

TR93-77

THE USE OF THE LOCAL ENVIRONMENT FOR TEACHING

GEOGRAPHY : A CASE STUDY IN THE UMTATA

ADMINISTRATIVE AREA

THESIS

SUBMITTED IN PARTIAL FULFILMENT OF THE

REQUIREMENTS FOR THE DEGREE OF

MASTER OF EDUCATION

RHODES UNIVERSITY

BY

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JANUARY 1993

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ABSTRACT

Current theories in geographical education advocate the use of strategies that encourage the pupil to play an active role in learning, thereby making such learning more meaningful and effective. Fieldwork is perceived as one such method. Fieldwork helps pupils acquire and develop understanding of geographical concepts, skills, attitudes and values through their own efforts and involvement. Fieldwork approaches have tended to change with the changing paradigms resulting in the development of approaches that are more pupil and experience oriented.

In the South African school geography curricula fieldwork has been explicit since 1985. However, research has shown that in most South African secondary schools fieldwork as a teaching strategy is only applied to a limited extent. Teachers have always used financial constraints and time limitations as explanations for their failure to use fieldwork in teaching geography.

This study attempts to demonstrate how the local environment of any school can be used effectively for teaching and learning most aspects of the senior secondary school geography syllabus, thereby alleviating the problems of time and money perceived by teachers as the major constraints inhibiting their use of fieldwork.

In order to illustrate the effectiveness of fieldwork in the local environment, this study incorporated an analysis of the current senior secondary school geography syllabus, the identification of potential fieldwork sites in the Umtata District and the development and implementation of three fieldwork units based on three of the sites identified.

The analysis of the evaluations of the three fieldwork units by the researcher, the pupils and the non-participant observer revealed that fieldwork conducted in the local environment is highly effective, interesting and rewarding to pupils even when they have no prior experience of fieldwork.

ACKNOWLEDGEMENTS

It is with a sense of gratitude that I express my appreciation and thanks to all who assisted me in the preparation of this half-thesis.

I am deeply indebted to my supervisor, Mrs U van Harmelen for her long invaluable advice, constant encouragement and the long hours she spent supervising this dissertation and to the late Professor A.E.G. Clark for his advice in choosing the topic of this dissertation. I also wish to thank Mr P Botha of the Transkei Teachers In-Service College for sacrificing time and money to act as the non-participant observer to evaluate this research and the Transkei Department of Education for allowing me to undertake research in schools under their control. Without the co-operation of the principal and the geography teachers in the two schools involved in this research, it would not have been possible to complete it.

A special word of thanks goes to the pupils who were involved in this research, particularly the 1991 Std 10A pupils of Zamukulungisa senior secondary school who enthusiastically participated in this research. Professor James Lwanga-Lukwago's assistance and support was invaluable during the actual research and the writing up phases of this study. My sincere appreciation goes to him. I do not wish to forget my colleagues who have shown their interest in my progress and given me their unfailing support

as did Mr Ludidi and Mr Monyooe.

Mr Mbuzeli Matibe who assisted me regarding the use of the computer and in typing the first draft of this dissertation and the tables, Ms Soko Mtshemla who typed the programme, Mrs Billy Alladeen who typed the final draft and Rosemary Townsend who edited this thesis proved to be the most understanding people I have worked with. I thank them for their assistance and positive attitude at such a very crucial time.

I owe a debt of gratitude to my uncle Rev. Douglas Nkosinathi Adonis and Songo for all the love, support and motivation they have given me throughout my studies.

Finally, I wish to thank my two loving daughters, Lungiswa and Noloyiso for their understanding during the long periods of absence from home and their constant encouragement.

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DEDICATION

To My late mother

CHRISTINA BUYISWA ADONIS

for having taught me how to persevere in life and to trust in God.

CHAPTER 1

THEORETICAL BACKGROUND TO THE STUDY

1.1 INTRODUCTION

Geography has been defined as the study of the interrelationship between man and the environment and of the processes that affect changes in these interrelationships (Biddle, 1968; Boardman, 1986 and Hurry, 1989). Understanding these interrelationships must be preceded by knowledge of man himself, the environment in which he lives and the processes that affect these interrelationships. This knowledge can best be gleaned from the environment itself, by going out to see, to touch and to feel, that is, through fieldwork.

