skills
- consider and predict the consequences (ecological, social, political, economic, etc) of possible courses of action
- select, design and implement appropriate courses of action on environmental issues
- the ability to evaluate, clarify and change their own value positions in the light of new information
- make decisions concerning action strategies to be used with respect to particular environmental issues
- evaluate the actions taken with respect to their influence on achieving and/or maintaining a dynamic equilibrium between the quality of life and the quality of the environment

☞ Personal and social skills

- working co-operatively with others, eg participating in group activities for the environment
- taking individual and group responsibility for the environment, eg disposal of litter
- use all their senses to explore a variety of environments
- identify, clarify and express value judgements that relate to the environment
- cooperate and negotiate with others to resolve conflicts that arise over environmental issues
- develop the political skills necessary for active citizenship (lobbying, petitioning, forming delegations, letter writing)
- encourage responsible individual and collective behaviour towards the local and global community and biophysical environment
- the ability to create and accept change

Information and technological skills

- collecting information and entering it into a database, eg data recording the birds on the school grounds
- simulating an investigation using information technology, eg operation of a nuclear reactor

Note:

Citizen action that students should be exposed to and experience are:

- **Persuasion:** *A logical or emotional appeal to motivate other human beings to modify their values and take positive environmental action (eg newspaper articles, radio/tv debate etc).*
- **Consumer action:** *Primarily economic actions intended to motivate other human beings to take positive environmental action (eg boycotts, monetary support, economic patronage, etc).*
- **Political action:** *An action to persuade an electorate, elected official, or government agency to conform to the values held by the person taking that action (eg campaigning, lobbying, voting, etc).*
- **Legal action:** *Any cohesive, legal/judiciary action taken by an individual/organization that is aimed at some aspect of environmental law enforcement or a legal restraint of some environmental behaviour perceived as undesirable (eg lawsuits, injunctions).*
- **Ecomanagement:** *Positive physical action by an individual or group that improves or maintains some part of the environment (eg ecosystem restoration, nature trail development, starting a recycling centre).*

R AND LEARNING STRATEGIES

issues and including the context.

Enthusiasm, care and natural

allow delay for addresses the neck in the on.

Environmental learning process of what

a change in to learner- s will find t education time to in- number of if INSET effective.

ion for an facilitatory : of Action and giving

requires , agencies resources materials

area are y relevant

should be

s also a

away from teaching for awareness, which than awareness, and the need for a move tion-based learning is emphasised - this in teacher education and thus also in

phasis in schools on transmission of ental education suggests a more active ing. The following characteristics should , and learning:

rds thinking skills and problem-solving, sponsibility and awareness of the ; of actions. Methods should include case sues-based work and practical involvement al issues. Such work should ideally have g characteristics:

focus ipatory (within schools and across schools) boundaries (social, economic, school, authority) m-solving focus e local community (industry, local ity, civic structures etc.) subject-based, but holistic - m/process/issue-based)

d students should solve problems together; 's role is to facilitate learning. Active is opposed to transmission, should allow feel part of the education process.

l style should be based on dialogue and , hands-on work, learning in the context of al problems, issues and processes.

ment

that in order for assessment and evaluation e of environmental education, mainly exam- s to be replaced. Product evaluation should there should be greater focus on process udes the following:

rds continuous assessment. sion of assessment of skills-based and sed learning, incorporating environmental principles.

sed assessment and group work, self and peer

rmulation and problem-solving skills.

ation of reasoning processes.

is to be more emphasis on qualitative - more quality interaction between teacher r.

(After Clacherty, 1995)

Teacher Education and Development

1. According to the document all teachers should be able to make a contribution to the development of aesthetic values and environmental literacy, including environmental awareness, understanding, skills and commitments to action. Environmental Education is not the responsibility of subject specialists.
2. Colleges and schools should develop and adopt environmental policies for themselves - not imposed by the authorities, but developed with their support.
3. Teacher education should be more practically orientated towards wider issues/problems in their immediate communities; (socio-economic issues), reconsidering the school as a focus and resource-base for their community.
4. Teachers should also be trained to be proactive in terms of local environmental issues, not just reactive, if at all.
5. The interaction needed to empower teachers will be a more democratic process. The existing strong environmental education network in South Africa can be seen as a vehicle for providing a needed networking structure on all levels, and to stimulate inter-relationships within departments, schools, colleges etc.

Preservice teacher education

The following proposals are listed by the document:

1. Environmental education should be a compulsory component of all teacher education, possibly with an introductory course followed by an optional specialist course of substantial length and credit value. This implies that environmental education in teacher education should be explicitly mentioned in any National Curriculum Policy Document and be incorporated into the criteria for Teacher Education.
2. Environmental education in colleges and university teacher development programmes should include:
 - * Skills such as:
 - critical thinking
 - problem solving
 - evaluation
 - value positions clarification,
 - action and advocacy skills.
 - * Social and educational processes such as:
 - community involvement,
 - action research
 - local content studies
 - * A study of environmental ethics.
 - * Appropriate learning and curriculum theory and practice

- * Resource production
 - * Appropriate knowledge of environmental issues and processes (broad view of environment), including the basic principles of ecology.
 - * Skills to manage the above in a school context.
 - * Promote personal qualities such as enthusiasm, care and commitment.
 - * A study of aesthetics in both the built and natural environments.
3. Resources should be made available without delay for teachers and teacher education. This comment addresses the problem that teacher education can be a bottle-neck in the delivery process implied by education innovation.
 4. Teacher educators play an important role in environmental education. Close, on-going contact with learning institutions is necessary to maintain an awareness of what is happening there.

In-service education

1. The environmental education approach requires a change in attitude from teacher/content centred education to learner-centred education. As it is likely that teachers will find this adjustment difficult and that in the present education context, many teachers are reluctant to give up time to in-service training, it is recognised that a number of strategies need to be explored and adopted if INSET provision in environmental education is to be effective.
2. Education Departments should thus make provision for an effective in-service system that works as a facilitatory service, not an inspection system. The concept of Action Research applies here. Working with teachers and giving recognition for good practice are needed.
3. In-service support for teachers and schools requires partnerships between colleges and universities, agencies such as NGOs and the state. Staff and financial resources should be made available for the development of materials and programmes in a consultative way.

Teacher networks and study groups in a local area are collaborative types of strategies for providing relevant in-service teacher development.

Local teacher networks are essential. Teachers should be involved in materials development.

4. In-service support for teacher educators is also a fundamental requirement.

TEACHER AND LEARNING STRATEGIES

The change in emphasis away from teaching for awareness, which may result in no more than awareness, and the need for a move towards skills and action-based learning is emphasised - this should be reflected in teacher education and thus also in schools.

From the strong emphasis in schools on transmission of information, environmental education suggests a more active participation in learning. The following characteristics should thus apply to teaching and learning:

- * A move towards thinking skills and problem-solving, towards responsibility and awareness of the consequences of actions. Methods should include case studies, issues-based work and practical involvement in real local issues. Such work should ideally have the following characteristics:
 - * local focus
 - * participatory (within schools and across schools)
 - * across boundaries (social, economic, school, local authority)
 - * problem-solving focus
 - * involve local community (industry, local authority, civic structures etc.)
 - * not subject-based, but holistic - problem/process/issue-based)
- * Teachers and students should solve problems together; the teacher's role is to facilitate learning. Active learning, as opposed to transmission, should allow students to feel part of the education process.
- * The overall style should be based on dialogue and interaction, hands-on work, learning in the context of environmental problems, issues and processes.

Evaluation and Assessment

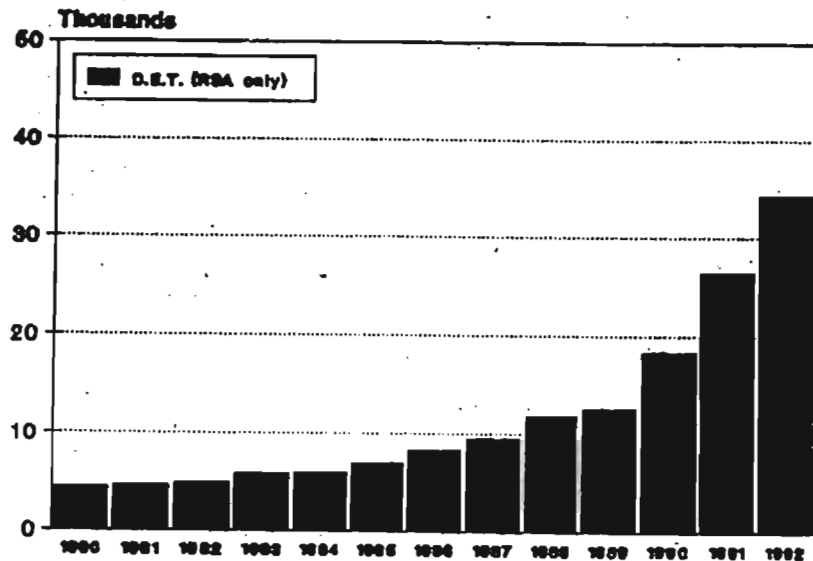
The document proposes that in order for assessment and evaluation to reflect the nature of environmental education, mainly exam-focused learning needs to be replaced. Product evaluation should be de-emphasised and there should be greater focus on process evaluation which includes the following:

- * A move towards continuous assessment.
- * The inclusion of assessment of skills-based and contextualised learning, incorporating environmental education principles.
- * Project-based assessment and group work, self and peer assessment
- * Problem formulation and problem-solving skills.
- * The application of reasoning processes.
- * There needs to be more emphasis on qualitative evaluation - more quality interaction between teacher and learner.

Implications for teachers and resource materials

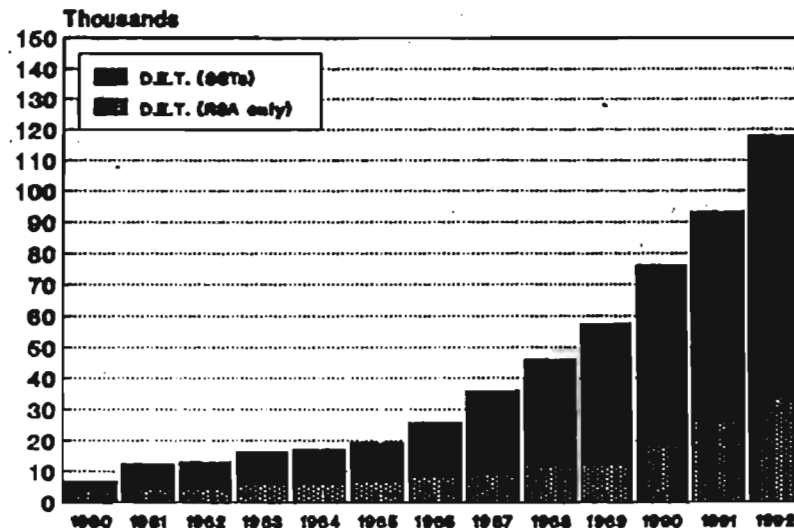
Support for teachers in coming to grips with new, fundamentally different approaches to their work will be required. The nature of learning materials will also have to be examined. At present learning and materials are separated from real life, often irrelevant and there are not clear linkages with life. Education needs to be contextualised, and assessment or evaluation processes should reflect this.

HIGHER GRADE AND STANDARD GRADE



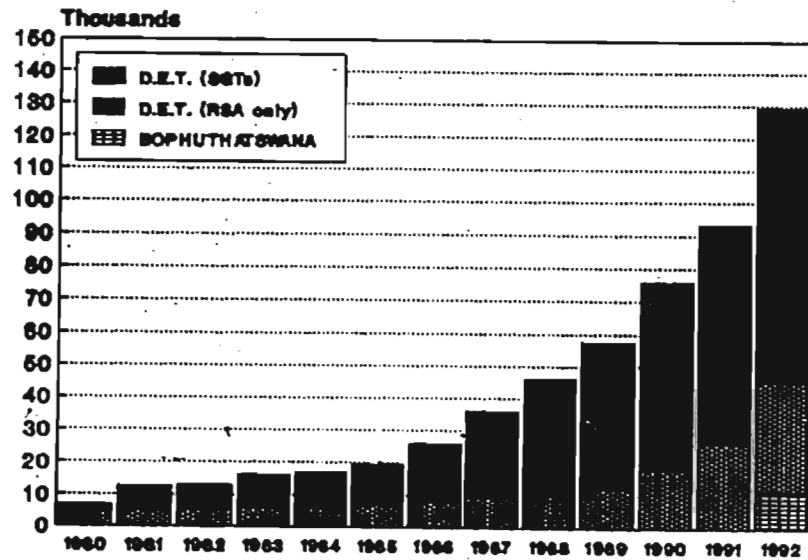
Copyright J. Smith, Oak Publications

STD 10 GEOGRAPHY ENROLMENTS: 1980-1992
HIGHER GRADE AND STANDARD GRADE
DET (RSA) and DET (8GTs)