Laws (1984:134) has suggested that 'geography is fieldwork'. The adage that geography is learned through the soles of one's boots (Laws, 1984) also highlights the inseparability of geography and fieldwork. Jones (1968:1) claimed that 'those who are trained to go and look for themselves are not only likely to be the best geographers, but they become real geographers.'

In geography, as in other subjects, 'learning becomes more effective when the methods of the subject are firmly entrenched in the strategies of the subject itself' (Webster, 1979:357). The method of geography, according to Webster (1979) and Slaytor

(1973) is to observe, record and perfect a skill of interpretation which becomes a tool for solving a variety of political, social, economic and environmental problems. Burt (1989) saw observation as the vehicle through which we experience the world while, in supporting this, Fien (1985) describes geography as environmental experience. From the above discussion it can be inferred that fieldwork ought to be an essential method for teaching/learning geography. Consequently, it has assumed great significance in the school geography curriculum since World War II. This significance increased drastically with the introduction of the learner-centred approaches of the 1960s. In highlighting the need for fieldwork, Jones (1968) expressed the need for 'all pupils, good or bad, indifferent, rich and poor' to be afforded the opportunity to undertake fieldwork because, according to Brady (1985:35), 'there is not and there cannot be any substitute for the immediacy of field experiences'.

The British, American and South African curricula have acknowledged the importance of fieldwork by including it in their geography syllabuses. The British Geography 16-19 Project, and the Geography 14-18 Project have included fieldwork as part of the examination system (Tolley and Reynolds, 1977).

Paradigm shifts that occur in geographical education as a result of the changes that occur in the nature of thinking have brought about changes in fieldwork approaches. The most significant shifts in fieldwork approaches occurred from the observational field teaching of the early 1960s which is teacher-centred and

product-based to field research which is learner-centred. The ecological paradigm of the 1980s has resulted in a further approach, framework fieldwork, which places more emphasis on the people-environment interactions, and explains the nature and relevance of geographical ideas and concepts in terms of these interactions (Boardman, 1986). It must be noted that these successive approaches are not exclusive, and that successive developments have tended to build on what has gone before.

The role of fieldwork in the 1973 South African geography syllabus was implicit. In the 1985 revised syllabus, however, the need to undertake fieldwork was explicitly emphasized. This syllabus emphasized the need for geographical education to develop conceptual understanding, skills, values and attitudes and to allow the pupil to reflect, analyse and evaluate in approaching the study of the world. These concepts and skills can be best developed, practised and refined through fieldwork.

1.2 STATEMENT OF THE PROBLEM

Notwithstanding the direct inclusion of fieldwork as an explicit part of the South African geography syllabus, recent research (Nightingale, 1981; Ballantyne, 1986; Bogwana, 1992; and Ngquba, 1992) has revealed that fieldwork is a neglected area of geography teaching. This research identifies the following as factors which limit the use of fieldwork in South African secondary schools:

- (i) There is generally a shortage of money for travelling to well known sites far from the schools.

- (ii) There is a lack of knowledge of local sites and the necessary skills to identify them. Consequently there is a tendency for teachers to ignore the use of the local environment for fieldwork.

- (iii) Another problem identified is lack of knowledge of the type of fieldwork appropriate for each topic and of the skills that can be developed.

- (iv) The limited expertise in fieldwork methods which many teachers trained in South Africa possess is another aspect of the problem. This results in teachers feeling insecure when faced with the prospect of teaching in the field. Furthermore, though much can be learnt from the extensive literature on fieldwork, only a limited amount of material has appeared which is appropriate for the specific needs of local areas. This results in teachers adopting a negative attitude to fieldwork and in this way remaining unaware of the wealth of opportunity that the local environment is able to offer. Thus the fieldwork potential of a place such as Transkei tends to remain unexploited. The above can be seen as a failure in perception. This problem of perception implies that teachers cannot assess the potential of the area where most fieldwork should be carried out, namely, in the school

grounds.

- (v) Time has been identified as the main deterrent to the use of fieldwork (Bailey, 1987). Fien (1985) asserts that 'the time-cost effectiveness mentality' is a result of the factual emphasis placed on geography by examination systems. The organisation and preparation of activities are often perceived as taking more time than the actual activities in the field.

The overemphasis placed on financial and time constraints is an indication of the poor perception by teachers of the value of the local environment as a resource for fieldwork. Fien (1985) remarks that teachers rarely direct the attention of the pupils to the micro-environment of everyday life.

1.3 GOALS OF THE STUDY

On the basis of the problems outlined above and the review of literature carried out in Chapter 2, this study has been undertaken to demonstrate the extent to which the local environment can be used adequately for fieldwork in teaching the senior secondary school geography syllabus. The study centres on the Umtata District as a case study for the identification of potential sites and for the implementation and evaluation of fieldwork units in the area. It is hoped that this study may help teachers in other areas to see how they can use their own local environments for fieldwork and thereby solve the problems of time

and money needed for travelling and organizing fieldwork.

1.4 RESEARCH LOCATION

This research was undertaken in the Umtata District of Transkei between May and August 1991. It involved all senior secondary schools in the district and 18 Std 10 and 17 Std 8 pupils in the first school and 35 Std 10 pupils in the second school.

1.5 CHAPTER OUTLINE

Chapter Two traces the changes in fieldwork approaches resulting from the changing trends in geographical education and the role of fieldwork in the South African geography syllabus since 1973 is analysed .

Chapter Three discusses the research methods used in this study. In Chapter Four a geographical background to the study area is given. This is followed by the development and analysis of the fieldwork programme for Stds 8-10.

In Chapter Five the results of the data collected are presented and analysed. Chapter Six focuses on the conclusions and recommendations based on the findings of the research.

CHAPTER 2

FIELDWORK IN THE TEACHING OF GEOGRAPHY: A REVIEW OF PERTINENT LITERATURE

2.1 INTRODUCTION

Fieldwork, as a teaching strategy, has assumed great significance in school geography curricula since World War II. It has been accepted as one of the strategies in which, when properly organised, pupils are afforded the opportunity to assume a major responsibility for their learning. Fieldwork is perceived as playing a significant role in enhancing the pupils' understanding. (Maye, 1984; Hurry 1989)

Fieldwork has been defined in various ways. Nightingale (1977) defines it as a formal study outside the classroom undertaken by pupils as part of their academic work. This definition is supported by Hurry (1989) who perceives it as any educational activity that takes place outside the classroom. Bailey, (1987) on the other hand, sees it as a method of planned discovery, whereby the teacher prepares situations from which pupils learn geographical facts and ideas for themselves. These definitions emphasize the fact that fieldwork does not need to be undertaken far from the school to be effective.

The first part of this chapter discusses the value of fieldwork

and explains how recent trends in geographical education have influenced changes in fieldwork approaches and, subsequently, led to a greater emphasis on the local environment as the pupils' laboratory for learning geography (Marker, 1980). The second section of the chapter examines fieldwork in the South African geography curriculum with particular reference to schools in the developing and relatively disadvantaged areas of Transkei.

2.2 THE VALUE OF FIELDWORK IN GEOGRAPHY TEACHING/LEARNING

Bailey and Binns (1987) maintain that fieldwork provides the pupil with an opportunity to learn through direct experience. Hutchings (1962), on the other hand, sees it as a way of relieving the bookishness of education through practice in observation and exploring out of doors. The same view is expressed by the University Working Group (UWG) (1984:210) that fieldwork 'develops field investigative techniques and an ability to relate the ideal world encapsulated in theory, map and textbook examples to the real world which they [the pupils] encounter in the field.' Thus, fieldwork leads to experience-centred education or what Fien (1983:47) and Huckle (1983:152) call 'experiential learning'. Bailey (1974) regards fieldwork as the best and most immediate means of bringing together in the pupil's experience geography as a body of knowledge and as a distinctive method of study.

Laws (1984) and Lidstone (1988) agree that fieldwork provides the opportunity for developing skills such as observation, recording,

analysis and interpretation. Fieldwork extends the world with which the pupil is familiar while widening geographical experience providing a foundation for the development of concepts and attitudes. The specialised vocabulary of geography is strengthened, generalisations and theories of geography are rendered more real and meaningful when studied in the field (UWG, 1984).