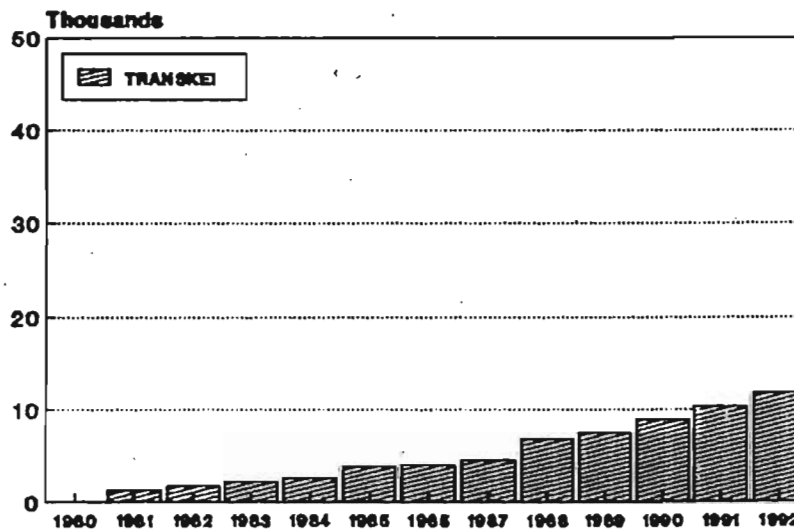
Copyright J. Smith, Oak Publications

DET: STD 10 GEOGRAPHY ENROLMENT: 1980-92
HIGHER GRADE AND STANDARD GRADE



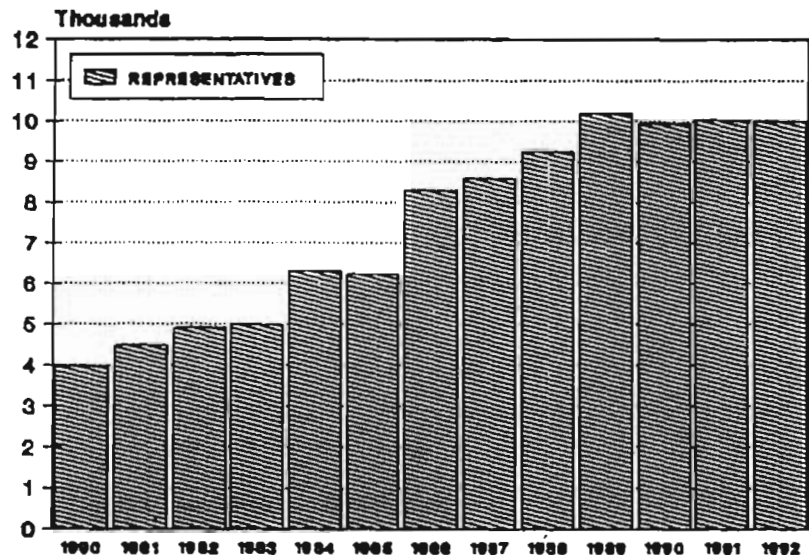
Copyright J. Smith, Oak Publications

TRANSKEI: STD 10 GEOGRAPHY ENROLMENTS
HIGHER GRADE AND STANDARD GRADE
BLACK AND OTHER DEPARTMENTS



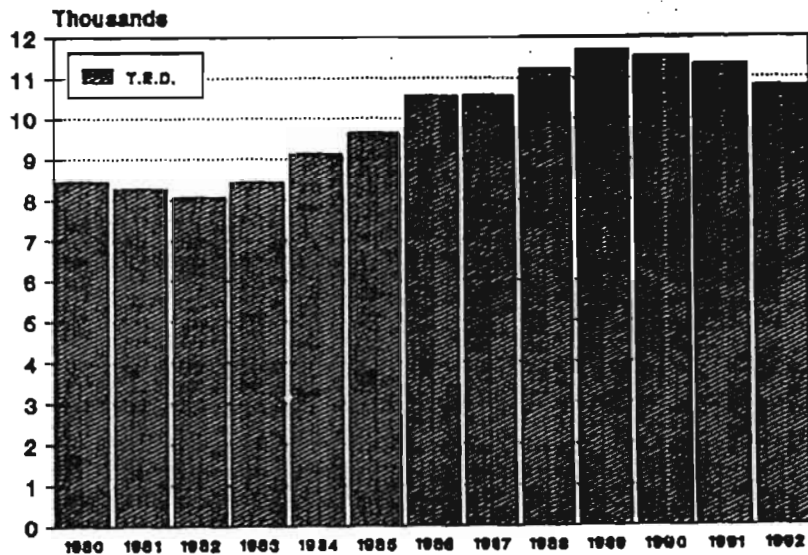
Copyright J. Smith, Oak Publications

HIGHER GRADE AND STANDARD GRADE



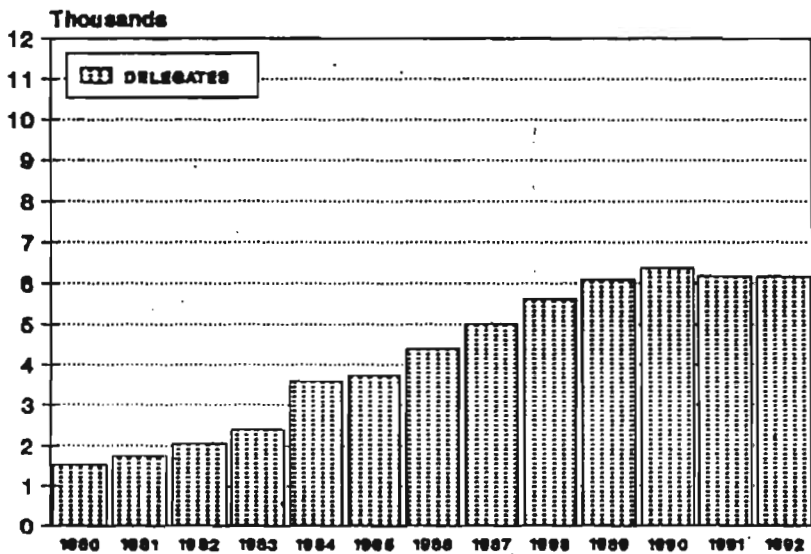
Copyright A. Smith, Gulf Publishing

HIGHER GRADE AND STANDARD GRADE



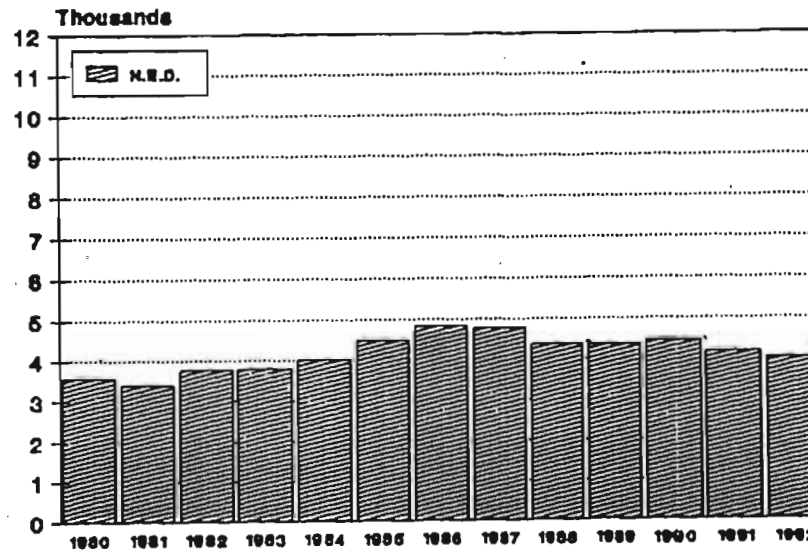
Copyright A. Smith, Gulf Publishing

HIGHER GRADE AND STANDARD GRADE



Copyright A. Smith, Gulf Publishing

HIGHER GRADE AND STANDARD GRADE

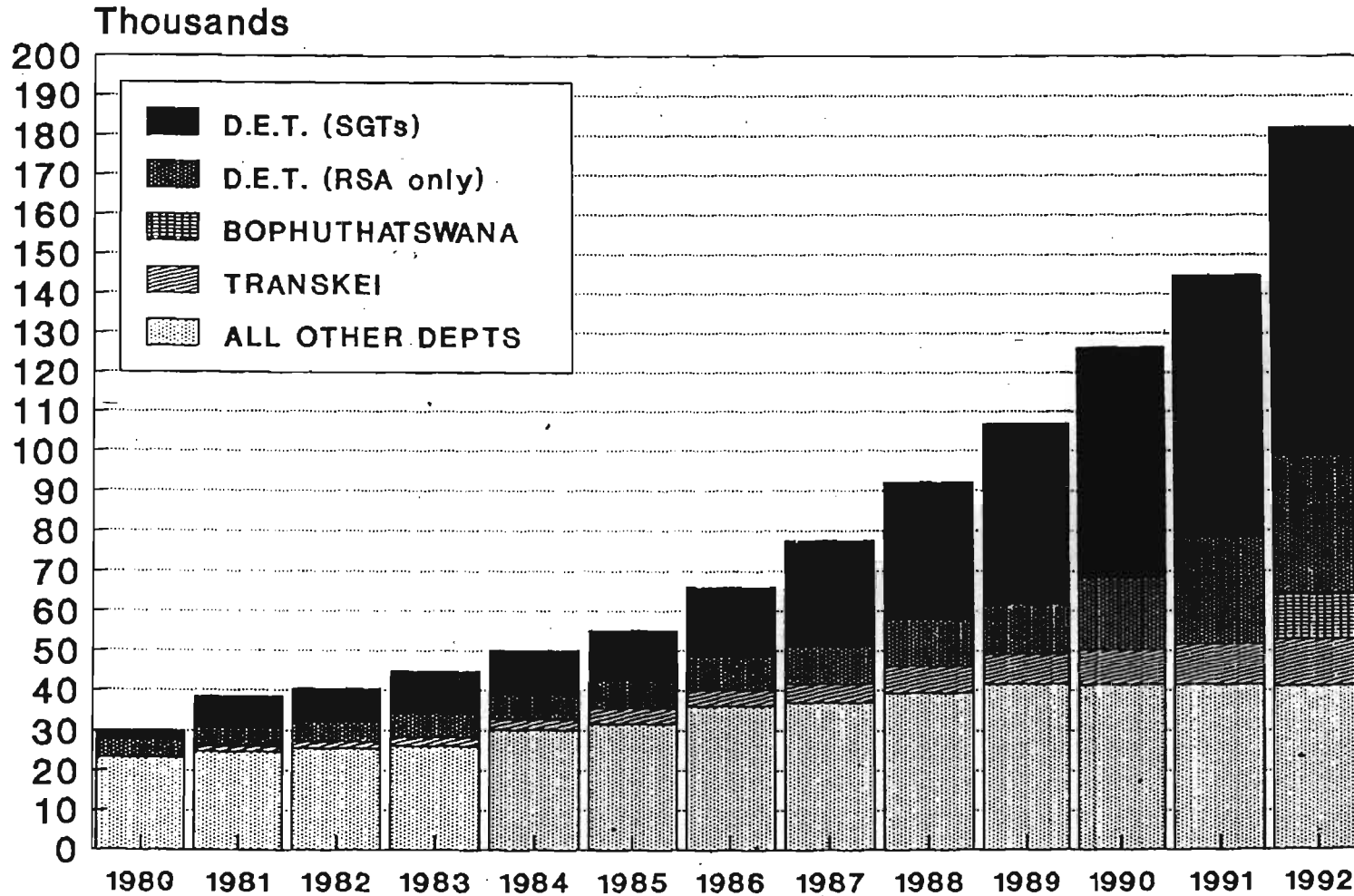


Copyright A. Smith, Gulf Publishing

STD 10 GEOGRAPHY ENROLMENTS: 1980-1992

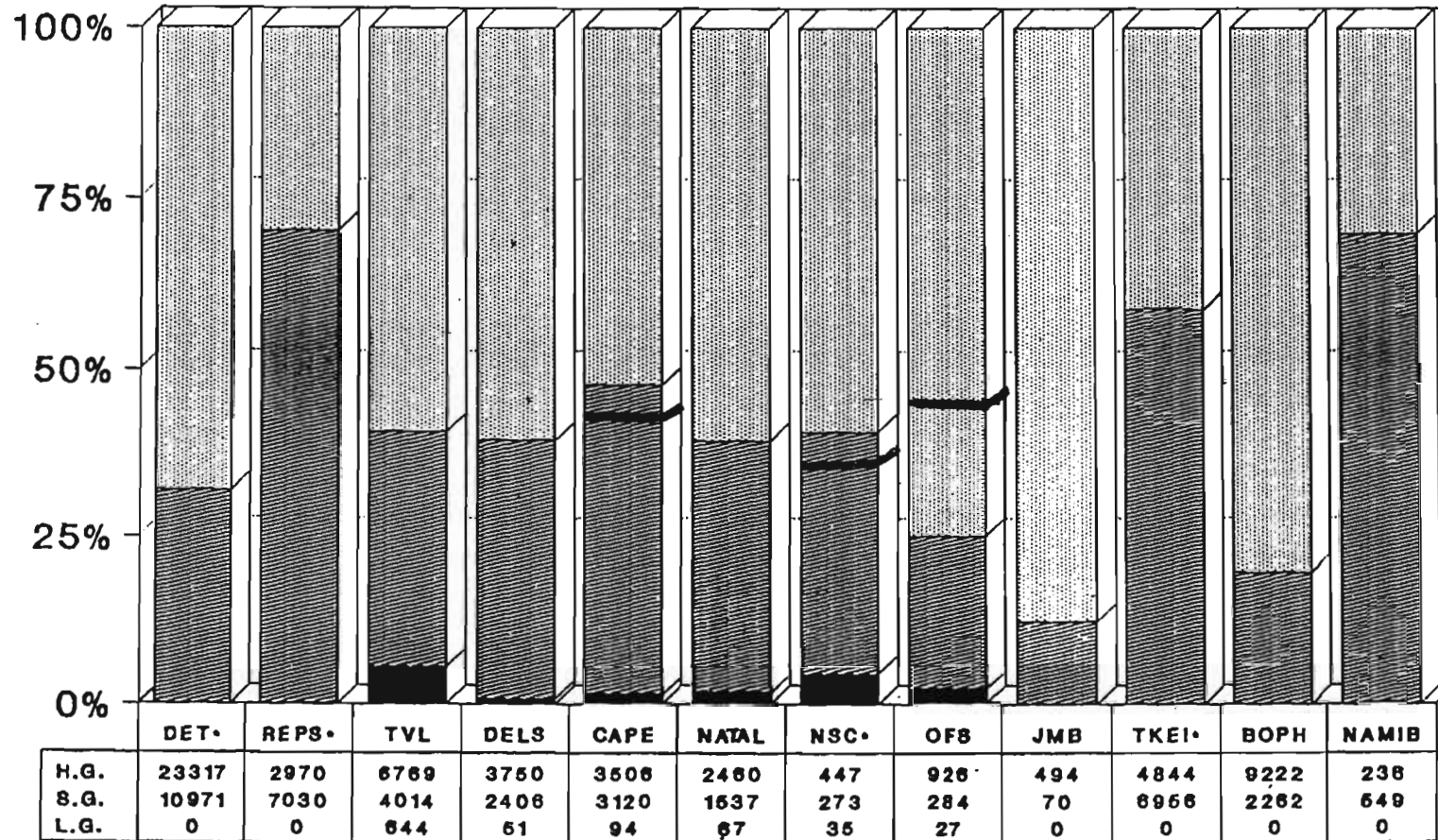
HIGHER GRADE AND STANDARD GRADE

BLACK AND OTHER DEPARTMENTS



STANDARD 10 GEOGRAPHY: 1992

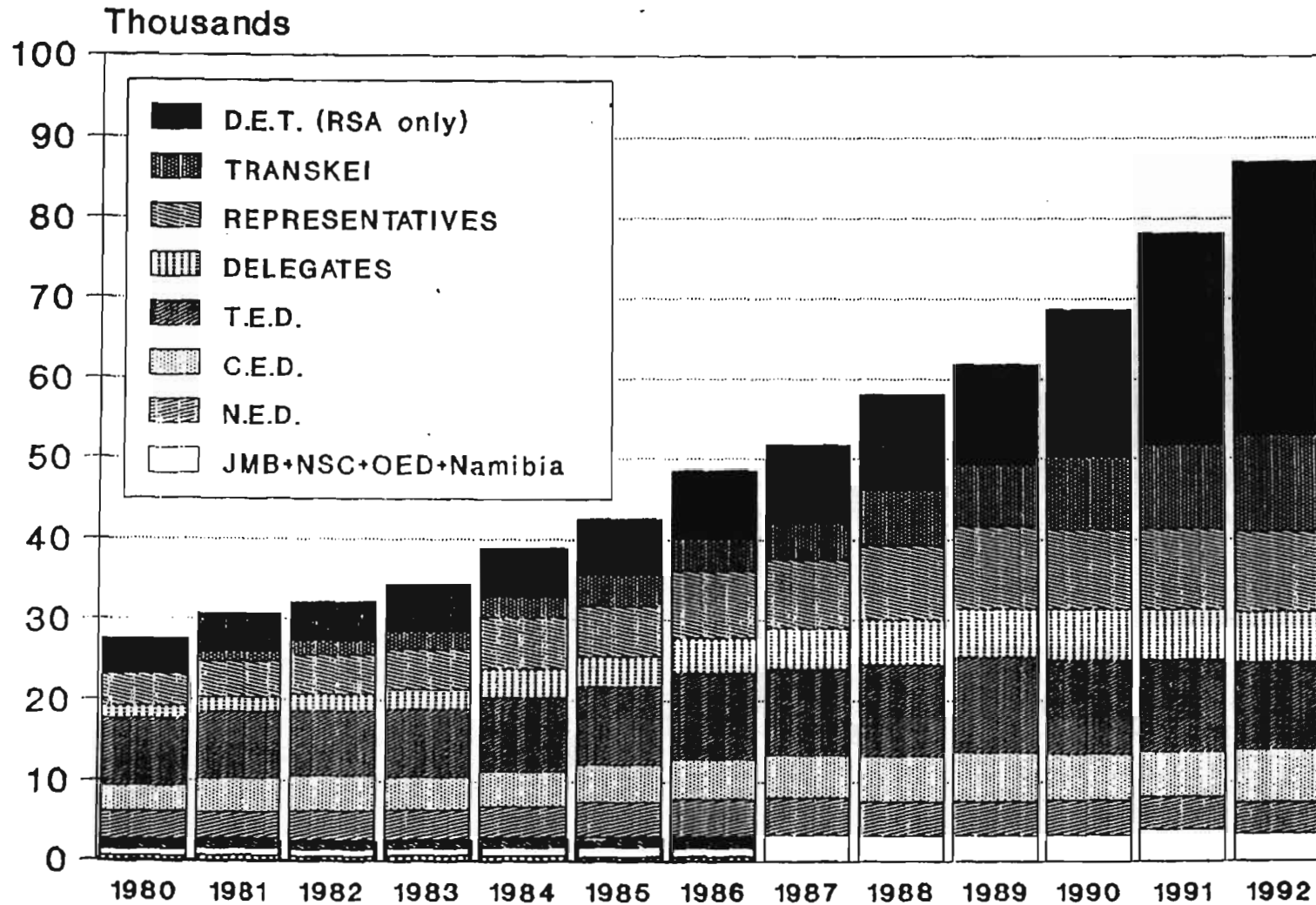
HIGHER, STANDARD AND LOWER GRADE RATIOS (BEFORE ADJUSTMENT)



L.G.
 S.G.
 H.G.

STD 10 GEOGRAPHY ENROLMENTS: 1980-1992

HIGHER GRADE AND STANDARD GRADE



APPENDIX IX

NATAL EDUCATION DEPARTMENT

WORKING DOCUMENT
WERKSDOKUMENT

SUGGESTIONS FOR A

DRAFT SYLLABUS FOR GEOGRAPHY
STDS 8, 9 & 10 HIGHER GRADE

KONSEPSILLABUS VIR AARDRYKSKUNDE
STS 8, 9, 10 HOëRGRAAD

NOVEMBER 1993

COVERING NOTE

The enclosed draft standard VIII, IX and X school Geography syllabus has been prepared in response to a request by members of the Natal Education Department Geography Syllabus Committee to produce a document which may form the basis of their submission to the National Core Syllabus Committee.

The following considerations were taken into account when drawing up this document:

- The position of Geography in secondary schools appears to be under threat. Recent policy documents such as the Educational Renewal Strategy and the older H.S.R.C. report produced by the De Lange commission both relegated Geography to an inferior position. It is apparent that policy makers do not place a high value on the contribution which Geography (as announced by the present syllabus) makes to the education of pupils.
- A number of University departments and the South African Geographical Society have declared their dissatisfaction with the present Geography syllabus and the suggested amendments to it. They have voiced their misgivings in the strongest terms.
- The direction taken by school Geography in countries such as Great Britain indicates the exciting possibilities which do exist for school Geography. (I have made considerable use of British Syllabi in the preparation of this draft.)

It is my conviction that the present Geography syllabus is in need of drastic revision; past revisions, and the present proposals of the Core Syllabus Committee are mere titivations of a syllabus based on the Geography of the 1960s. These timid efforts to update an old outdated syllabus have done Geography a grave disservice - they have failed to demonstrate the true educational potential of modern Geography.

I am convinced that it is possible to produce a Geography syllabus which will proclaim the relevance of the discipline to pupils, parents and education policy makers. Such a syllabus must focus on manifestly by important issues, and it must provide pupils with a range of useful skills. If it fails in this, no place will be found for it in tomorrow's schools.

This is a rough draft, it was prepared in indecent haste, I have had to leave some parts incomplete. Your comments on this draft syllabus would be greatly appreciated - we need to canvass as wide a spectrum of opinion as possible.

C.S. Nightingale.

June 1992

INTRODUCTION AND RATIONALE

EMPHASIS ON SUSTAINABLE DEVELOPMENT

The underlying theme of this syllabus is the need to promote sustainable development. Throughout the world there is a growing awareness of the fact that the life support systems of this planet are under severe strain; our profligate use of resources and abuse of ecosystems is undermining the ability of this planet to provide a decent livelihood for our growing human population. The question which all should ask is: 'What kind of world will we leave to our children?' It was this concern that prompted the coming together in Rio de Janeiro of the greatest number of delegates at the largest conference ever held - a conference called to consider the threats to earth's environments. The gravity of the issues debated and the importance attached to them was demonstrated by the fact that a hundred Heads of State were at the Conference.

In the past development has often been at the expense of the environment; now there is a growing realisation that development which does not promote the integrity of the environment is a recipe for disaster. An increasing number of people are arguing that sound environmental management is impossible without the resources made available through development. Both greed, which promotes development regardless of the environmental costs; and grinding poverty, which makes desperate people destroy life giving ecosystems, are equally a threat to our existence.

This syllabus promotes the ideals of 'development education', the aim of which is to enable pupils to comprehend and participate in the development of themselves, their community, their nation and the world. Poverty, conflict, power, justice are some of the issues which reoccur; inevitably an education which deals with such issues promotes personal development. It is education for development, aiming to foster the awareness and skills needed to participate in responsible decision making. An important feature of this syllabus is that it will contribute to a student's economic and political understanding. Contemporary literature stresses economic understanding as an important cross curricula theme, with Geography making a major contribution. The syllabus also makes provision for students to gain insights into the political dimensions of development issues.

It is the conviction that it is the responsibility of educationists to instil an environmental ethic in the minds of their pupils that has motivated the choice of the major themes which form the basic structure of this syllabus. The emphasis on sustainable development encompasses both physical and human environments, and is a motivation for understanding the main principles of Geography and acquiring Geographical skills.