Through fieldwork pupils develop an appreciation of the patterns and surface forms and an understanding of the processes which led to their formation (Fien, 1985). Concern for the environment and for the people is developed through involvement in the community during fieldwork. This leads to the development of interpersonal relationships among the pupils and between the pupils and teachers.

McPartland and Harvey (1987:162) maintain that fieldwork offers opportunity for introducing pupils to people-environment issues and the opportunity for the analysis of these issues in the field using appropriate techniques of inquiry.

The role of fieldwork is, to a large extent, influenced by the aims and content of the geography syllabus. The aims and objectives of the syllabus, in turn, are influenced by the prevailing philosophical/methodological trends in geographical education.

2.3 TRENDS IN GEOGRAPHICAL EDUCATION AND THEIR IMPACT ON FIELDWORK IN GEOGRAPHY

People's ideas about the nature of knowledge often determine their thinking and the way in which they organise and approach the subject (Hall, 1984). In order to trace the development of fieldwork as a teaching strategy, and the modifications that it has undergone, the developments and changes in the nature of thinking in geography since 1963 are reviewed.

2.3.1 Empiricism and its influence on fieldwork in geography

Until the 1960s, geographical thinking was dominated by an empiricist perspective with its concept of knowledge as the product of experiences received through sense perception, especially vision. Geography consisted of a description of places. As a result, facts about such places tended to be overvalued. Emphasis was placed on the description of the observed world (Hall, 1984 and Johnston, 1985).

During this empiricist period, fieldwork tended to be associated mostly with what Hall (1984:3) referred to as 'an acute and persistent observation, and acute registration of data'. If the information proved to be ambiguous, recourse was made to further observation (Briault and Shave, 1960 and Hall, 1984). Everson (1973), Rawling (1977) and the University Working Group (UWG) (1984) described fieldwork during this time as 'observational field teaching'.

The observational field teaching approach involved preparation in the class to provide pupils with background material. This would be followed by observation, recording and interpretation which occur in the field. Recording can be effected in such ways as field-sketching, map-drawing, completing transects and/or answering questionnaires. Interpretation is carried out in the field and concluded in the classroom through discussion, drawing graphs and maps and/or the writing-up of field reports as shown in figure 1.

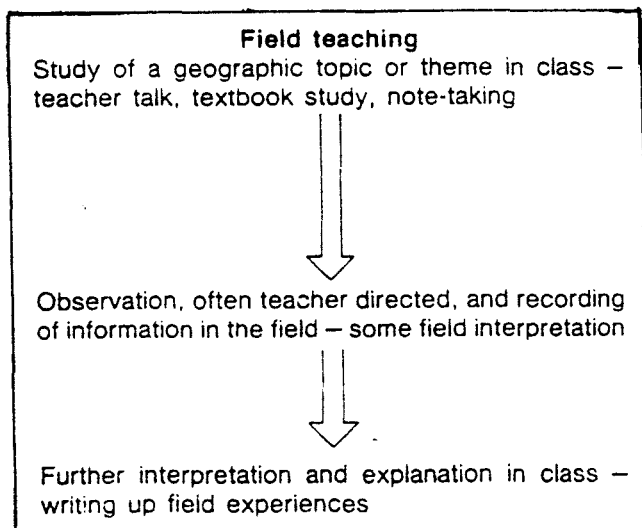


Figure 1 : Field teaching (After Laws, 1984)

Long and Roberson (1966) maintain that in observational field teaching, it was the facts rather than the processes that tended to be discerned in the field. This practice often led to a concentration of attention on simple, obvious information, phenomena and relationships.

Despite the criticism cited above, observation and perception are still regarded as the basic didactic principles related to fieldwork (Hurry, 1989). Hutchings (1962) saw observation as significant in facilitating the learner's development of mental maps and imagination. According to Hutchings (1962) it is only through field observation that a pupil can properly grasp the meanings of distances and relative sizes of landscape elements. Nightingale (1981) remarked that observational fieldwork can be meaningful if proper guidance is given through either verbal communication or specific tasks.