VARIETY OF APPROACHES TO GEOGRAPHY

A study of development issues encourages varying approaches to geography since they cross the boundaries of physical and human Geography. The search for answers to development problems must take physical processes into account, it also requires spatial and temporal analysis, as well as an examination of the activities, motives and values of people and the environments and contexts which effect them. Thus in seeking to understand people-environment relationships, the syllabus encourages varying approaches to Geography. Some parts focus on individuals; others on groups and organisations; and still others on social, economic and political contexts or structures. These are complemented by the 'scientific' approaches to the search for explanations of change in the physical environment.

BROAD RANGE OF SKILLS

By encouraging a number of approaches to Geography this syllabus also promotes the acquisition of the varying skills associated with them, for example skills such as identifying values (human Geography) and hypothesis testing (physical Geography). A balanced range of skills should be acquired and a variety of types of sources used. Both quantitative and qualitative methods should be employed.

FLEXIBILITY

Another important characteristics of this syllabus is its flexibility, both in the choice of content and methods of assessment. This flexibility allows students and centres to

- (i) develop their interest and
- (ii) make the best use available of resources.

ACKNOWLEDGEMENT

I wish to acknowledge with gratitude the stimulus and wealth of ideas given by the Geography 16-19 Curriculum Development Project produced under the auspices of the United Kingdom Schools Council, and a number of recently compiled British School Syllabi based on that document.

THE NATURE OF GEOGRAPHY AS A DISCIPLINE

1. We believe that Geography is indispensable to understanding the modern world. It should be an exacting, challenging, but also enjoyable discipline.
2. We set out our broad understanding of the nature of Geography :
 - (a) Geography explores the relationship between the Earth and its people 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 inter-relationships that create or influence those features.
 - (c) The study of **space** seeks to explore the relationships 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 interrelationships between the two.
4. These three elements - place, space and environment - form the core of Geography. Uniquely, they create a bridge between the humanities and the physical sciences. Geographical study should be pursued at local, regional, national, continental and global scales. Furthermore, changes are constantly under way: the examination of change in place, space and environment is integral to the study. Using a wide range of skills, the subject identifies, analyses, and helps to clarify some contemporary problems concerning peoples and their environments. In this sense Geography also asks the question 'How ought?'

AIMS

In the light of our understanding of:

- the needs of senior pupils who must be prepared to play their part in the rapidly evolving South Africa;
- the purpose of a national curriculum
- the nature of Geography and the vital contribution which it can make to the educa-

tion of young people
We believe that Geography should

- (a) stimulate pupils' interest in their surroundings and in the variety of physical and human conditions on the Earth's surface;
- (b) foster their sense of wonder at the beauty of the world around them;
- (c) help them to develop an informed concern about the quality of the environment and the future of the human habitat; and the sustainability of economic enterprises;
- (d) thereby enhance their sense of responsibility for the care of the Earth and its peoples.

Moving on from the general statement, we concluded that the study of Geography should more particularly aim at leading pupils to:

- (a) acquire a framework of knowledge about locations and places that will help them to set local, national, and international events within a geographical context, and that will support their development of geographical understanding.
- (b) understand some of the important characteristics of the Earth's major physical systems - its landforms, weather and climate, hydrological and ecological systems - and the interaction among those systems;
- (c) understand the significance of location and of distribution patterns in human activities and physical processes; how places are linked by movements of people, materials and information, and by physical, economic, social and political relationships; and the interdependence of people, places and environments throughout the world;
- (d) understand some of the relationships between people and environments, including both:
 - (i) the influence of environmental conditions on human activities, and
 - (ii) the varied ways in which societies with different technologies, economic systems and cultural values have perceived, used, altered and created particular environments;
- (e) develop a sense of place: a feeling for the 'personality' of a place and what it might be like to live there;
- (f) acquire the knowledge and understanding about the physical and human processes that bring about changes in place, space, and environments, and a critical appreciation of the consequences of those changes;
- (g) develop awareness and appreciation of the ethnic, cultural, economic and political diversity of human society, and its geographical expression;
- (h) acquire the knowledge and develop the skills and understanding necessary to identify and investigate important cultural, social and political issues relating to place, space and environment, with sensitivity to the range of attitudes and values associated with such issues;
- (i) acquire techniques and develop skills and competencies necessary for geographical enquiry, and of value for other purposes, especially the making and interpretation of maps, the use of information technology and the conduct of fieldwork; and
- (j) develop intellectual and social skills, including the ability to observe, analyse, and communicate.

Because of its breadth of content and methodology, school Geography has many links with other subjects in the curriculum and contributes strongly to cross-curricular themes, skills and dimensions. The aims stated above enable this to happen while focusing on what is specific to Geography.

CURRICULA AIMS OF THE SUBJECT

It is intended that this syllabus facilitate a variety of modes of learning, teaching methods and approaches to Geography and will provide candidates with the opportunity to :

- study Geography as a means of understanding the geographical themes identified in the syllabus;
- understand that physical and human elements in Geography are closely interrelated and interact with each other;
- appreciate that the geographical changes within a particular place, region or country may be affected by decisions made and processes occurring in other places, regions and countries;
- develop a range of skills including enquiry skills, problem solving, decision making and report writing;
- appreciate the contribution which Geography, with its various philosophies and approaches, can make to understanding contemporary issues;
- realise that geographical studies are concerned with explanations and understanding which, because of the complexity of the world, may be tentative and incomplete.

It is also intended that courses based upon this syllabus will

- be complete in themselves and perform a useful educational function for students not intending to study Geography at a higher level and
- provide a suitable preparation for higher education course in Geography and other subjects.

ASSESSMENT OBJECTIVES

The three sets of assessment objectives listed below provide a general indication of the abilities, knowledge and understanding which the examination as a whole, in conjunction with the listed aims, key themes and detailed material, will test. These sets of assessment objectives, although clearly distinguished below, obviously interact and overlap because both geographical skills and attitudes, values and approaches to Geography may be considered as contributing to and involving knowledge and understanding. Individual questions will test more than one set of objectives.

KNOWLEDGE AND UNDERSTANDING

Candidates will be expected to demonstrate and communicate a knowledge and understanding of

- a sense of place and an understanding of relative location at a variety of scales;
- geographical themes and how they might be applied to a variety of physical, economic, technological, social and political environments;
- the interactions within and between the elements of physical and human Geography;
- the characteristics and effects of changes in physical and human environments and the processes which influence them;
- how changes in one place, region or country may be influenced by decisions and processes occurring in other places, regions and countries.

GEOGRAPHICAL SKILLS AND PROCESSES

Candidates will be expected to demonstrate and communicate their

- ability to identify and critically to evaluate issues and problems and present reasoned responses to them and to make decisions which may often be on the basis of limited evidence;
- ability to initiate, implement, report on and evaluate the procedures of a geographical enquiry;
- awareness of and ability to make use of a range of sources of information;
- ability to observe, collect, record, describe, analyse and present information using appropriate methods;
- ability to explore evidence, describe, analyse, interpret and hypothesise from it, and synthesise;
- ability to identify geographical changes from source materials and analyse their effects and the responses of people to them.

ATTITUDES, VALUES AND APPROACHES TO GEOGRAPHY

Candidates will be expected to demonstrate and communicate a critical awareness of

- the significance of people's attitudes and values to the candidate's understanding of geographical themes and change;
- the relative priority given to economic, social and environmental attitudes and values by individuals, groups, organisations and governments;
- the role(s) played by decision-makers in influencing change;
- the opportunities and constraints facing different people within a society, and amongst different societies at varying levels of development that affect attitudes and values;
- the varying ways of studying geographical issues.

EMPHASISING SKILLS AND PROCESSES

One of the guiding principles of the scheme of examination is that processes, skills and techniques of particular value in geographical studies at this level should be meaningfully introduced, where relevant, in the context to investigative learning arising from the study of the modules.

The following categorisation and listing is intended to establish a norm of expectation of students, rather than provide an exhaustive inventory. There is no wish to inhibit teachers and candidates from introducing further innovative techniques where these are thought to enhance the candidate's learning experiences.

It is hoped that the candidate will come to appreciate that the components separated below are part of a total geographical methodology, progressing from inductive observation (data collection) through analysis to generalisation and theoretical explanation or, alternatively, research design, data collection and analysis to test an *a priori* hypothesis.

Applications of these skills will arise within candidates' Individual Studies and in the examination they may be asked to demonstrate a critical understanding of the nature and relevance of a technique or their ability to interpret the results of an application rather than working through a lengthy, contrived exercise. As indicated in the specimen questions, data response exercises will test the ability to interpret and apply evidence presented in the form of maps, diagrams, photographs and data tabulation.

The growing availability of the microcomputer (and suitable software) as a classroom tool will facilitate rapid application of statistical procedures to 'real life' data. Increasingly, attention will focus on the need for candidates to understand the principles of data manipulation and what significance can be attached to the results. It will also allow greater emphasis on the interpretation of data rather than lengthy preoccupation with the statistical techniques themselves.

INTELLECTUAL SKILLS AND PROCESSES

Reference skills and processes - ability to make use of a variety of sources for obtaining information.

Communication skills and processes - ability to present information in a clear and appropriate way.

Interpretative skills and processes - ability to give meaning to data.

RELATED TECHNIQUES

- data collection through fieldwork.
- data collection from various media-type/slide book/journal/film, etc.
- TRANSFORMATION OF DATA: INTO GRAPHS (LINE, HISTOGRAM, PIE, RADIAL, SCATTER); MAPS (SKETCH, CHOROPLETH, ISOPLETH, TOPOLOGICAL)
- landscape sketching.
- INTERPRETATION OF DATA: GRAPHS (LINE, HISTOGRAM, PIE, RADIAL, SCATTER); MAPS (SKETCH, CHOROPLETH, TOPOLOGICAL, TOPOGRAPHICAL AT VARIOUS SCALES; PHOTOGRAPHS (VERTICAL AIR, OBLIQUE, GROUND LEVEL); DIAGRAMS NUMERICAL DATA.
- SIMPLE NETWORK ANALYSIS.
- ANALYSIS OF DOCUMENTARY EVIDENCE e.g. OLD MAPS, PHOTOS, ADVERTISEMENTS, questionnaires etc.
- ANALYSIS OF ATLASES.

Evaluative skills and processes - ability to consider evidence and form a conclusion.

- role play
- exercises/games.
- DECISION-MAKING EXERCISES.
- discussion.

Conceptualising skills and processes - ability to organise information to form a concept or generalisation.

- discussion.
- research and investigation.
- prediction.

Hypothesising skills and processes - ability to formulate hypotheses and to test and reformulate on the basis of evidence.

- classifying.
- APPLICATION OF UNDERSTANDINGS TO NEW SITUATIONS

The candidate's ability to use the techniques in CAPITALS in the table above may be assessed in the written papers. All the techniques listed are appropriate to the candidates Individual Studies, particularly those which are not assessed in the written papers.

THE SCHEME OF ASSESSMENT

Note: This must be negotiated but will probably look something like this.

Assessment will be by means of an externally assessed written paper carrying 70% of the marks, and by either an externally assessed practical paper or a folio based on coursework (internally assessed and externally moderated) carrying 30% of the marks.

Differentiation in the externally assessed paper will be achieved by using questions requiring responses that can be made at different levels. There will be a detailed, positive marking scheme by which markers can give credit for different levels of answer. For the Coursework, teachers will assign task to individual candidates according to the capabilities of each. Coursework will be marked on a common scale for all candidates, the marking criteria being designed to differentiate across the complete ability range.

Paper 1 (3 hours). A common paper which will be divided into 3 sections. Section A in which each question must be answered by all the candidates. This will sample all the work covered in the Standard Ten year. The majority of the questions will be of the short answer type (multi-choice etc.) Section B will be on Africa and Section C on The Republic of South Africa. Candidates will be required to answer one question from each of these sections and one additional question from either section. In each paper all questions will be structured and there will normally be an incline of difficulty in each question. Data and stimulus material will be used in each section.

The weighting of Paper 1 in the examination is 70%.

EITHER

Paper 2 (2 hours). Practical and Applied Geography (2 hrs). Candidates must answer each question. These will refer to a task or problem for which data and/or maps will be provided to enable unfamiliar situations to be presented to the candidates. Candidates will only be expected to draw on Core Topics in Standards VIII, IX and X to provide explanations. Data will also be used to test interpretation.

Questions will be structured to test knowledge and understanding and application of techniques for collecting, representing and analysing data. These will link with the formulation of a design for undertaking specific tasks based on the information supplied in the form of maps and data. Reasoned judgments will be sought.

The weighting for Paper 2 in the examination will be 30%.

OR

A folio based on coursework. Weighting 30% of the final total. Further information regarding the nature and assessment of the folio appear on pages 10 and 11 and in Appendixes B, C and D.

WEIGHTING OF ASSESSMENT OBJECTIVES

The distribution of marks in the table below illustrates the varying emphasis of the sets of assessment objectives in the first written paper and the practical paper or the folio based on coursework. The sub-total for each set of assessment objectives is approximate to reflect the fact that the objectives overlap and interact with each other. The values of each assessment objective in the written papers and folio are also approximate. The column totals will be as stated.

TABLE

Sets of Assessment Objectives	Written Paper 1	Practical paper or coursework	Sub-totals
Knowledge and understanding	40	7	47
Geographical skills	15	16	31
Attitudes, values and approaches to Geography	15	7	22
Total (% of marks)	70	30	100

GRADE DESCRIPTIONS

The following Grade Descriptions will be used by Chief Examiners and Moderators :

Grade descriptions are provided to give a general indication of the standards of achievement likely to have been shown by candidates awarded particular grades. The grade awarded will depend in practice upon the extent to which the candidate has met the assessment objectives overall and it might conceal weaknesses in one aspect of the examination which is balanced by above average performance in some other.

Ability

Lower Grade

Standard Grade

For LOWER GRADE, the student is likely to have shown ability to

For STANDARD GRADE, the student is likely to have shown the ability to

in relation to knowledge

recall basic information relating to the syllabus content and demonstrate an elementary level of locational knowledge.

recall a wide range of information in sections of the syllabus and, in so doing, will reveal a basic level of locational knowledge.

in relation to understanding

demonstrate a comprehension of simple geographical ideas, describe simple geographical relationships.

show not only a comprehension of important geographical ideas, concepts, generalisations and processes as specified in the syllabus, but will also demonstrate this comprehension, where required, in a range of situations; social, economic, political and environmental. The candidate will be able to describe and account for interrelationships between people and their environment.

in relation to skills

be able to observe, record and attempt to classify geographical data, to use a range of source materials, including maps; to draw simple sketch-maps; and construct diagrams such as a bar graph; to communicate information by brief statements.

be able to select data from a variety of sources, primary and/or secondary, to plan logically a simple geographical enquiry from observations to ultimate conclusion. Techniques used may include map interpretation at different scales, photographic analysis and a range of graphical and numerical information such as flowline diagrams or simple census extracts. Be able to identify the main solutions to a problem and evaluate these individually in a logical way but showing limited comparative evaluation of the solutions.

in relation to values

recognise, at an elementary level, the claims of differing systems of values which influence economic, environmental, political and social issues.

show an increased comprehension of judgments made on economic, political environmental and social issues.

HIGHER GRADE

For Higher Grade the candidate is likely to have shown the ability to

in relation to knowledge	recall detailed facts from across the Syllabus, using accurate geographical terminology, and be able to name good illustrative examples including relevant locations at the appropriate scales.
in relation to understanding	be able to support their comprehension of the essential elements of the Syllabus by explaining causal and interrelated factors, extrapolating likely developments, applying principles learnt in one situation to another, analysing conflicts and by providing a synthesis.
in relation to skills	use appropriate analytical techniques, interpret maps and photographs to show an accurate 'feel' for the landscape, draw concise and accurate annotated sketch maps and diagrams and demonstrate the ability to select, classify and interpret information in order to arrive at well reasoned conclusions; identify the main solutions to a problem and show a thorough evaluation of each solution individually and in relation to the others.
in relation to values	show reasoned understanding of differing viewpoints and evaluate those that could be accepted as both justified and feasible before coming to a conclusion.

COURSEWORK

Coursework (if chosen) will contribute 30% to the final mark. This will be marked internally and then moderated. The material will be presented in the form of a folio. Further information is contained in Appendix.

THE FOLIO

- (a) The Folio must consist of two separate and different pieces of work covering a range of ideas and questions, one based upon the optional units, the other based upon a cross-unit approach, i.e. arising out of the key ideas and questions from more than one of the modules.
- (b) Each of the two pieces of work will be worth 15%. Each should take approximately 5 hours' classroom time.
- (c) The brief of each Folio Item must be so structured as to allow candidates of all abilities to reveal their abilities and skills in a positive way.

- (d) The pieces of Folio work should be structured to allow differentiation and must be selected from two of the following :

a research assignment: this could, for example, take the form of a project brief based upon an idea/question which allows candidates to engage in a piece of research using primary and/or secondary source material.

a practical test: for example, in which a set of statistical data is to be converted into graphs, maps etc., possibly using computers, and observations made about the conclusions drawn from them. Similarly, candidates could be expected to carry out a test in the field or laboratory.

an extended essay: in which, for example, a local or national issue is considered, analysed, and presented, with the candidate's considered opinions.

a decision making or problem solving exercise: in which a problem is identified, related data collected and analysed, values regarding the problem analysed and clarified, outcomes predicted and decisions arrived at.

a simulation exercise in which the candidate is engaged in the representation of a real life situation.

- * an oral presentation - either as an individual production, or as part of a group project (a booklet containing a list of guidelines will be made available).
- * the production of a geographical game in which the underlying geographical principles are clearly understood and demonstrated. This could be a computer game.
- * the production of a video: for example, in which a local issue is considered, analysed and presented; including an interpretation and summary of the issue(s) involved.
- * the production of a hardware model, such as a 3-dimensional wood model: again, it would have to be accompanied by a 'brief' outlining of the nature of the project, its aims, an interpretation of the work and conclusions.
- * Any other method of assessment which meets the assessment objectives and criteria of the syllabus and is approved by the Examining Group.

NOTE * : Teachers wishing to use any of these techniques must contact the relevant authorities before embarking upon the exercises.

- (e) It is permissible for the two pieces of Folio work to be linked in some way as long as the Regulations are followed.
- (f) It is assumed that the Folio of a candidate will grow out of or be part of a normal teaching-learning programme: it should, however, be directed towards the final assessment.

If appropriate, any piece of work in the Folio may be common to the whole entry.

Students who choose the coursework option are required to produce two pieces of work which they must be able to claim as their own. The teacher, parents and friends may assist as resource people, but the extent of assistance must be acknowledged.

The project must be concerned with a geographic issue which must first be defined by the student. Then, using geographic skills, either primary data from research carried out in the field, or secondary data from archival sources must be obtained and analysed to find the solution to the problem.

Concepts to be applied include: location, distance, distribution, spatial interaction, temporal change, region, scale and classification.

There should be evidence of the skills and processes being used in a geographical context : observation, mapping, listing, identifying, categorising, defining, comparing, hypothesising, judging.

Suggestions as to the types of projects which could be attempted, are given in Appendix D, but the variety is subject to the limitations of available time and access to data and resources.

The study should not be over-burdened with too many problems/issues or hypotheses to investigate, one or two are usually sufficient.

Studies should be clearly defined and straightforward with carefully stated problems/issues or hypotheses. At the same time, the teacher should be aware of problems/issues and hypotheses which are so low-level, descriptive or trite as to be obvious from the outset. Great care should be given to the choice of suitable topics, ensuring that the candidates have sufficient background knowledge and understanding and skills to do justice to the chosen topic.

Some investigations often lack a spatial (i.e. 'geographical') component. A Study should be locational and should stress the need for explanation of the patterns/features observed otherwise they lack value to the candidates understanding of the issues in question.

The Study presents an opportunity for candidates to consider issues which involve attitude/value clarification and judgment.

When using secondary data, care must be taken to ensure that candidates do not merely repeat it in their Study. Data must always be used/processed to further the arguments.

Because of the variety of options allowed for in folio, it is difficult to provide guidelines for the choice and assessment of the material to be produced by candidates. Some criteria are given below. This can be used by candidates as an aid in planning and completing their reports. An assessment guide follows - this too can be shown to candidates.

Selection of topic/Setting the scene

A good question, issue or problem for study is one which

- [a] is concerned with people and their environments (not just one or the other);
- [b] is capable of being subdivided into one or two specific questions or hypotheses for study;
- [c] provides adequate possibility for information collection and background reading;
- [d] is manageable in the time available;
- [e] is likely to lead to a conclusion or answer or decision;
- [f] has possible wider relevance than the specific example studied.

The introductory 'scene setting' section of each report should do the following:

- [a] introduce the broad area of concern;
- [b] explain the reasons for study;
- [c] refer to the specific questions which are being asked or the hypotheses being tested;
- [d] provide sufficient general background (including location maps) necessary to introduce the topic;
- [e] mention any possible wider significance or broader implications of the study.

Data Collection and Recording

This section should :

- [a] explain the nature of the information required in order to answer the question or problem posed;
- [b] describe what kind of data was needed, and when and how it was collected;
- [c] give an account of any problems experienced in data collection;
- [d] show evidence of the data collected (if necessary by referring to Appendices);
- [e] describe how the data is used in the study;
- [f] present the data in an organised and appropriate manner.

Analysis and Explanation

This section should show evidence that appropriate methods and techniques have been chosen and used to analyse and explain the information collected, with a view to moving towards answers and/or solutions.

It should therefore do some of the following:

- [a] provide accurate illustrations of appropriately applied analytical techniques;
- [b] refer as well to descriptive and interpretative material by way of analytical commentary;
- [c] apply or test the relevance of models and theories;
- [d] put forward alternative models and/or theories;
- [e] analyse items individually, but also attempt to summarise and recognise overall links and/or trends across items;
- [f] show an appreciation of the values position of the decision makers, and analyse the steps followed in the values classification.

Evaluation and Conclusion

- [a] return to the question(s) posed at the beginning;
- [b] summarise and 'draw threads together';
- [c] evaluate specific findings against more general theories and themes;
- [d] point out the wider significance of results;
- [e] make some imaginative and creative suggestions;
- [f] draw comparisons between the study situation and other situations;
- [g] put forward one's own views and recommendations;
- [h] suggest further aspects of enquiry.

Presentation

The presentation of the report is an important part of the complete enquiry. It refers to far more than just clear handwriting and neat diagrams. Also important are :

- [a] labelling of all maps and diagrams;
- [b] finding and selecting appropriate ways to present all information;
- [c] supplementing the report with relevant (personal) photographs, if appropriate;
- [d] acknowledging all data sources and references;
- [e] subdividing work into clear sections;
- [f] ensuring that text and figures are easily handled and capable of being 'read' together.

In general, teachers should look for evidence of understanding of the process of enquiry, for originality and individuality, and for the exercising of the candidate's critical ability.

The individual study report should comprise written text, supported by relevant maps, diagrams, tables and other illustrations (numbered Figure 1...n) in whatever proportion is considered appropriate by the candidate.

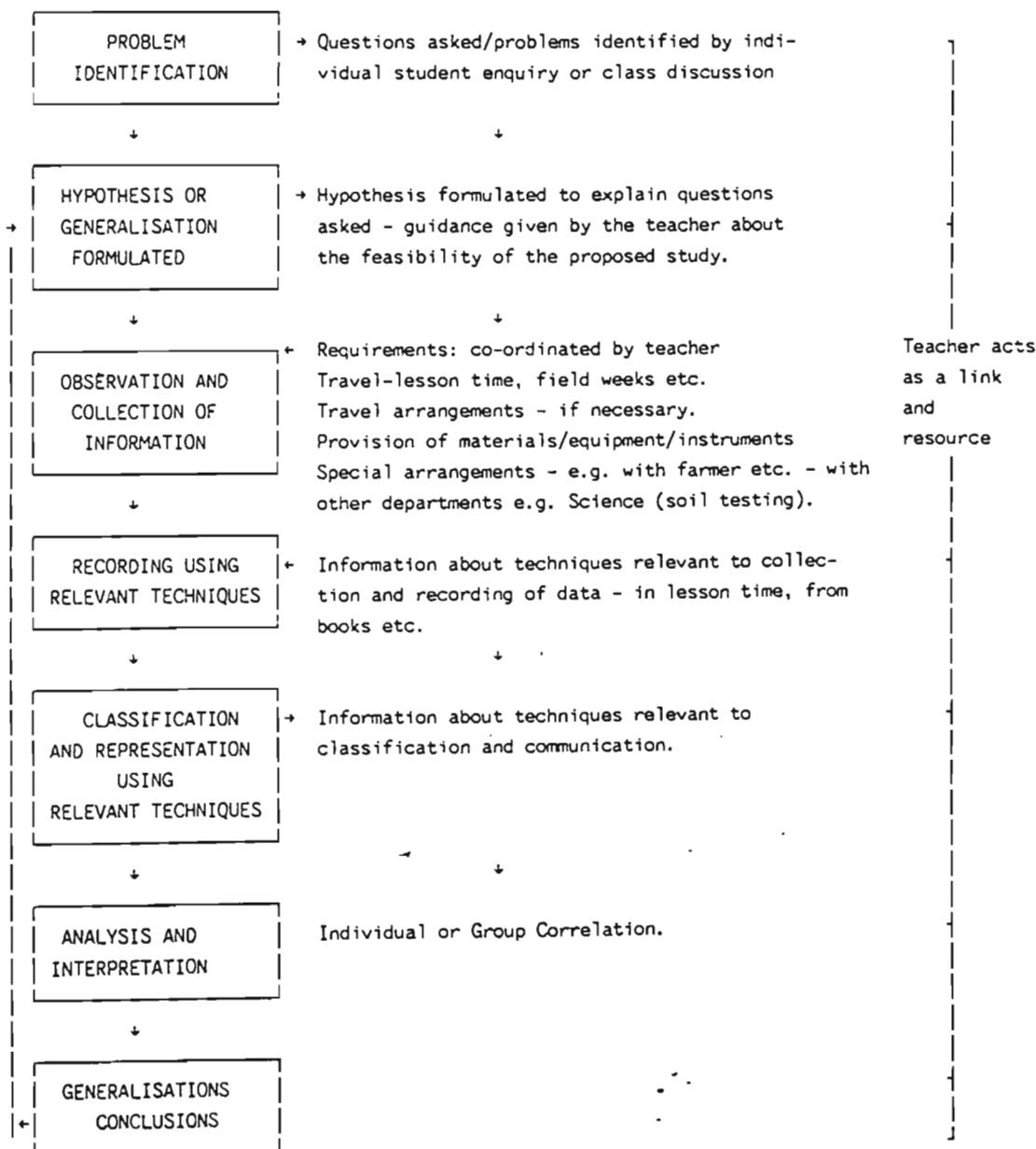
The text must be between 1500 and 2000 words in length.

The report must be presented on A4 paper (8mm spacing) secured together in a simple A4 lightweight folder with the candidate's name, examination number and centre number clearly written on the cover sheet. A 3cm margin should be drawn on the left of each sheet. All maps and other illustrations should preferably be reduced to fit A 4 paper, but where absolutely necessary, they should be folded down to size and included within the cover. All figures should be presented neatly, but not over-elaborately, on plain paper. The choice of colour used in illustrations should be related to sound cartographic practice. The text should be legibly handwritten or typed.

Good relevant photographs are permitted, but their numbers should be kept to a minimum, and they should not be larger than half-plate (16cm x 12cm), and be secured by adhesive (not mounting corners).

All sources and references should be clearly acknowledged at the end of the report.

GENERAL APPROACH TO GEOGRAPHICAL ENQUIRY



OBSERVATION, COLLECTION AND RECORDING

The candidate should attempt to :

- (a) demonstrate investigative (information-collecting) skills
- (b) clearly describe methods used in collecting information
- (c) present a clear record in their submission of the information observed and collected by the representation of field notes through the use of appropriate techniques: e.g. written description; appropriate sketch and or photographs; data counts, measures and the results of questionnaires in unsorted tabular form

Field notes/sketches must be retained in order to verify (a), (b) and (c).

- 1-2 Evidence of some observation, collection and recording achieved.
- 3-4 Observation, collection and recording of a variety of information from more than one source. Some care for accuracy. A brief indication of the methods used.
- 5-6 Observation, collection and recording of a wider range of information from a variety of sources. A greater care for accuracy. A more detailed outline of methods used.
- 7-8 Observation, collection and recording carried out competently and accurately using all the relevant sources for the enquiry. A clear statement of the methods used.
- 9-10 Observation, collection and recording carried out competently and accurately with close attention to detail. Thorough use of the relevant sources. Evidence of value/limitations of methods used.

FORMAT OF THE MODULES

There is a break with the tradition of indicating the material which should be covered in the classroom by giving a series of headings and sub-headings. Instead modules are set out as follows:

- a brief statement of content, designed so as to sell the module.
- three columns placed side by side give
- a list of generalisations or principles which pupils should arrive at as a result of learning about a particular topic, i.e. it indicates the proposed learning outcome
- a list of key questions which form the logical starting point of a learning activity.
- a list of exemplars. This column suggests examples which could be used to illustrate the principles eluded to in the first column. These should be chosen so as to give maximum world coverage.

This skeleton needs to be fleshed out. Additional columns should indicate

- subsidiary questions which should be asked in order to direct the search for answers to the key questions, i.e. a more detailed statement of the starting point of enquiry;
- a more detailed list of the concepts, models, generalisations, understandings which pupils should arrive at;
- a list of the skills and processes which would be acquired or used during the course of the investigation, and of the attitudes and values which might be developed or clarified;

- an indication of the teaching/learning strategies which will be adopted in order to achieve the objectives of the lesson;
 - an indication of the assessment strategies which will be used to test learning outcomes.
- There should be a match between learning/teaching and assessment strategies.
- a list of the resources which are needed if the lesson is to go according to plan.

SUMMARY OF SYLLABUS CONTENT

The syllabus focuses attention on the theme *sustainable development*. In the first two years each major division is organised into modules, the Core Modules are compulsory, a selection is to be made from the Optional Modules. The wide range of optional modules provides that flexibility which will enable educators to adapt the syllabus to the needs of widely differing communities. In the final year there is no choice.

STANDARD EIGHT

MANAGING NATURAL ENVIRONMENTS

Core Modules

Landform Management
The Use and Abuse of Ecosystems

Optional Modules (A choice of TWO of the following)

Climatic Change and Uncertainty
Living in Difficult Environments
Pollution of Natural Environments
The Geological Challenge

THE USE AND MISUSE OF NATURAL RESOURCES

Core Modules

Energy into the 21st Century
Water Management

Optional Modules (A choice of two of the following)

Minerals as a Resource
Land as a Resource
Soils as a Resource
Managing Forest and Woodland
The Potential of Oceans and Seas

STANDARD NINE

MANAGING HUMAN ENVIRONMENTS

Core Modules

The Challenge of Urbanisation
Changing Employment Patterns

Optional Modules (A choice of two of the following:)

Changing Urban Landscapes
The Impact of Secondary Industry
The Growth of Service Industries
The Impact of Recreation and Leisure
Changing Transport and Communication

ISSUES OF GLOBAL CONCERN

Core Modules

Population and Resources
Famine and Surplus - the World Food Problem

Optional Modules (A choice of TWO of the following:)

Global Limits to Growth

Alternative Approaches to Development

People Planning and Environment

STANDARD TEN

Africa - A continent in crisis

South Africa at the crossroads

Geography in the workplace

A UNIFIED COURSE

A criticism that has been levelled at past Geography syllabi has been the tendency to compartmentalise; it must often have appeared to pupils that their Geography was a compendium of different subjects. If, however, the key theme of sustainable development is given prominence it will forge the link which ensures that the course forms a unified whole with the units complementing each other. More important, however, is the fact that the three years of study will convey an important message to the pupils - one which mankind ignores at its peril.

The Core Modules have been selected to ensure that the pupils gain insight into the working of the natural and human systems of which they are part; and of the potential for good or ill of human management or mismanagement of this planet's resources. Students should acquire considerable ecological, economic and some political literacy from these studies, as well as the opportunity to explore and develop their own value systems. Thus the course becomes in the best sense, a training in responsible citizenship.

The drawing up of a teaching syllabus will, in part, be the responsibility of the school (and the community it serves), exercised through the choice of optional modules. Not only should the selection be made with the pupils and the particular community in mind; but the course should cover such aspects of geography as, the physical environment; population; settlement; agriculture; extracting, processing and manufacturing industries; tertiary activities and communication. Case studies (at various scales) should be widely used, and examples selected to ensure that local, regional and global perspectives emerge. A judicious choice of exemplars can ensure a reasonably wide coverage.

Each module poses a set of people-environment issues, questions or problems, and presents the opportunity to study the various aspects of geography which are necessary for their investigation. Each module encourages students to raise the questions set out in the matrix, "Key Questions and Guiding Concepts" (see Appendix B) and should lead, through enquiry, towards understanding of the guiding concepts. Study within each module leads to the development of a variety of skills and techniques, and to a greater awareness of the values inherent in the issues under consideration.

STD 8 HG GEOGRAPHY

MANAGING NATURAL ENVIRONMENTS

LANDFORM MANAGEMENT (Core Module)

Landforms such as river basins and coastlines greatly influence, and are influenced by human activity. Urban areas may develop on flood plains or on the coast. Over time problems of flooding or coast erosion may develop or increase which lead to responses to minimise the effects. Such responses may not necessarily solve the problems but simply cause other problems within the river basin or coastal system.

In each case, students should reach an understanding of important physical forms and processes and significant aspects of human activity and management through appropriate case studies at different scales. Whilst study should emphasise the role of the particular processes required for the syllabus (i.e. fluvial and coastal), reference should also be made to the importance of structure and rock type, and to the significance of weathering, slope formation and other physical processes where this is necessary to explain the situation adequately.

GENERALISATION	KEY QUESTIONS	EXEMPLARS
The following generalisations should emerge:		
Formation of Landforms - landforms result from complex interactions between the materials and structures of the Earth's crust and natural processes acting upon these over time.	How are landforms formed and changed by natural processes? How do landform systems pose challenges for and exert influences on people?	Examples of man's attempts to modify river channels, valleys and flood plains and to control river flow and floods. Local examples. The Tennessee Valley Authority. Examples of man's attempts to manage coastal landforms (to include beach, cliff and shoreline scales.) Durban's sand problem. Coastal defences in S.A.
Natural processes change landforms - natural processes operating on landforms cause changes to occur. These may be apparent within human time scales in terms of changing forms and features.	Why and how are people an important component of landform systems? How may the inter-relationships between people and landform systems be better managed in the light of present knowledge?	
Human responses to landforms change - changes in landforms may give rise to the need to adapt the human use and activity of the area.		
People as components of landform systems - landform systems may be influenced by human activities, sometimes with and sometimes without the knowledge of people.		
Consequences of modification - modifications to landforms and to natural processes may result in adverse consequences for the future use of natural environments.		

Environmental management - successful management requires an understanding of landform systems and processes; people attempt to adjust their use of land areas to optimise their relationships with landforms and minimise the problems and risks associated with such relationships.

USE AND ABUSE OF ECOSYSTEMS (Core Module)

Issues such as desertification in the world's marginal zones, deforestation in the tropical rainforests, and the pollution of lakes by acid rain or agricultural run-off form the basis of this module. In each case it is necessary to understand some of the processes operating within the ecosystem in order to develop ideas about how it is being affected by human activity. Principles governing the management of exemplar ecosystems should be considered. Such studies could include management of fish stocks, whaling, African National Parks, dune mining and even farming systems, and should consider management at a variety of scales.

In each case, students should be encouraged to distinguish the roles of climate, relief, soil, energy flows, time, vegetation, animals and people within the selected ecosystems, and also the inter-relationships between the component parts. It is suggested that students be made aware of the relationships between dominantly natural ecosystems and some of the highly modified systems which are associated with human activities.

GENERALISATIONS	KEY QUESTIONS	EXEMPLARS
<p>Nature of ecosystems - ecosystems consist of structured webs or systems at a range of scales, which include living organisms and their material environments of soil, air and water; the components are linked by movements of energy and nutrients.</p>	<p>How do plant and animal ecosystems pose challenges for people and influence their activities?</p>	<p>Example of the structure - functions of a local ecosystem e.g. a nearby wetland.</p>
<p>Significance of ecosystems in environments and landscapes - vegetation, and to a lesser extent, animal life exert a strong and readily apparent influence on human activities and landscape.</p>	<p>Why and how are people an important component of plant and animal ecosystems, and with what spatial and environmental effects?</p>	<p>Man's impact on this ecosystem. Propose management strategies.</p> <p>Management problems with e.g. tropical forests or desert margins or grasslands.</p>
<p>People as a component of ecosystems - people are an increasingly important component in ecosystems at all scales and in all locations, possessing potential for dominance due to increasing numbers, adaptability and technological expertise.</p>	<p>How can people's interactions with ecosystems be better managed in the future?</p>	
<p>Change - ecosystems may exist in a relatively stable state, or may be subject to change through natural processes or the influence of human activities.</p>		

GENERALISATION

Impact of changing ecosystems - change in the form and functioning of ecosystems may produce change in landscapes, in distributions and in the usefulness of environments for people.