2.3.2 Rationalism and its influence on fieldwork in geography

From the 1960s there was a marked change in the perception of geographical knowledge and fieldwork, as described below.

Firstly, there was a diffusion of ideas from the natural sciences about processes, cause-effect relationships and classificatory procedures which helped make sense of discrete data by the use of rules and general explanatory procedures.

Secondly, and according to Hall (1984), mathematical geographers challenged the empiricists' view of sense perception as the fundamental route to knowledge. The result was the rationalist view that knowledge is founded upon the innate power of the mind to interpret, organise, relate and anticipate events. Reasoning, by its generation of theories and concepts, was regarded as the ultimate source of knowledge. Therefore, ideas, theories,

concepts and principles were regarded as fundamental in helping the individual to understand the world.

The foregoing change, to some degree, influenced the approach to fieldwork. Pupils would now go beyond the observation and description of observed places. Henceforth, they would be expected to observe and describe the processes and structures evident in the area under study.

According to the same author, the major weakness of this approach was its failure to suggest methods of inquiry that produce the conceptual structures and ideas. This resulted in the concepts and ideas being used simply as labels and therefore assuming the status of inert facts. Thus there was little difference between the rationalist and the empiricist perspective. This meant that even in fieldwork no methods of inquiry could be suggested as means to provide generalisations.

2.3.3 Positivism and its influence on fieldwork

While the value of observation and description of processes and principles could not be denied, it became necessary to find an approach that would produce methods of inquiry which would help pupils to identify the principles and patterns on their own. Hence the importance of positivism.

Positivism emerged as the basis of the 'new geography' of the 1960s, and the rapid changes that occurred as a result of this

paradigm led to the so called 'quantitative revolution' in geography. Positivism went beyond simple description by also providing explanations (Johnston, 1985). Positivism was associated with the so-called scientific method.

Scientific methodology was seen to provide guidelines by which ideas, principles and/or patterns could be investigated, and critically accepted or rejected. Geography, it was suggested could only claim to be a science if it used the methods of science. The ideas outlined above resulted in a shift of emphasis in geographical education from a description of facts, ideas and concepts to scientific methods of inquiry. Emphasis was placed upon the formulation and testing of hypotheses, and the use of measurement and statistical techniques to prove the hypotheses (Beddis, 1983; Campbell and Wood 1969; Hall, 1984; Bartlett, 1984 and Johnston, 1985). Unlike the empiricist perspective, which saw places as unique entities, emphasis in the new geography was put on generalisations.

There was an attempt to connect different ideas and formalise them into theories and models (Campbell and Wood, 1969). Alongside this change, there was an increased emphasis on understanding rather than factual learning (Beddis, 1983). Understanding, according to this paradigm, could only be assessed from the learner's ability to apply facts in solving problems. Therefore, another important area of emphasis was the use of problem-solving methods.

In addition to the features of the new geography mentioned above, Bartlett (1984) emphasized the direct observation of perceived phenomena as the ultimate link between scientific knowledge and the world itself. The same author and Preston-Whyte (1982) maintained that, in positivism, the route to true understanding was through detachment, thereby emphasizing objectivity.

These ideas filtered into fieldwork in geography in several ways. Firstly, the idea of observation in fieldwork was retained. Secondly, objectivity and the rejection of values and personal perspectives in description and explanation were adopted in fieldwork. Thirdly, the formulation and testing of hypotheses formed the core of fieldwork (UWG, 1984). This was confirmed by Bailey (1974) who observed that fieldwork would be used to present pupils with evidence from which they could draw conclusions for themselves. This type of fieldwork was practical, experience-oriented, learner-centred and problem-oriented.

De Vos (1989) maintained that this field research approach involved more active participation by the learners in the structure and development of activities, as shown in figure 2. It is noteworthy that such traditional techniques of fieldwork as observation are still used with the emphasis being placed on analysis, evaluation and generalisation.