Management of ecosystems - management of ecosystems represents peoples' attempts to effect change in plant and animal systems which will be beneficial and constructive, rather than destructive to their environments; for successful management, it is necessary to understand the workings of the ecosystems and the likely causes and effects of change.

MANAGING OF NATURAL ENVIRONMENTS (Option Modules)

CLIMATIC CHANGE AND UNCERTAINTY

The problems of drought and flood highlight how the uncertainty of weather and climate provide challenges for people. In this module the processes of weather and climate can be studied and related to the problems of living with the uncertainty they engender. Long term climatic changes and trends influence the evolution of vegetation, soils and distinctive ecosystems; and short fluctuations, brought about through natural and human causes, affect the usefulness and productivity of environments (e.g. desertification). Year to year fluctuations should be studied with respect to the way people must adapt their activities as they attempt to manage an uncertain environment. Case studies could include drought in the Sahel and flooding in Bangladesh.

In addition, long-term climatic change could be studied, including consideration of the effects of increasing the carbon dioxide in the atmosphere (the greenhouse effect) and the reduction of ozone. Such a study could be on a world scale though local effects of such climatic changes should also be considered.

LIVING IN DIFFICULTY ENVIRONMENTS

Difficult or extreme environments may be identified as those which are characterised by extremes of climatic, topographical or biogeographical features which make their development difficult and may even pose problems for survival. In this module the distribution, nature and functioning of such difficult environments and the varied responses made by people should be examined.

The way in which people interact with these environments will vary according to their level of technological and economic development. In every case, human response to a difficult environment brings its own environmental consequences and related social and cultural impacts. In many of the world's difficult environments, the actions of technologically advanced societies and multi-national organisations in dealing with land and other resources have frequently, but not always, been undertaken in ignorance of, or to the detriment of, the lives of indigenous minorities and the natural environments.

STD 8 GEOGRAPHY

The geographer is interested in the processes which cause difficult environments, the nature and characteristics of the environments themselves, the variety of ways in which human response to this challenge may manifest itself, and the resultant successes or stresses and conflicts.

Examples of attempts to meet the challenge of such environments could be a study of the exploitation of the far north of North America or Siberia. It would involve a study of periglacial processes and how these have brought responses from people trying to make use of the mineral wealth of the regions. Other areas could include the desert countries around the Sahara and Arabian Deserts, the mountain communities of the Himalayas, and remote communities such as inhabitants of the Falkland Islands. Studies at a small scale could lead to general ideas about the overall problem of living in difficult environments.

THE POLLUTION OF NATURAL ENVIRONMENTS

This module involves a study of how human activity pollutes the natural environment and disrupts natural systems. The topic is a broad one and can be related to other modules to produce a more integrated course.

Pollution is a term which refers to the introduction of various materials or substances into a natural environment, resulting in a decline in its quality and usefulness. In this sense, pollution has been occurring since people first appeared on Earth. With increasing population numbers and greater sophistication of technology and life styles, people have greatly increased their capacity to harm their environments and to endanger the stability of the biosphere.

The geographer has an interest in the causes and consequences of environmental pollution. Study should emphasise the location, characteristics and patterns of pollution sources and polluted environments, and the impacts of pollution through space and time on the environment. The political and social contexts in which decisions are made about pollution should be considered, together with the wider impacts of such decisions on the quality of life and environments.

Whilst it may be necessary to focus analysis in depth on small scale studies, some reference should be made to the broader implications of environmental pollution and degradation on a global scale.

THE GEOLOGICAL CHALLENGE

How far do distinctive rock types and geological formations provide challenges for people? This module provides an opportunity to examine some of the ways in which geology influences landforms, landscapes, economic opportunities and hazardous occurrences. Study should focus on the environmental issues which arise and on human response to these.

The detailed geological characteristics of a particular rock or structural feature should be studied as far as is necessary to reveal the inter-relationship with land-forming processes and economic activities. Themes which might be covered in this module include the structural control of landscapes, the physical aspects of distinctive rock types and their relationship with landforming processes, landscapes and economic opportunities, the geology of mineral occurrence or water supply, and people and geological hazards. The geographer's main concern is with the way in which human response to the geological challenge has an influence on locational and environmental decision-making.

THE USE AND MISUSE OF NATURAL RESOURCES

ENERGY INTO THE 21ST CENTURY (Core Module)

As the demand for energy continues to increase throughout the world, major issues about the environmental, social and economic impacts of energy production abound. By studying issues such as the development of onshore oilfields, the building of a nuclear power station, or the opening of a new coalfield, a range of geographical skills and concepts can be explored. It is not necessary to study the whole range of energy sources, but through a few case studies at a variety of scales, the whole dilemma of energy issues can be studied in terms of need against environmental and social effect.

Although the emphasis within this module is on energy, students should gain an understanding, through this example, of important general ideas about the definition of resources, reasons for patterns of resource use and development, links between technology, economic development, social change and resources use and the role of government and government agencies.

GENERALISATIONS

The following generalisations should emerge :

The nature of energy resources - increasing requirements for fuel and power are met by the use and development of a number of energy resources, some renewable and some non-renewable.

Influence on spatial patterns - these resources have locations in space and their use results in particular distributions and patterns of human activity.

Environmental and social impacts - use and development of energy resources produces modifications in natural environments and systems, and also has consequences for people.

Factors influencing resource development - the decision to exploit an energy resource depends on the physical character and availability of the resource, technological capabilities and the way in which society appraises its demands for energy.

KEY QUESTIONS

How are attempts made to satisfy our increasing demands for energy?

What are the environmental, spatial and social impacts of using different energy resources?

How can energy resources be managed in order to reduce human conflict and optimise use of environments?

EXEMPLARS

An examination of the energy resources available to one more developed and one less developed country, with specific reference to their renewable and non-renewable characteristics, and to the balance between imports, exports and production for the home market. Suggested countries : Japan, the USA or Russia
Zambia or Zimbabwe.

Case study - the role of oil in the Persian Gulf wars.

Case study - the nuclear power option in California or England.

GENERALISATIONS

Decisions on energy resources - decisions about the use and development of energy resources are commonly made in response to political pressures, and may result in conflict between individuals, groups and nations.

Resource management - resource management represents attempts to evaluate alternative strategies of resource use and development in the light of relative economic, social and environmental costs.

WATER MANAGEMENT (Core Module)

The issue of drought is seldom out of the news.

Water is a resource for life support as well as for industrial, recreational and other purposes. With increasing population numbers and advancing technology, the demand for water resources is increasing. How then is water managed as a resource, and with what environmental and social consequences?

Geographers study the nature of the resource in its natural context in order to appreciate the likely consequences of its use and management. Supply and demand for water vary through time and space. In addition, the extraction and transfer of water create environmental impacts and affect the location and development of other types of human activity, it may also have significant political implications. The consequences of water resource strategies for the well-being of human communities are of particular significance.

In this module, study of contrasting environments and of regions with different water management strategies would help to draw out the key ideas about water as a resource and the issues that develop from attempts to meet this need.

GENERALISATIONS

Water as resource - water is a resource for life support as well as for industrial, recreation and transport purposes.

Demand for water is increasing with increasing population numbers and advancing technology, the use and cost of water is increasing rapidly.

Demands for water are often in conflict but may be complementary. Conflict may arise as water uses are often in conflict.

KEY QUESTIONS

How are attempts made to satisfy our increasing demands for water?

What are the environmental, spatial and social impacts of water usage?

How can water resources be managed in order to reduce human conflict and optimise its use?

EXEMPLARS

Local : A study of demand and supply of water in the local area. Identification of potential areas of conflict. The work of agencies responsible for the management of local water resources.

Regional:
A Case Study :
A study of a major multi-purpose water project e.g. The Highlands Water Project; the waters of the River Jordan and neighbouring aquifers; the Rhone waterway; Snowey River.

GENERALISATION

Supply and demand for water vary through time and space - areas where the demand is greatest are often not the water rich areas. Furthermore seasonal variations create problems of supply.

The availability of water influences the location and development of other types of human activity - both settlement and development patterns are influenced by the availability of water. The extraction, storage, transfer and use of water, creates environmental impacts.

Resource Management - decisions regarding strategies for the optimum use of this resource should be made in the light of relative economic, social and environmental costs. They are often made in response to political pressures, and may result in conflict between individuals, groups and nations.

Large dams and irrigation schemes significantly impact the environment.

THE USE AND MISUSE OF NATURAL RESOURCES (Optional Modules)

MINERALS AS A RESOURCE

Within this module, the focus is on the use of minerals (a non-renewable resource) and on the varied spatial, environmental and social impacts of this activity. The question is raised as to how these impacts may best be managed and controlled.

In order to understand a situation fully, the geographer analyses the locations and types of resources, the characteristics of demand and the socio-economic conditions under which extraction takes place. In terms of environmental impact, the main issues are, firstly, the creation by mining of polluted and derelict land, and secondly, the conflicts engendered between mining and other uses. In human terms, the important questions concern the health and well-being of mining communities, and the broader economic effects of resources supply on consuming industries, regions and countries. Political factors at national and international level should be recognised as having an impact on mineral strategies and policies. For instance, the role of multi-national companies should be considered.

LAND AS A RESOURCE

Land is a prime resource on a small planet with an increasing population. How can people make the best use of the land available to them in order to maximise environmental quality and the quality of life? How can conflicting demands for the use of a limited land area be best resolved? These are the environmental questions which should be raised within this module.

Geographers analyse land use patterns and examine the factors affecting land use in a given situation. They also employ land evaluation techniques to assess the capability or productivity of the land and to predict the impact of new schemes for land utilisation. Increasingly the importance of land as a cultural heritage is realised, with different societies placing varying demands on it, and using it in different ways. Conflicting claims for the use of land, either within or between societies or cultural groups, is a major cause of concern in many parts of the world. The management of such conflict, comprising a need to analyse the situation and assess priorities, is of interest to the geographer. Whilst the more sophisticated methods of assessing land capability and land use and managing land resources are well exemplified in a developed world context, it is important to stress the significance of land use planning in less developed countries.

SOILS AS A RESOURCE

Soil is a vital resource in a world where an increasing population demands greater production of food and materials. This module raises the question of how soils can best be managed for maximum agricultural productivity and least environmental damage.

Since humans disturb the dynamic equilibrium of the natural soil system, it is necessary to understand the nature of the system, the characteristics of the human use of soils and the consequences of this inter-relationship. Misuse of soils, apparent in degraded, eroded and waste land, is a manifestation of past failures to understand and manage soils adequately. Increasing agricultural productivity may result from peoples improved understanding of soil as a resource and their greater abilities to manage soils.

The geographer has a particular role to play in studying the distributions and types of soil and their use by people and in analysing the people-environment inter-relationships.

MANAGING FORESTS AND WOODLAND

Woodland and forest ecosystems provide resources for people in a number of ways. In this module, the question should be raised as to the nature of human involvement with woodland and forest ecosystems and the impact this has on them. How can they be better managed to enhance the welfare of people and the quality of the environment?

People use wood as a material resource by cutting and clearing woodland and forest. They may also use a particular wooded area as a recreational or aesthetic resource, contrasting with the urbanised, industrial living environment. All such uses create an impact on the natural environment and may result in decline in quality and availability of the resource unless the situation is carefully managed. It is increasingly being realised that a forest or woodland ecosystem is an important component in, and has a great impact upon, the functioning of a number of other systems, e.g. climate, drainage catchment and control. The geographer has an interest in these issues, and therefore studies the nature of the ecosystem, its distribution and spatial consequences of its exploitation.

THE POTENTIAL OF OCEANS AND SEAS

This module presents the opportunity to ask in what respects the oceans and seas possess potential as a resource. How may this potential be best realised, and what are the likely spatial and environmental consequences? The oceans and seas comprise two thirds of the global surface, and have both present and potential importance as reservoirs of a variety of resources, and as a medium over which transport and exchange takes place.

Geographers study the distribution and pattern of exploitation of oceanic resources (e.g. minerals and fish), the nature of interaction and trade across the oceans and the potential for human conflict arising from such relationships. Study should highlight the increasing realisation that the use of economic resources needs planning and management, often at international level, in order to ensure their continued value.

STANDARD 9 HG

MANAGING HUMAN ENVIRONMENTS

THE CHALLENGE OF URBANISATION (Core Module)

The rapid growth of cities, and the problems this engenders is an issue of considerable concern in the Less Developed World. In the West the rate of urbanisation has slowed down though the concern is now more about the sprawl of cities and even the development of counter-urbanisation.

The module should involve a study of the processes of urbanisation and urban growth together with the resulting patterns both locally and at a larger scale. Through investigating case studies in the Less Developed and Developed Worlds some of the solutions to the issues raised by these processes can be discussed.

Studies should emphasise the experience of living in contrasting urban environments, the wider implications of such contrasts, and the importance of cultural and political factors in understanding each situation or in implementing change. The problems of deprivation, whether in Shanty Towns or in the Inner Cities should be highlighted.

GENERALISATIONS	KEY QUESTIONS	EXEMPLARS
The following generalisations should emerge:	An investigation of the following questions :	An investigation of rural urban migration in Natal/KwaZulu.
Global significance of urbanisation - an increasingly large percentage of the world's population now lives in urban areas both in developed and less developed parts of the world.	What are the spatial, environmental and social impacts of urbanisation?	An investigation of variation in quality of life (housing type and quality, environmental quality, access to services etc. in contrasting residential areas preferably in the local area.
Quality of life in urban environments - urban areas provide a range of living standards and environments for people, one of the greatest urban challenges is presented by the existence of poor living conditions and urban poverty side by side with affluence and with more favoured urban environments.	How does urbanisation lead to different qualities of life and environment?	An investigation of a planning issue involving changes in housing (e.g. redevelopment, rehabilitation) and for services. Simulation of urban planning.
Change in urban environments - changes in urban environments may result from a number of social, political and economic processes, and may often engender conflict between the different individuals and groups affected.	How can planning and management help alleviate the undesirable effects of urbanisation?	Contrasts between urbanisation and counter-urbanisation in developed and less developed countries.
Spatial justice in urban areas - decision making in urban areas frequently reflects the distributions of power and wealth in society, this has implications for spatial justice.		

GENERALISATION

The wider impact of the city - the growth of cities has implications for and effects upon surrounding rural areas, other regions, and, frequently, other nations.

Answering the urban challenge - improvement in the quality of urban life demands more than a continuation of present day trends, there is a need to understand existing processes, and to develop agreed criteria for action by decision-makers in specific situations.

CHANGING EMPLOYMENT PATTERNS (Core module)

In recent years there has been a decline in the Developed World of Primary and Secondary industry, with social and environmental consequences particularly in those areas which have lost employment and those that have gained.

The changing pattern of employment is also evident in the less developed world where there has been a loss of employment in agriculture, but in some countries, a gain in manufacturing industries. The Informal Sector provides employment for large numbers, but these activities are not part of the paid economy.

This module is ideally studied using a range of scales from the local case study, through regional and national patterns, to considering the global pattern of employment change. The following two modules allow for a closer study of the type of industry.

GENERALISATIONS

The following generalisations should emerge:

The world of work - all work may be classified into the primary, secondary, tertiary or quaternary sectors of the economy. Another important distinction (particularly in the Less Developed World) is between the formal and the informal sectors.

Changing patterns of employment - there has been a significant decline in employment in the Primary and Secondary industry in the Developed World, and a loss of employment in agriculture in the Less Developed World. In the Developed World an increasing proportion of the workforce is finding employment in the quaternary sector (activities associated with information, research

KEY QUESTIONS

What changes are taking place in employment patterns in the Developed world and the Less Developed World?

How do these affect the location of employment opportunities?

How do changing employment patterns influence economic growth?

How does the shortage of skilled manpower in Less Developed Countries influence their relations with the countries of the Developed World?

What are the effects of the concentration of employment opportunities in urban areas?

EXEMPLARS

Local survey to establish local employment structure.

Study of local problems of employment.

Simulation games factors influencing the location of an industry.

Case study of a growth point such as Hammersdale.

Problem areas of decline e.g. Ruhr.

Problem areas of underdevelopment e.g. a Homeland, North-East Brazil.

The influence on economic growth of e.g. oil in Saudi Arabia and the multi national Brooke Bond in

GENERALISATIONS

and the control functions of organisations). In the Less Developed World the informal sector is a major source of employment.

The location of employment opportunities - physical, political and socio economic factors influence the location of employment opportunities, as do the planning policies of various agencies (including governments).

Changing levels of economic development - different levels of development occur on all scales and give rise to the gap between rich and poor. Patterns of trade between the Rich and the Poor World may hinder development.

Influences upon economic growth - there are various influences which create employment opportunities: changing technologies, new mineral sources, capital investment, planning, decisions political influences.

Reasons for loss of job opportunities - there are many reasons for the decline of jobs in an area: the exhaustion of physical resources, mechanisation, new technologies, automation, high cost of production, declining demand, poor investment, competition from alternate sources.

The involvement of foreign enterprises - in Less Developed Countries where capital and technical knowhow are in short supply, multi nationals often participate in mining, manufacturing or specialised agriculture, at a few isolated locations. Their interaction with the traditional sector of the economy often poses problems.

The concentration of much economic activity in urban areas - therefore these tend to dominate national settlement patterns, particularly the primate cities of Less Developed Countries. There are often big contrasts

EXEMPLARS

A comparison between one Developed and one Less Developed Country in terms of economic activity, employment patterns and rural and urban settlement patterns.

GENERALISATION

in standards of the urban elite and the rural poor.

Social and environmental consequences - numerous social and environmental problems arise particularly in areas of economic decline, but also when there is rapid development.

MANAGING HUMAN ENVIRONMENTS (Optional Modules)

THE IMPACT OF SECONDARY INDUSTRIES

An understanding of spatial patterns of manufacturing systems and their relationship to resource availability, economic, social and political factors is vitally important to present and future employment opportunities. Current trends such as international shifts in location of industry from more developed to less developed countries, automation and computer technology are having world wide effects.

Geographers study industrial location at intra-urban, regional, national and international scales in centrally planned and capitalist societies. Technological, economic and organisational factors are particularly important in explaining these patterns.