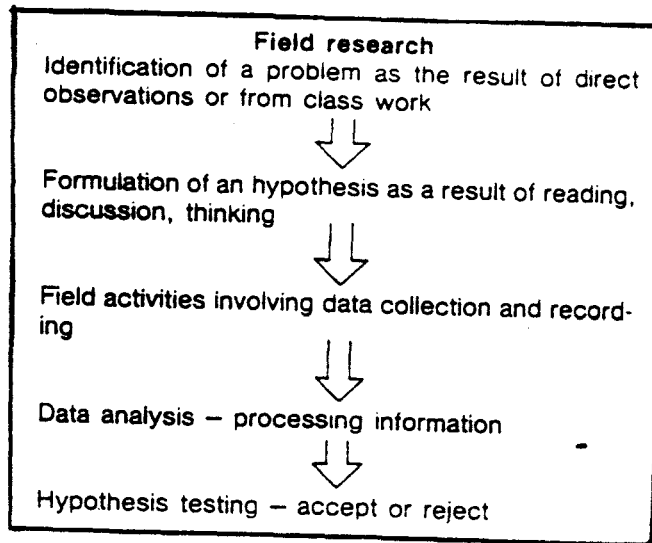


Figure 2 : Fieldwork Research (after Laws, 1984)

A major weakness of the field research approach is its rejection of values, intuition and imagination. Everson (1973) expressed the fear that, whereas one of the major aims of teaching geography and undertaking fieldwork is to develop awareness and appreciation of the environment, this approach encouraged pupils to develop a problem-solving consciousness rather than an eye for the countryside.

2.3.4 Humanism and its influence on field work in geography

The major characteristics of positivism, namely, objectivity, detachment and emphasis on a value-free geography, were a source of dissatisfaction during the late 1970s. To accept these as fundamental in geographical education was to ignore the fact that even the decisions about the nature of positivism were made on the basis of the values of the people who made them (Maye, 1984).

Beddis (1983:18) noted that 'a largely conceptual geography in schools could be intellectually challenging but colourless and morally sterile, without feeling or compassion'.

These concerns led geographers to look for an alternative approach that would provide scope for personal knowledge and experience and, in so doing, take cognisance of the values, attitudes and imaginations of people. The new approach adopted was based on the principles of phenomenology and existentialism.

Phenomenologists argued that there is no objective world independent of man's experience, and that all knowledge originates from the world of experience and cannot be independent of that world (Fien, 1983; Holt-Jensen, 1980 and Preston-Whyte, 1982).

Knowledge is perceived as being based upon subjective interpretations of experience. This means that there is a personal dimension to the way one sees and interprets phenomena and/or events (Bartlett, 1984). Fien and Slater (1983) and Fien (1983) also referred to 'private geographies', the everyday meanings and experiences through which places become known. They regarded such geographies as locational and evaluative and therefore embedded in a social context. Such an interpretation of knowledge is known as 'humanism'.

Experiential learning propounded by humanism demands, inter alia, extensive use of fieldwork. The fieldwork approach associated

with personal experience, values and attitudes of people is what the UWG (1984) and Bailey and Binns (1987) described as 'investigative or issue-based fieldwork'. This fieldwork aimed at investigating such issues as planning, decision-making and matters of environmental concern which were perceived as being relevant to people.

Through such fieldwork, learners can learn to clarify their own value positions, and develop empathy by learning to put themselves in other people's positions. This type of fieldwork does not reject the scientific procedures of the scientific approach. Rather, it seeks to apply it to the identification and transmission of meanings (Johnston, 1985). Hart and Thomas (1986) maintained that such fieldwork is often practised under the guise of perception studies and environmental education. They remarked, however, that it is easy to envisage it as becoming just another field activity employed largely in its own right and for its own sake. In other words, it is a learner-centred activity to be tried out, appreciated and then shelved with little chance of ever being used in understanding the quality of life in a given area.

2.3.5 Environmentalism and its influence on fieldwork in geography

Preston-Whyte (1982) perceived positivism and humanism as opposing poles which cause an irreconcilable split between the environmental (physical) and the cultural (socio-economic)

components of geography.

Thus, whereas humanism emphasizes learner-centred approaches, positivism emphasizes subject-oriented approaches. The integration of the natural and social components of geography requires the use of an all-embracing methodology that can bring these two components together without inhibiting progress in any one of them.