Influences affecting the structure of individual industrial regions or the national or world distribution of particular industries would make appropriate case studies. The restructuring of developed economies and the emergence of newly industrialising countries cannot be ignored.

THE GROWTH OF THE SERVICE INDUSTRIES

The type and level of service activity for both people and businesses reflect a country's level of development. Low paid personal services are typically important in less developed countries while in more developed countries much employment growth in recent decades has been in professional services, although the application of computers to office routines is already changing this situation.

Geographers are interested in the distribution pattern of services within the urban hierarchy and the ways in which it is changing.

A starting point could be an identification of services and their classification in terms of personal and business, government and non-government, paid and unpaid and physical and information. The distribution of services within the urban hierarchy might be studied within an individual country, though attention should also be paid to world financial and management centres. The growth of specialist services in high order centres and the implication of computer networks could be studied.

THE IMPACT OF RECREATION AND LEISURE

Recreational demands on resources of all types have increased dramatically in response to increased income, mobility and available time. A knowledge of types of distribution patterns of recreation activity is an increasingly important aspect of human spatial behaviour.

Geographers study recreational activities in terms of demand, frequency and cost of use, and the origin, nature and travel patterns of users. They are concerned with the economic and environmental impact of recreation, including tourism, in more and less developed countries at varying scales, and they attempt to classify recreation resources to measure, predict and plan their use.

STD 9 HG GEOGRAPHY

Students should be encouraged to appreciate the breadth and varying geographical patterns of activity involved in leisure pursuits as well as making a detailed study of specific activities or neighbourhoods. They might study the contrast between activities requiring minimal provision of facilities but making large demands on space and services, such as those associated with wilderness, national parks, and tourism, with those requiring built facilities but relatively little space, such as squash courts and sport grounds.

CHANGING TRANSPORT AND COMMUNICATION

Modern levels of economic and social interaction and inter-dependence at international and national scales are a function of increasing ease of transport and communication. Rapidly changing facilities particularly in telecommunications have had significant effects on the location of human activity.

The geographer has a special interest in understanding networks and facilities for transport and communication, and the effect they have on regional development.

In this broad topic it will be necessary carefully to limit the topics for study. Contrasts between selected modes of transport and communication in type, volume, speed, cost and distance and their varying importance in different countries would form an appropriate study. Important consequences include the environmental impact of transport and communication systems and their influence on the functions and prosperity of urban centres.

ISSUES OF GLOBAL CONCERN

POPULATION AND RESOURCES (Core Module)

Many contend (but others deny) that over-population or rapid population growth lie at the root of the problems of the Less Developed World. Malthus and later the Club of Rome popularised the theory of exponential population growth set against a world of diminishing resources.

The growth, structure and distribution of population should be studied with particular emphasis on changes in time: the world trends of population growth, the modern demographic explosion, the major determinants of growth; pandemics such as Aids could profoundly effect growth rates. Changes in space: the effects of differential growth rates on the general distribution of population, immigration as a factor redistributing population the types and causes of migration, and their consequences, particularly for rural areas. Changes in the relationship with resources: resource definition e.g. physical and human, finite and renewable; spatial variations in levels of resource consumption; resource depletion rates; factors effecting resource use e.g. cultural traditions, levels of technology, the concepts of population pressure, over-population and optimum population; and the functioning of the rural economy and society.

Students should understand the meaning and use of the terms crude birth rate, crude death rate, infant mortality rate, and rate of natural increase, and be familiar with the physical, economic, social, political and religious factors affecting these rates and their world distribution patterns. They should have gained a knowledge of age/sex structures associated with differing rates of natural increase, and the consequences of population growth and decline, using the idea of demographic transition as an approach to growth patterns.

A comparison should be made between one More Developed and one Less Developed Country from the standpoint of population geography. These case studies should include population distribution maps and explanations of regional differences, measurements of density, vital rates and age/sex histograms, and sex and dependency ratios. Case studies should enable ethnic structure, international migration, rural/urban migration and government population policies to be considered. Throughout the case studies the emphasis should be on the differences which emerge between more developed countries and less developed countries.

STD 9 HG GEOGRAPHY

GENERALISATIONS

Population is growing exponentially, this, many argue, is threatening the life support systems of our planet.

The most rapid population growth is in Less Developed Countries and particularly amongst the world's poor.

The youthfulness of the population in the Less Developed Countries guarantees continued rapid population growth in these areas, though pandemics such as Aids may impede growth rates.

In the wealthy industrialised countries crude birth rates have declined, some countries are recording negative growth rates.

The demographic transition model is a useful tool for explaining population growth rates.

The cause of differing population growth rates are a complex inter-meshing of cultural, social, economic and political factors. Hence the difficulty of reducing growth rates particularly in traditional societies.

The distribution of population is influenced by a multiplicity of interlinking factors, and is changing constantly as a result of differential growth rates and migration.

Migration is a response to a diversity of push-and-pull factors, large scale migration creates opportunities and problems both in areas which are losing population and in those which are gaining it.

Population pressure has led to rapid down grading of some environments, particularly ecologically sensitive areas.

KEY QUESTIONS

What factors have led to the exponential growth of the world's human population?

How and why do population growth rates differ in different parts of the world?

Why is it difficult to bring down the crude birth rate amongst the world's poor?

What factors have induced population migration?

What are the spatial, environmental and social impacts of changing population densities?

EXEMPLARS

Demographic characterisation of a local area.

Factors influencing migration in the home province.

The demographic characteristics of a Less Developed Country and of a Developed Country.

The relationships between population and resources on a world scale. The relationship between the North and the South.

STD 9 HG GEOGRAPHY

Rising resource depletion rates are a result not only of increasing population, but also of resource consumption. There are significant spatial variations in resource consumption, resulting from differing levels of technology, and lifestyles and personal aspirations.

FAMINE AND SURPLUS - THE WORLD FOOD PROBLEM (Core Module)

Many people observed with horror, despair and puzzlement the situation that while the people of the Sahel starved the grain stores of the E.E.C. were bulging. They were further puzzled to hear that countries such as Ethiopia were exporting food crops while their people were dying. Why is the gap growing between the adequately and the inadequately fed? What are the key processes resulting in food availability? Is it the result, primarily, of environmental, political, social/cultural and economic factors? How can food production and distribution be improved? How can it be made more equitable and what are the likely impacts on the environment?

The problems associated with world food supplies have considerable geographical relevance, stemming from both population growth and agricultural practices.

Geographers study agricultural systems. They contrast the traditional systems of Less Developed Countries, where increased yield poses questions of intensification, transfer of agricultural technology and diffusion of new ideas with the surplus-producing agricultural systems of the developed countries. The complex relationships between food surplus and food-deficient countries raise ethical questions of equitable distribution of the total supply.

A starting point for this unit could be the world pattern of areas affected by malnutrition and possible famine. Commercial and subsistence agricultural systems in more and Less Developed Countries could be compared and contrasted. Studies made of the growing importance of commercial agriculture in less developed countries including cash cropping, plantation agriculture and the role of transnational corporations. The reduction of population growth rate is a further crucial issue.

GENERALISATION

While an estimated three-fifths of the world is inadequately fed, huge food surpluses accumulate in some Developed Countries. The gap between the well fed and the hungry is growing.

Cash crops are being exported from some Less Developed Countries while famine engulfs many of their people.

In Developed, and to a greater extent in Less Developed Countries, the 'haves' (such as civil servants and soldiers) are well fed while the 'have nots' are malnourished.

KEY QUESTIONS

Why is the majority of the world's population malnourished while huge food surpluses exist?

Why are some agricultural systems in Less Developed Countries unable to provide food for their rising populations?

Why is the transfer of Western farming technology to Less Developed Countries often problematic?

Why does trade often operate against the Less Developed Countries?

EXEMPLARS

Analysis of statistical information, thematic maps, graphs etc.

Case studies: trade between selected countries in the North and South.

Case study of a 'failed' large scale development scheme.

The cash crop dilemma.

Examples of the poverty spiral.

GENERALISATIONS

The issue of food availability is a complex one involving environmental, political, social/cultural and economic factors.

Some of the traditional agricultural systems of Less Developed Countries have supported dense populations for centuries; others, however, are unable to provide sufficient food for rapidly rising populations.

Attempts to increase crop yields in Less Developed Countries by adopting Western methods of agriculture have often met with only limited success, and sometimes have created serious environmental and social problems. The transfer of agricultural technology and the diffusion of new ideas is often hindered by cultural barriers.

The Green Revolution, while it has resulted in greatly increased yields in some countries, has failed in others. It has created its own environmental and social problems. The sustainability of Green Revolution techniques is a matter of debate.

While natural phenomena such as droughts or floods may create local food shortages, famine is usually the result of man's mismanagement. War and corrupt administration may be the primary cause.

The global market place, over which Less Developed Countries have little control, often disadvantages countries dependent on cash crops to earn foreign exchange. The terms of trade and protectionist policies operate against Less Developed Countries.

Cash cropping, plantation agri-

GENERALISATIONS

culture and the transnational corporations have played a significant and often controversial role in the development of many Less Developed Countries.

Food aid is a 'tender trap', its undoubted short term benefits must be weighed against longer term consequences.

The complex relationships between food-surplus and food deficit regions raise serious ethical questions.

ISSUES OF GLOBAL CONCERN (Optional Modules)

GLOBAL LIMITS TO GROWTH

In this module, the opportunity is provided to consider how the complex equation between global resource supply and human survival may best be balanced. The question is raised as to whether the Earth's environments are capable of sustaining further population growth.

Numerous disciplines have contributions to make in studying this issue. The geographer's contribution is apparent in that both people and resources occupy distinctive locations in space. Some understanding of the causes and consequences of these spatial patterns is essential if attempts to 'solve' the equation are to be made. Study should include analysis of world population growth and distribution, patterns of exploitation and consumption of various 'key' resources, and the main features of world trade and aid. Various predictions and theories of world development should be considered from a geographical point of view. The need for an inter-dependent view of development and survival should be considered.

APPROACHES TO DEVELOPMENT

The gap between the rich and poor is widening. Inequalities, in development both between countries and within countries, and the relationship between dominant core areas and dependent peripheries, has in the past been seen as the heart of the development problem. More recently, however, the need for sustainable development has been stressed. Sustainable development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Frequent television visuals of grim scenes of environmental devastation and man's starvation are alerting people to the fact that we are using up the earth's ecological capital. Some of the policies presently pursued by individuals and governments threaten the very survival of the human race. Most of today's decision makers will be dead, but today's pupils will be alive to suffer the full consequences of widespread desertification, ozone depletion, global warming, acid rain, and destruction of rain forests.

In this unit the nature and causes of the profound changes that have taken place during this century between the human world and the planet that sustains it are examined. Many of the problems of resource depletion and environmental stress arise from disparities in economic and political power. Thus the planet's main environmental problem is also its main development problem. Different development paradigms provide different and often contradictory explanations of the causes of underdevelopment and hence suggest differing cures.

If mankind is to flourish on this earth governments must make the concept of sustainable development central to their planning. The prerequisites for sustainable development will be examined in this unit. In short they revolve around two basic principles:

First, the world's poor must be given overriding priority. The basic needs of humanity for food, clothing shelter and jobs must be met. The community of nations must evolve a new, more equitable, international structure that begins to narrow the gap between developed and developing countries.

Second, the limits to development are not absolute but are imposed by present states of technology and social organisation, and by their impacts upon the life support systems of the biosphere. But technology and social organisation can both be so managed as to enhance the quality of life of future generations.

In this module development issues should be illustrated by reference to exemplar countries. Issues such as appropriate technology, aid, cash cropping versus food crops, large or small scale projects, the role of multi-nationals should be illustrated by specific examples. Although a world overview is necessary, case studies will often enable complex issues to be handled on a more manageable scale. Opportunities will arise for inter-disciplinary studies, but development issues are particularly amenable to geographical analysis and synthesis. Large numbers of simulation games have been devised to highlight certain development problems and to promote empathy. Studies of local development or environmental issues can be undertaken, often involving pupils in first hand research carried out in their home environment.

PEOPLE PLANNING AND THE ENVIRONMENT

Many of the processes discussed in the other modules under the theme of 'Managing Human Environments' are controlled using the variety of planning regulations and systems that exist at all levels of government. This module enables the planning system to be looked into in some depth. It raises questions about how decisions are taken, who takes decisions, who wins and who loses, and how the decisions have consequences on the built and social environments. Planning can be seen to operate at a range of scales from very small to national and even international scale through the operation of organisations such as the E.E.C.

Spatial patterns and processes are affected by planning and policy decisions made by governments, companies and individuals. Policy making philosophies and practices vary considerably between countries.

Geographers are particularly interested in decision making which affects the management of the environment and the location of human activities. This optional unit provides an opportunity to explore means of change in spatial patterns.

The contrasts between private enterprise and centrally planned economies in decision making procedures and resulting spatial patterns could form a starting point for study. Agreements between governments and decisions of transnational corporations affecting the distribution of agricultural and manufacturing activity; and decisions concerning the use of natural resources, such as minerals, forests and water in both more and Less Developed Countries, would best be approached through case studies.

(End of standard 9 syllabus)

STD 10 HG GEOGRAPHY

AFRICA : A CONTINENT IN CRISIS

In the mid nineteen eighties the entire continent was on the brink of collapse, the famines that swept across Africa were the biggest disaster to strike the planet since the devastation in Europe of World War II. 30 Million Africans in 20 nations did not have enough food to live on, 10 million environmental refugees abandoned their homes and fared in search of food. No one knows the number that died. At the time of compilation of this Unit (May 1992) an even worse drought threatens Southern and Central Africa. The news media will chronicle the ghastly consequences.

Africa's population is exploding, but its living standards have been declining since the 1970's, its ability to feed itself has diminished since the late 1960's. Mistakes and mismanagement have been a contributing factor, many institutions are deteriorating. Wars, coups and corruption have devoured development aid. Advising Africa has become a major industry, but the advice of Western experts has been deeply flawed. Without rapid, radical and well directed development, disaster will become a permanent way of life for many in Africa. The continent could be a political, social and economic nightmare by the turn of the century. Policy makers must strive towards the sustainable development of Africa's mismanaged environments if inhabitants are to enjoy a more stable, famine free future. Decision making at grass roots level harnesses the under-used skills and ambitions of the people; without their inputs there can be little meaningful progress.

South Africa is an African nation and its future is inextricably bound up with that of its northern neighbours. South Africans will play a leading role in the future development of Africa. It is imperative that its leaders see the relationships between Africa's environmental bankruptcy, its millions of environmental refugees and its political and social instability; and that they commit themselves to finding and furthering appropriate solutions.

Geographies contribution to an understanding of a major continent is demonstrated in this unit. Geographical analysis must underpin meaningful research into Africa issues and geographical synthesis inform policy makers seeking to find the balance between its environments and its people. The need to understand geomorphical, climatic and ecological processes is demonstrated as environmental issues are discussed, and the tools and techniques of the human geographer are used to explore economic, social and political issues. The unit provides the opportunity for analysing a variety of topological maps and statistical data.

GENERALISATIONS

Africa's population is exploding but its ability to feed itself is diminishing. Famines are frequent. A crisis of monumental proportions is imminent.

Many of Africa's environments are fragile, if mismanaged they deteriorate rapidly, damage often is irrevocable. The life support capabilities of parts of the continent is declining.

The reasons for the mismanagement of Africa's resources are complex. Western experts have prescribed many remedies, most have met with little success.

KEY QUESTIONS

What are the physical and human dimensions of recent environmental crisis in Africa?

Why are many of Africa's environments so vulnerable?

Is it true that famine is the mismanagement of drought?

What role have western experts played in promoting development in Africa?

What problems relate to the management of water resources in Africa?

What are the reasons for, and the consequences of widespread deforestation in Africa?

EXEMPLARS

Case studies of major droughts in Africa e.g. in Ethiopia.

Case study - desertification in the Sahel.

The role of development agencies such as the World Bank.

Case studies highlighting issue related to international rivers e.g. the Nile, the Zambezi.

Case study. Deforestation in Nigeria or Zaire.

The impact of the tsetse fly and bilharzia on development.

Case study - Kenya's population explosion.

GENERALISATIONS

The frequent famines are in part the result of unreliable rainfall, but human mismanagement is a major contributing factor. The management of Africa's water resources, poses problems; international rivers are politically sensitive; in arid and semi arid lands water is a scarce resource which requires careful management.

Deforestation is proceeding at an alarming rate. Poor people clear forests for shifting cultivations and chop down trees for fuel. The environmental consequences of disappearing forest and woodland are profound.

Tropical lands are prone to a variety of debilitating diseases afflicting both man and beast.

Africa's population is growing more rapidly than that of any other continent. This population explosion is a major hindrance to development.

Rapid urbanisation is placing great strain on Africa's burgeoning cities. Third World cities have their own character, with the informal sector forming a major component.

Racism, competing nationalisms, and tribalism create tension in many areas, often resulting in debilitating wars.

The Aids pandemic is a wildcard which will profoundly effect the people of Africa. The results are difficult to predict.

Rival territorial claims have resulted in a number of boundary disputes. They are partly the result of colonial boundary delimitations.

KEY QUESTIONS

How have tropical diseases retarded development in Africa?

Why is the population explosion seen as undermining development in Africa?

How is urbanisation changing the face of Africa?

How are racism, nationalism and tribalism hindering development in Africa?

Why are so many of Africa's peoples malnourished?

How is Aids impacting Africa?

What information is available on the social and economic organisation of societies in African before the white man arrived?

What impact did colonialism have on the people of Africa?

Why is the gap widening between the rich 'North' and Africa, the urban elite and the rural peasant?

Why are there so few examples of successful rural development projects in Africa?

What part will South African play in Africa's future development?

EXEMPLARS

The capitals and ports of Africa. Primate cities.

Case study - the causes and consequences of an African war.

Analysis of thematic distribution maps and other statistical material. Correlations.

Historical maps, and the diaries of early explorers.

The impact of colonialism and neo-colonialism on Kenya, Zimbabwe or Angola.

An analysis of trade statistics. Case study of core periphery relationships in countries such as Zambia.

Case studies: a large African irrigation scheme: the groundnut fiasco in Tanzania, the Ujamaa initiative, a successful small scale development.

GENERALISATIONS

Refugees both political and environmental, are placing severe strain on the economies of some African countries.

Pre Colonial African states were often largely self-sufficient and relatively prosperous. Slavery was, however, a major problem.

Colonialism, though it brought some benefits, disrupted African societies, facilitated the exploitation of the continents resources for the benefit of the colonial power, and produced a relationship of dependency.

Neo-colonialism, the emphasis on cash crop production, and the involvement of multinationals in the economies of African states are responsible for a continual state of dependency.

The terms of trade operate against African countries. The real price of raw material exports is falling, while the price of processed goods which African countries must import is rising. The result is ever increasing poverty, growing national debts and a small, lagging industrial sector.

Core periphery inequalities are evident in most African countries. An urban based elite is relatively prosperous, but the peasant is peripheral in every sense and is therefore neglected. They are trapped in a spiral of poverty.

National development policies tend to favour urban areas and neglect rural communities.

GENERALISATIONS

Many rural development strategies, such as major irrigation projects, improve the livelihoods of relatively few rural dwellers. Many have proved to be environmentally inappropriate and costly failures. Integrated rural development projects have a greater measure of success.

Small scale, grass root projects which utilise the skills and ambitions of the local people, may prove more effective in turning the tide in Africa, than solutions imposed by foreign experts. The links between politics, economics and social stability are evident throughout Africa.

South Africa could play a leading role in the development of the African continent.

SOUTH AFRICA AT THE CROSSROADS

South Africa faces an uncertain future, at present the focus of attention is on the political options that are open to its citizens. Most consider that the kind of future which its people will enjoy depends, for the most part, on the political choices that are made; there are, however, those who realise that environmental considerations may, in the medium and long term prove to be of paramount importance in determining the quality of life of South Africa's inhabitants. Human well being depends, in no small measure, on a peoples' ability to strike a balance between environmental health and economic development.

Rapid economic development is essential if South Africa's spiral of violence and social breakdown is to be contained. No government can rule effectively when the majority of its citizens are unemployed. Economic development provides the basic material necessities (shelter, food, clothing etc.) and the luxuries of life; meaningful employment ensures access to these commodities and adds dignity and self respect. Environmental health guarantees pollution free air and water, ensures a continuing food supply, attractive areas for recreation, and well laid out towns. Each is necessary for a good quality of life.

South Africans must embrace the ideal of sustainable development - progress which ensures that the use of resources today does not prejudice prospects for future generations. For growth to be sustained it must not undermine environmental integrity.

It probably is not possible for economic growth and the state of the environment to be maximised simultaneously - certain trade-offs are inevitable. In order for difficult decisions to be made in as responsible manner as possible, it is essential that decision makers in government, commerce and industry, examine not only the profitability of new ventures, but that they understand the environmental constraints which operate within this country. For example, certain types of farming may be highly profitable but inflict irreparable damage to a fragile ecosystem.

Geographers are amongst those who are best equipped to balance the needs of the economy against the realities of the limitations imposed by the environment. Geographers have developed a wide range of analytical tools, and their training enables them to synthesise the different facets (physical, ecological, culture, economic, technical, legal and political) of complex development issues.

GENERALISATIONS

The act of acquiring goods and resources produces environmental impacts in the form of air and water pollution, soil erosion and desertification, as well as solid waste disposal.

Sustained economic development is a prerequisite of both political harmony in South Africa and of a healthy environment. The maintenance of environmental integrity is a prerequisite of sustained economic development.

Serious risks to the environment often arise insidiously and may be undetected until they reach crisis proportions.

The process of impact recognition is dependent on both the culture and the form and levels of education of a community. The diversity of South Africa's population militates against a shared environmental ideology. Consequently environmental concerns are often low on the agendas of politicians and other decision makers.

The true costs of the production of goods and services (the cost of production plus environmental costs) must be taken into account when the profitability of a venture is assessed. Members of society must judge what balance of benefits and costs are acceptable, and should articulate their demands through responsive political representatives. The legal system must enforce enlightened environmental codes.

South Africa has an extraordinary diversity of landscapes and richness of flora and fauna. This is the prime drawcard for overseas visitors. The tourist industry is a major growth industry.

KEY QUESTIONS

Why is the rapid growth of South Africa's economy essential for the well-being of its people?

What environmental management practices must be adopted if development is to be sustained?

What resources, natural and human, can South Africa draw on to operate sustainable development?

Which of South Africa's resources require the most careful husbanding if development is not to be retarded?

Why is wise water management essential for the future well-being of South Africa's people?

Why is air pollution such a serious hazard in South Africa?

Why is the increased availability of cheap electricity desirable but problematic?

How must the costs and benefits of an expansion of mineral extraction be resolved?

What are the consequences, to South Africa, of the link between poverty, population growth and environmental degradation.

GENERALISATIONS

South Africa enjoys one of the most pleasant and healthiest climates in the world - a possible drawcard for wealthy retired people.

A feature of South Africa's climate is its variability - there are marked seasonal variations and alternating cycles of wet and dry years, flood and drought. Such rainfall patterns have serious environmental consequences.

There are major spatial disparities in the mean annual rainfall. While some areas receive good rains, in most of the country rainfall receipts impose severe restrictions on farming.

South Africa has an inversion climate, high pressure cells influence both rainfall and pollution levels. Travelling frontal systems and thunderstorms bring rain to parts of the country.

Soil erosion is a serious problem, erosion rates increase dramatically during dry cycles.

Ecologically sensitive marginal areas, cultivated during wet spells, deteriorate rapidly during dry cycles. The damage may be irreversible as veld recovery during wet spells is insufficient to reverse the long-term trend of deterioration.

Agricultural subsidies provided to tide farmers over dry spells often encourage cultivation in marginal areas and discourage farmers from reducing stock numbers when they ought to. Thus they can promote environmental degradation.

South Africa is a dry country,

KEY QUESTIONS

In what ways will the aspirations of disadvantaged majorities impact future environmental policies?

How can the descending spiral of overpopulation and poverty in the Third World component of South African be reversed?

How can the creative potential of the teeming populations of the rapidly growing metropolitan areas be harnessed to promote development?

How can the productivity of farms in the homelands be improved, and sustained?

How can the productivity of South Africa's commercial farms be boosted and improved in such a way that their productivity is sustainable?

How can the growing demand for energy be satisfied without further damage to the environment?

What steps must be taken to ensure that the mismatch between the major areas of economic growth and water availability does not put a break on development?

How should the economic return on South Africa's scarce water resources be maximised?

How will changing patterns of consumer spending impact development?

What role is the informal sector playing in the development of South Africa's economy?

GENERALISATIONS

Its meagre water resources will place restrictions on development. The domestic and industrial demand for water probably will outstrip available supply by the year 2000.

The present demand for water is changing, with urban and industrial consumption increasing rapidly relative to agricultural usage. The demands of agriculture are irregular.

Increasing population and living standards of previously disadvantaged consumers will greatly increase water demand.

The demand for water is becoming more centralised requiring greater water transfer from areas of supply.

The development of aquifers has intensified as surface water supplies dwindle, but their development requires careful environmental management.

Only 20% of South Africa's total water requirements are ever likely to be met by ground water supplies. They will only supply small scale agricultural and industrial users.

Wetlands are amongst the most productive environments on earth and as such need protection.

Wetlands act as nature's kidneys, removing pollutants and improving water quality, they reduce flooding and erosion, they store water and regulate the flow of rivers - at no cost to society.

Wetlands are the habitats of certain animals and water birds.

Urbanisation and industrialisation are contaminating our water

KEY QUESTIONS

What impact will AIDS and other tropical diseases have on the development of the South African economy? How can this be minimised?

How will political developments in neighbouring states impact South Africa's future?

What role could education play in the development of South Africa?

How will political choices impact the quality of life of South Africa's people?

GENERALISATIONS

resources with more and more pollutants.

The treatment of polluted water is costly.

Public awareness is essential to sustain pressure on policy makers to balance development with the need for clean water.

Environmental legislation must play a vital role in policing water and halting poorly planned development.

Stable atmospheric conditions and certain topographical features make South Africa particularly prone to air pollution. Pollution levels in the Eastern Transvaal are higher than the worst in Europe.

Rain washes pollutants out of the air, causing extensive damage to building surfaces, clothing and plants, and chronic illnesses in humans.

Hormone herbicides drift into off-target areas causing serious damage to susceptible vegetable and fruit crops.

Extreme delays characterise the recognition of common health hazards, and effective action against pollution. There appears to be no effective mechanism to resolve environmental conflicts.

The impact of acid rain is likely to be felt in all parts of ecosystems, from soils to water to plants.

The South African economy cannot afford controls that retard growth, but also cannot afford the high costs of pollution.

GENERALISATIONS

Weighed against environmental considerations is the need to electrify the townships. By providing electricity to rural people, environmental degradation would be contained, the demand for wood for fuel would diminish.

Nuclear power is a cleaner energy source than coal, it might, therefore, be a logical alternative. It would create other environmental problems.

Alternative energy sources should be explored.

Mining often has a very damaging impact on the environment, and the infrastructure which supports mining operations is often more harmful than the mining itself.

By imposing few controls, the state has encouraged the private sector to explore for and exploit mineral wealth. The procedure whereby mineral rights are obtained and exploited has many weaknesses.

Compulsory environmental evaluations should be mandatory when new mines are proposed. The proper implementation of Integrated Environmental Management (IEM) would guarantee the wise use of our natural resources.

Poverty, population growth and environmental degradation are interlinked in developing societies.

The natural environment in rural areas often provides the only available resources for poor people.

The appalling state of the envi-

GENERALISATIONS

ronment in many homelands and informal housing areas must be addressed as a matter of urgency.

The aspirations of the disadvantaged majority will inevitably lead to increased demands on natural resources, and an understandable impatience with cautious, sustainable development philosophies. Major adjustments may have to be made in our approaches to environmental conservation.

South Africa's population is expected to increase to over 45 million in the year 2000.

The Third World component is growing at 2,72% p.a. (doubling every 25 years); the First World component has a growth rate of only 0.65% p.a. (a doubling time of over 100 years).

Socio-economic progress is essential for black demographic transition. Without this South African will be interminably locked into a descending spiral of overpopulation and poverty.

South Africa's urban population will increase from 16,2m in 1985 to 35,7m in the year 2000. This raises the spectre of sprawling megacities with young populations, high rates of unemployment and crime.

If the entrepreneurial drive of these people can be encouraged and channelled into constructive activities, the metropolitan markets of South Africa could be very significant.

One in every five black is without a permanent legal home. Shack development is taking place at an unprecedented rate.

GENERALISATIONS

Only 7,3% of South Africa's farmland is arable, most of this is already under cultivation, leaving a relatively small amount of low potential land for future expansion.

The former white South Africa has 85,4 million hectares of which 14,3 million hectares are arable. The 'homelands' comprise 15,1 million hectares of which 2,3 million hectares are arable.

15 million of South Africa's 35 million people are crowded into the homelands i.e. 42% of the population is confined to 13% of the land.

The homelands lack major industrial centres which could absorb large numbers of people and reduce population pressure in the country side.

The extremely high population densities and shortage of good arable land have driven black farmers onto marginal land that is often highly erodable. Overstocking accelerates soil erosion.

Agricultural production in the homelands can meet just 16% of its residents' food needs.

Financial aid and advisory services to agriculture in the homelands has been inadequate, and often misdirected.

The need to conserve soil through sustainable agricultural systems is not appreciated by a populace whose needs are immediate. A hungry stomach cannot accommodate a long term view of resource management.

GENERALISATIONS

For the food growing potential of the homelands to be realised there will have to be radical changes in agricultural practice, and the provision of an adequate distribution network. Overcrowding must be relieved by a multiplication of job opportunities in non agricultural sectors of the economy.

The contribution of commercial farming to the GDP is declining, and depopulation is taking place in white rural areas.

Agricultural productivity in 'white' areas is largely governed by climatic and weather factors. On average 23% of agricultural production is lost annually on account of adverse weather conditions. Irrigated lands are an important buffer.

Many consider that improvements in crop yields and animal husbandry are possible. This could enable South African food needs to be met well into the 21st century.

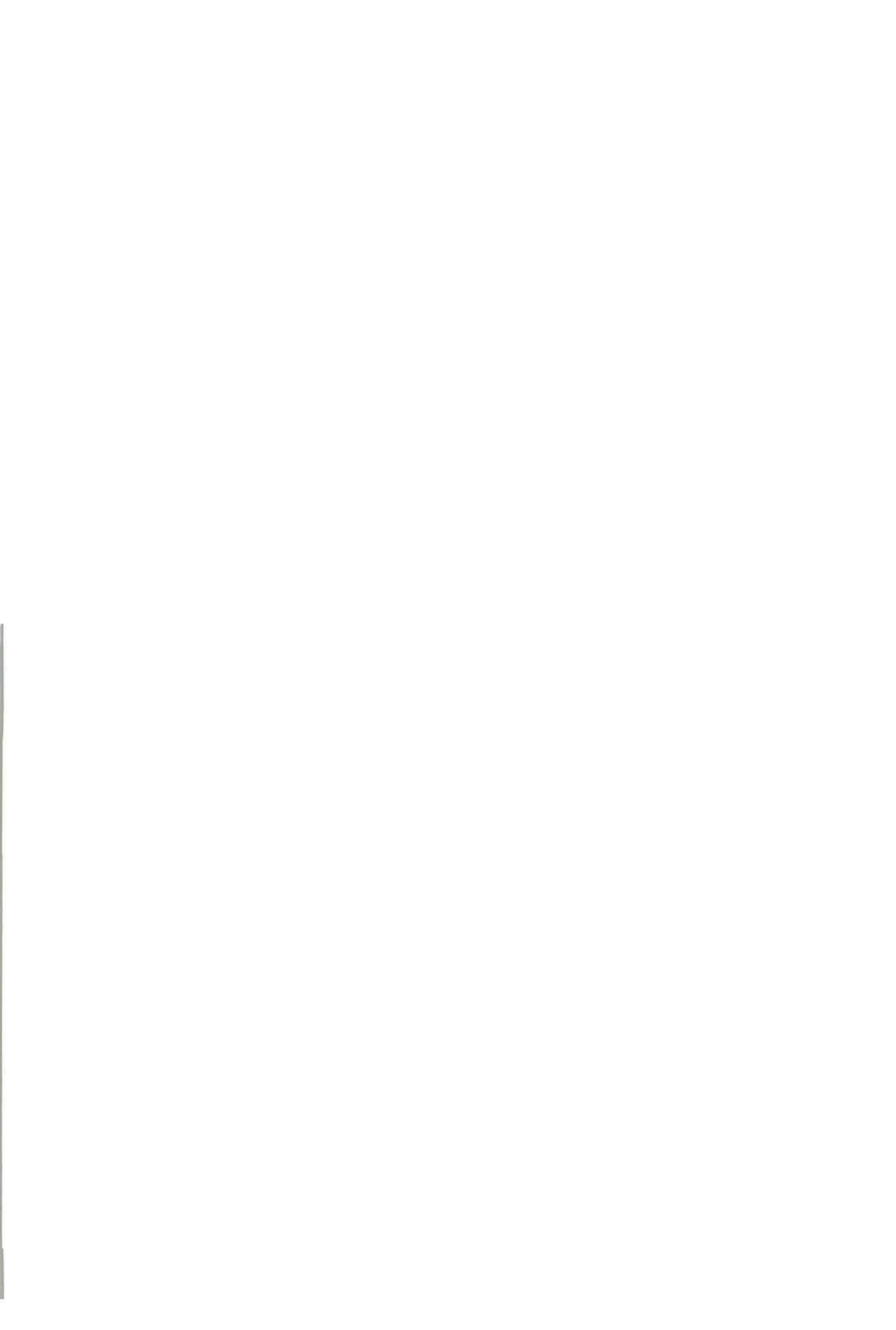
The demand for forestry products is rising more rapidly than the planting of timber: Acute shortages of timber can be expected in the future.

Large numbers of trees are felled for firewood, with dire ecological consequences.

There is a serious mismatch of major industrial areas and water availability.

59% of South Africa's GDP comes from the PWV but only 8% of the mean annual rainfall is provided by the Vaal catchment.

The cost of providing water to the major areas of economic



GENERALISATIONS

growth is rising sharply and will continue to rise.

Poor veld management practices are exacerbating the problem. They lead to high levels of soil erosion and siltation. One medium sized dam (e.g. Midmar, Hartbeestepoort) is lost each year.

Half the developed water resources goes to irrigation farming, this use is highly cost inefficient. Water supply to farmers is heavily subsidised.

The economic return on water use in agriculture is low e.g. the Vaal catchment mining earns 58 times manufacturing 39 times and electricity 19 times the gross geographic product.

Changing patterns of consumer spending among the black population will alter future demands for resources.

Major structural changes are taking place in the South African economy. The present trend away from agriculture and mining, towards manufacturing, construction and services, is expected to continue.

The formal sector and rural subsistence agriculture have failed to keep pace with the huge number of new work seekers.

The informal sector is making an ever increasing contribution to the growth of the South African economy and is providing large numbers with jobs.

Aids is a wild card, its effect on future development is uncertain. It could impact population growth, the labour force, and

GENERALISATIONS

place an intolerable strain on health services.

Other tropical diseases could make a comeback. This includes malaria, hepatitis-B, cholera, bilharzia, foot and mouth diseases and rinderpest.

The kinds of government which evolve in South Africa's neighbouring states will have a major bearing on South Africa's own future. A significant regional 'common market' could develop.

There must be massive investment in an education that is relevant for societies needs. Without a mass education programme development will falter.

The future political and economic course chosen by South Africa, and the way in which its environment is managed will profoundly influence the quality of life of all its people.

GEOGRAPHY AND THE WORKPLACE

This module introduces pupils to vocations which are opening up to individuals with geographical skills. Often Geography is studied with a related discipline in order to prepare a person for a particular career. Each of the careers listed below should be defined; at least two must be selected, and for each of these the following information provided :

The nature of the career.

The particular skills/knowledge required in order to pursue the career.