Preston-Whyte (1982) referred to the 'new environmentalism' as a paradigm which constitutes a fusing agent and a rationale for a return to the study of man-environment interactions. According to Hall (1984), this paradigm forms an ecological viewpoint in which man-land relationships and the principle of interrelationships are seen as a descriptive framework within which scientific investigation can be undertaken using the key ideas of general systems theory.

Knill (1991) seems to be referring to a similar concept when he uses the term 'green paradigm'. The 'green paradigm' accepts that people are one part of a complex system. They are dependent on that system, and 'there is neither justification nor logic in exploiting the system for human benefit to the detriment of that system' (Knill, 1991:57). He emphasized that 'the world appears as a complicated tissue of events, in which connections of different kinds alternate or overlap or combine to determine the texture of the whole'.

According to McPartland and Harvey (1987), one of the aims of fieldwork is to introduce learners to important people-environment issues and to provide them with the opportunity to analyse these issues in the field using appropriate techniques of inquiry. That this aim is gaining importance is evident from the integrated framework for fieldwork stressed by Hart and Thomas (1986). Furthermore, this aim is closely linked to the ecological paradigm, implying that it has an apparent influence on fieldwork in geography. Hart and Thomas (1986) claimed that during the 1980s, there had been an attempt to adopt a fieldwork approach which sought to emphasize the significance of people-environment interactions, and to explain the nature and relevance of geographical ideas through reference to those interactions. "Framework Fieldwork" is regarded as such an approach.

Figure 3 shows the integrative nature of Framework Fieldwork in that people-environment interactions, ideas and concepts, procedures and techniques of inquiry are all combined.

The same figure shows that interference by people in their environment often generates a number of questions, issues, problems and challenges which have to be solved. These questions and issues have both factual and opinion or value-oriented dimensions. In attempting to solve these problems, relevant aspects of the problem have to be investigated in the field using procedures and techniques which emphasize integrated information gathering (Hart & Thomas, 1986).