The vocational opportunities which exist in the market place for individuals with the requisite training and qualifications

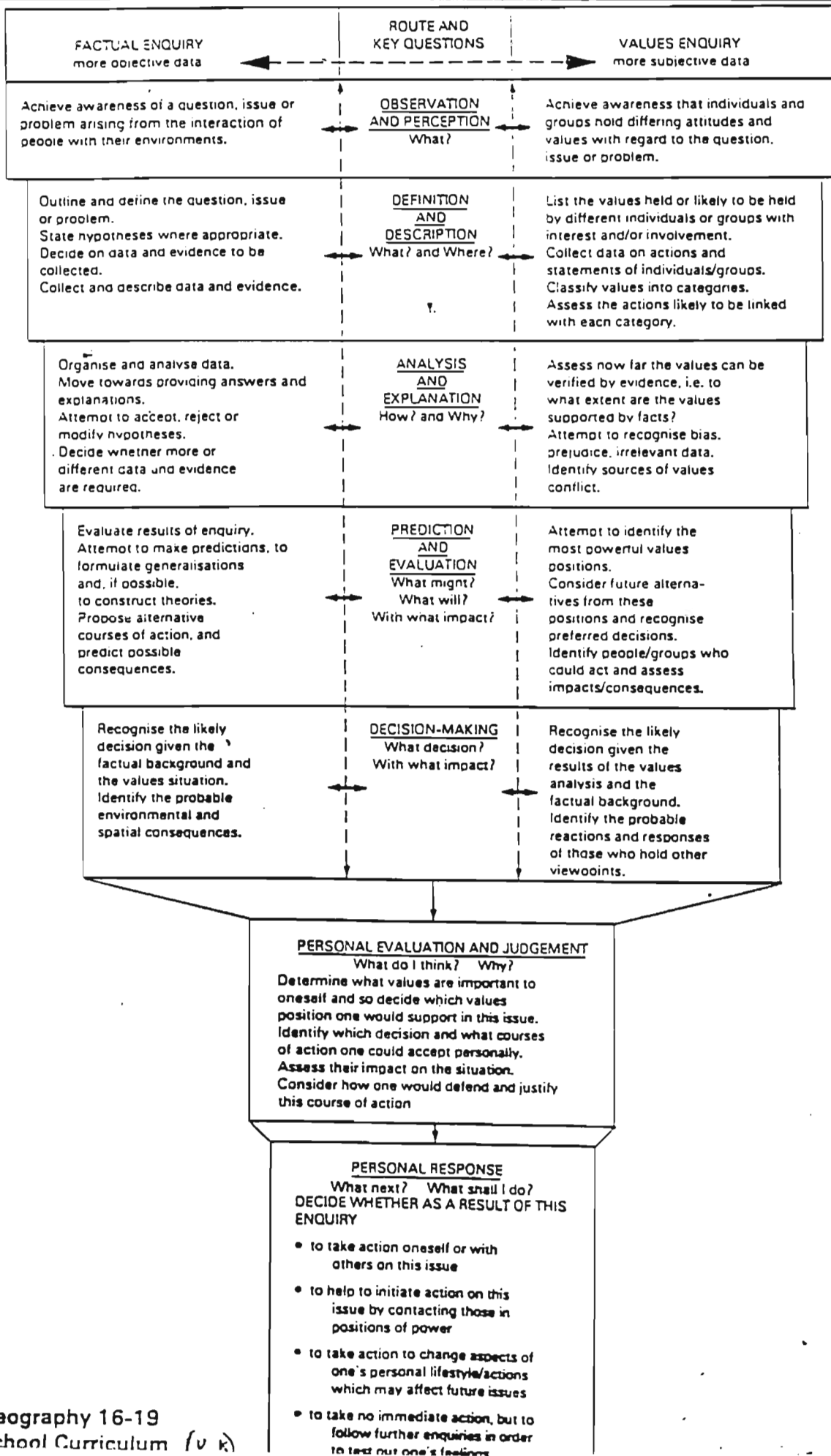
The nature of the training and where it can be obtained.

Urban and regional planning
Environmental engineering
Development planning
Remote sensing and geographical information systems (G.I.S.)
Land surveying and cartography
Environment/social impact assessment/environmental services
Geology and mining geology
Demographics and family planning
Transportation, transport planning, transport economics
Agricultural economics and production planning
Pedology
Meteorology and its applications
Environmental/land-use law
Locational analysis, sight feasibility studies
Resource potential studies

Forestry
Recreational Geography and tourism
Teaching in schools and tertiary institutions
Development banking
Hydrological research
Oceanography
Energy research
Rural development planning
Futures research

000

APPENDIX A THE ROUTE FOR GEOGRAPHICAL ENQUIRY



APPENDIX B : SOME GUIDELINES FOR CANDIDATES UNDERTAKING INDIVIDUAL STUDIES.

1. THE STUDY

- (a) The Individual Study allows candidates to fulfil several of the syllabus objectives in the most appropriate way.
- (b) The Individual Study should grow out of the syllabus and must be related to at least one of the modules studied and should emphasise the integrative nature of geography.
- (c) The Individual Study must meet the weighting of the Objectives specified in part of the syllabus.
- (d) The Individual Study can be either the result of the candidate's personal investigation or the result of an investigation carried out in a group relating to a common topic. When the investigation is undertaken by a group, the analysis and refining of data and written presentation must be the candidates own work.
- (e) A total of approximately twenty hours classwork should be allowed for the Study. This should result in a study of not more than 1500 words.
- (f) The study itself should follow the strategy outlined below.

2. DEVELOPING AND CARRYING THROUGH AN INDIVIDUAL STUDY

The following points are intended to help both the teacher and the candidate in developing and carrying through an Individual Study.

(1) SETTING THE SCENE : A TOPIC FOR STUDY IS RECOGNISED AND OBJECTIVES DEFINED

Several years of research in many different subject areas in public examinations suggest that the most rewarding studies fall largely into four broad groups:

- (a) those which adopt a problem-solving approach;
- (b) those which investigate an issue;
- (c) the clear hypothesis-testing approach, which should be clearly defined and limited;
- (d) a simulation study. It is stressed that the quality of argument is important in studies of this type and this usually demands a great deal of material and data to be prepared by the candidate.

The study should not be over-burdened with too many problems/issues or hypotheses to investigate, one or two are usually sufficient.

Studies should be clearly defined and straightforward with carefully stated problems/issues or hypothesis. At the same time, the teacher should be aware of problems/issues and hypothesis which are so low-level, descriptive or trite as to be obvious from the outset.

Great care should be given to the choice of suitable topics, ensuring that the candidates have sufficient background knowledge and understanding and skills to do justice to the chosen topic.

Some investigations often lack a spatial (i.e. 'geographical') component. A Study should be locational and should stress the need for explanation of the patterns/features observed otherwise they lack value to the candidates understanding of the issues in question.

The Study presents an opportunity for candidates to consider issues which involve attitude/value clarification and judgment.

(2) DATA COLLECTING AND RECORDING. DECISIONS ARE MADE CONCERNING WHAT DATA TO COLLECT. DATA IS COLLECTED AND RECORDED.

The data used in the Studies may be drawn from both fieldwork and/or secondary sources, e.g. census data.

In using secondary data, care must be taken to ensure that candidates do not merely repeat it in their Study. Data must always be used/processed to further the argument.

(3) DATA ARE ANALYSED, REFINED AND PRESENTED.

Most Studies should involve the use of statistical techniques and teachers are referred to Appendix D, "Notes on Skills and Techniques", for guidance.

THE STUDY IS WRITTEN UP.

It is suggested that each Study should have the following:

- (a) an introduction dealing with such things as the context of the particular part of the subject, say the module which it is related to, the reasons for choosing the particular topic and the difficulties involved in carrying it out;
- (b) one or two chapters presenting the data, its analysis and explanation;
- (c) a final chapter should present interpretations and conclusions based upon the information that has been obtained and analysed.

A candidate is permitted to submit a Study that has been word processed or typed so long as it is his or her own work.

APPENDIX C : ASSESSMENT OF THE INDIVIDUAL STUDY

ASSESSMENT OF THE INDIVIDUAL STUDY

When teachers assess the Individual Studies they must use the mark scheme relating to the criteria given below. The information shown may be used by the candidates as an aid in the planning and completion of their Individual Studies.

A good question, issue or problem for study is one which:

- (a) is concerned with people and their environments (not just one or the other);
- (b) is capable of being subdivided into one or two specific questions or hypotheses for study;
- (c) provides adequate possibility for information collection and background reading;
- (d) is manageable in the time available;
- (e) is likely to lead to a conclusion or answer or decision;
- (f) has possible wider relevance than the specific example studied.

and follows the route to enquiry outlined in Appendix B, namely:
setting the scene → data collection and recording → analysis and explanation → evaluation and conclusion.

1. SETTING THE SCENE

20 Marks

Mark

- 17-20 The issue is very well stated in a people-environment context, and the purpose of the study is very clearly introduced with relevant guiding questions and/or a range of appropriate hypotheses to be investigated. The study area is clearly delineated, using a map or maps. The implications of the study are understood in a wider context. When appropriate its significance has been related to general themes, models and issues.
- 13-16 The issue is clearly stated in a people-environment context, and the purpose of the study logically introduced, with the identification of some relevant guiding questions and possible hypotheses to investigate. The study area is delineated using a map or maps. An attempt has been made to explore the implications of the study in a wider context. Although it is quite well set against models and theories, these may not always be appropriate to the issue.
- 9-12 The issue is stated, albeit somewhat briefly in a people-environment context, and, although the purpose of the study is clearly stated, there is only a limited effort to identify relevant guiding questions and possible hypotheses to investigate. The student locates the study adequately, although the location maps may be superficial, but has only a limited understanding of the wider implications of the issue.
- 5- 8 The issue is poorly related to a people-environment context and the purpose of the study lacks clarity and depth, as the student has only made a superficial attempt to identify guiding questions and hypotheses to investigate, often after considerable guidance from staff. The location is stated only in superficial terms, with no supporting map evidence, and there is virtually no attempt to consider the wider implications of the issue.
- 1- 4 The issue is barely related to a people-environment context, with the student having little clear idea as to its purpose. There is hardly any attempt to identify guiding questions or hypotheses to investigate, and the attempt to locate the study is inadequate, with no understanding of the wider implications of the

issue.

- 0 The study makes no attempt to set the scene.

2. DATA COLLECTION AND RECORDING

20 Marks

This section should:

- (a) explain the nature of the information required in order to answer the question or problem posed;
- (b) describe what kind of data was needed, and when and how it was collected;
- (c) give an account of any problems experienced in data collection;
- (d) show evidence of the data collected (if necessary by referring to Appendices);
- (e) describe how the data is used in the study;
- (f) present the data in an organised and appropriate manner.

Mark

- 17-20 The student shows considerable initiative in devising and describing a data collection programme. The data collected is completely relevant and the programme very thorough. The student has used appropriate and accurate techniques of measuring and sampling with a good understanding of the limitations of the data and the problems encountered during its collection, with further suggestions offered as to how this could have been improved. That data is presented in a completely organised and appropriate manner.
- 13-16 The student shows some initiative in devising and describing a data collection programme. Most of the data is relevant, and is thoroughly, but not exhaustively, collected, with the student usually using appropriate measuring and sampling techniques, but perhaps lacking rigour in one aspect. There is discussion as to the limitations of the data and the problems encountered during its collection, with some suggestions of possible improvement. The data is presented in an organised manner, but occasionally inappropriately.
- 9-12 The student devises an adequate data collection programme, perhaps after close staff guidance. The data collected is generally relevant and is reasonably thoroughly collected, although the techniques used are limited and the sample may be small or incorrectly collected. The student provides only a limited discussion of the shortcomings of the data collected or of the difficulties encountered, and there is little discussion of improvements. The data is presented adequately but not always in a logical sequence or appropriate manner.
- 5- 8 The student devises a limited or sometimes inappropriate data collection programme, which shows a lack of planning and thoroughness. There is a limited understanding of techniques and sampling methods and frequently only a very limited range of techniques is used e.g. limited questionnaire.
- There is very little attempt to discuss limitations and little recognition of any problems encountered. There is virtually no discussion of improvements. The data is presented in a somewhat disorganised and frequently inappropriate manner.
- 1- 4 The student shows very limited ability to devise appropriate data collection programme, with ill thought-out and inappropriate methods, and a very superficial approach. The programme uses a very limited range of techniques, and completely inappropriate sampling. Very little care is taken to produce a sound data based, with no discussions as to the limitations of data, or problems encountered. The data is poorly presented, and has frequently unexplained

- 0 The student has been unable to devise a data collection programme.

3. ANALYSIS AND EXPLANATION 25 Marks

This section should show evidence that appropriate methods and techniques have been chosen and used to analyse and explain the information collected, with a view to moving towards answers and/or solutions.

It should therefore do some of the following :

- (a) Select and appropriately apply analytical techniques;
- (b) refer as well to descriptive and interpretative material by way of analytical commentary;
- (c) apply or test the relevance of models and theories;
- (d) put forward alternative models and/or theories;
- (e) analyse items individually, but also attempt to summarise and recognise overall links and/or trends across items.

Mark

21-25 The student selects and uses an appropriate range of analytical techniques including descriptive, graphical and statistical. All methods are very well executed and understood. All maps, graphs and statistical results are fully described, justified and explained, with a clear understanding of the trends and patterns which emerge. Models, theories and hypotheses are tested against the data collected and analysed. Where appropriate, alternative models and/or theories are devised.

16-20 The student selects and uses an appropriate, but not exhaustive, range of analytical techniques. All methods are well executed and understood. Maps, graphs and statistical results are described, justified and explained, but not always fully. Trends and patterns are identified, but not always clearly interpreted. Models, theories and hypotheses are tested, but with insufficient confidence and initiative to develop alternatives.

11-15 The student selects and uses a fair range of techniques, but often these are basic, and limited the depth of analysis. Application and understanding of these techniques is variable and not always relevant. The student shows an adequate level of descriptive and graphical skills, but justification of statistical tests is weaker. Trends and patterns are described but not analysed, with little reference to models, theories and hypotheses.

6-10 The student selects and uses only a limited range of techniques, some inappropriate. There is adequate use of descriptive techniques, but the graphics lack variety, and there is little or no statistical analysis when it is clearly required. Where used, there is little understanding of statistical methods. Trends and patterns are infrequently recognised, with very little reference to models, theories or hypotheses.

1- 5 The student employs a very limited range of techniques, which are totally inappropriate. The descriptions supplied are vague, with little attempt at analysis in any form. Sources are frequently used with little development, e.g. photocopied maps with no annotation. The student shows virtually no ability to interpret patterns and trends, with no reference to models, theories and hypotheses where these would have been appropriate.

0 The student has been unable to analyse and explain the results of the enquiry.

4. EVALUATION AND CONCLUSION 25 Marks

The section provides the opportunity to :

- (a) return to the question(s) posed at the beginning;
- (b) summarise and draw threads together;
- (c) evaluate specific findings against more general theories and themes;
- (d) point out the wider significance of results;
- (e) make some imaginative and creative suggestions;
- (f) draw comparisons between the study situation and other situations;
- (g) put forward one's own views and recommendations;
- (h) suggest further aspects of enquiry.

Mark

21-25 The student produces an excellent conclusion which returns to all the questions posed at the beginning and draws on all the information gathered to provide answers and explanations, through the trends and patterns identified. Models, theories and hypotheses are accepted, rejected or modified with some justification. The wider relevance of the study is raised and discussed. The student then goes on to put forward personal views and pose imaginative and creative solutions in a full evaluation of the enquiry.

16-20 The student produces a thorough conclusion, which returns to most of the questions posed at the beginning and draws on the information gathered in an attempt to provide answers, explanations and solutions. Trends and patterns are linked to these explanations, but often with difficulty. Models, theories and hypotheses are discussed with some justification and there is some insight into the wider relevance of the study. The student puts forward some original views and tentative solutions in a thorough evaluation which suggests further avenues of enquiry.

11-15 The student makes a fair attempt to conclude the study, linking the results to the original questions posed. However, the conclusion shows limited development, with some key issues not discussed, and a failure to provide convincing arguments and explanations. Threads are weakly drawn together, with the trends and patterns identified, but not clearly. Models, theories and hypotheses are only discussed in a limited way, sometimes irrelevantly. There is limited original discussion or insight, with further levels of enquiry only briefly mentioned.

6-10 The student attempts to draw the study to a conclusion, but offers only very limited explanations, with little reference to the results of the data analysis, and an inability to draw the threads together in a logical way. There is some confusion as to the trends and patterns established, and little original discussion. The evaluation is minimal, with no concrete suggestions as to further development of the enquiry. There is a lack of critical assessment, or model or hypotheses testing.

1- 5 There is little reference to the original questions posed, with a very poor explanation as to the significance of the findings, making little or no reference to the data collected. Trends and patterns are weakly stated, if at all, with the conclusion being disorganised and totally descriptive. The evaluation is virtually non-existent, with no critical assessment, and suggestions as to further development.

0 The student has made no attempt to conclude and evaluate the study.

5. PRESENTATION

10 Marks

The presentation of the report is an important part of the complete enquiry. It refers to far more than just clear handwriting and neat diagrams. Attention should be given to :

- (a) labelling of all maps and diagrams;
- (b) the finding and selection of appropriate ways to present all information;
- (c) the supplementing of the report with relevant (personal) photographs, if appropriate;
- (d) the acknowledgement of all data sources and references;
- (e) the subdivision of the work into clear sections;
- (f) the ensuring that text and figures are easily handled and capable of being 'read' together.

Mark

9-10 The enquiry is very well organised, with clear sections and pagination, and fully incorporated and appropriate illustrations, tables and diagrams. Maps are well drawn and fully labelled, including keys and scales, are effectively linked to the text. All sources of data are acknowledged, with a well organised appendix where appropriate. The study follows a completely clear and logical route.

7- 8 The enquiry is well organised with clear sections and pagination, and incorporated tables and diagrams. Maps are clearly drawn, fully labelled and integrated into the text. Data sources are acknowledged, with an appendix used where appropriate. The study follows a clear and logical route.

5- 6 The enquiry is adequately organised perhaps lacking somewhat in the style and variety of presentation. Maps and diagrams are quite neatly drawn, but not fully labelled in some cases. Tables and diagrams are not always integrated into the text. Data sources are usually acknowledged. The study follows a route, but not always in a clear and logical manner.

3- 4 The enquiry is somewhat disorganised, and a little difficult to follow. Maps tend to be less than effective, and the tables and diagrams lack headings, keys etc. and are not frequently well incorporated into the text. Data sources are frequently not acknowledged. The study attempts to follow the route but this is not clear to the reader.

0- 2 The enquiry is very poorly organised and is very difficult to follow, as there appears to be no logical route to enquiry. Diagrams and maps are poorly drawn, frequently lacks keys and scales, and are not integrated into the text. Data sources are not acknowledged, and the overall impression is of a careless approach.

In general, teachers should look for evidence of understanding of the process of enquiry, for originality and individuality, and for the exercising of the candidate's critical ability.

Total

100 Marks