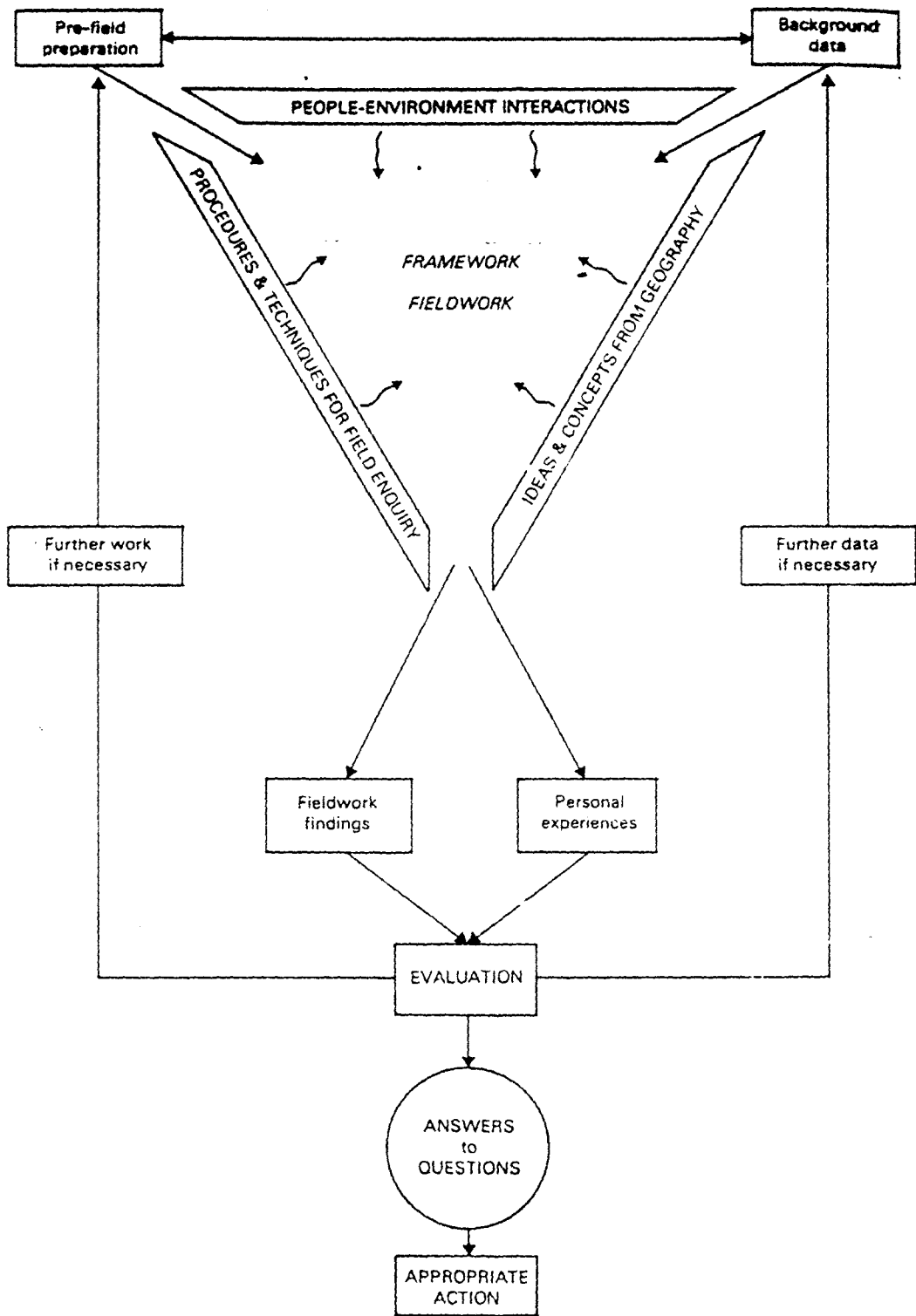


Figure 2.3

Framework: Fieldwork

(after Hart & Thomas, 1986)

In tracing the developments of geography as a school subject in South Africa from 1839 to 1989, Clark (1989) revealed that school geography in South Africa had undergone changes in accordance with the changing paradigms in geography in other parts of the world. For example, he cited the transformation of geography in the 1960s by a paradigm shift from the idiographic description of regions to a nomothetic, law seeking science. Developments included the adoption of new teaching strategies including enquiry methods and problem-solving. One such enquiry method was fieldwork. Fieldwork was accepted as an integral part of the geography syllabus but, as in Britain and the USA, it underwent changes in approach in accordance with the changing paradigms.

2.4 FIELDWORK IN THE SOUTH AFRICAN GEOGRAPHY SYLLABUS

According to Ballantyne (1986), the control and structure of South African senior secondary school geography is determined by the interplay between the various departments of education, the Joint Matriculation Board (JMB) and the Committee of Heads of Education (CHE). Through their control of the syllabus and school leaving examinations, these bodies have the power to implement or retard change.

Since 1970, the JMB and CHE have been instrumental in initiating rapid and appreciable changes in both the syllabus and examinations in the South African senior secondary geography, in keeping with the changes in geographical education in other parts

of the world.

Nicol (1978) saw the 1967 matriculation geography syllabus as too fact-oriented. This approach could lead to fieldwork being seen as observational and descriptive.

The 1971-1972 revision of the South African senior secondary school geography core syllabus, which was implemented in 1973 (except in the Cape Education Department which introduced it only in 1974), represented a shift in emphasis from a concern with factual information to an understanding of concepts and use of quantitative techniques (Ballantyne, 1986). An implicit principle, not explained in detail, was the focus on South Africa as a laboratory for the study of systematic physical and human geography sections, thus increasing their relevance and providing opportunity for fieldwork (Clark, 1989:53).

The 1973 senior secondary school geography syllabus included fieldwork thus:

1. For Standard 7, a record of practical fieldwork was expected in the section on mapwork, and the syllabus suggested that 'at least one field excursion should be undertaken' in the section on settlement geography (JS Course, 1973).
2. For Standard 8, fieldwork was included in the section on General Geographic Techniques. It could be concluded that

the type of fieldwork which would be expected here would be technique oriented. This would be typical of fieldwork during this period in other parts of the world.

3. At the end of the geomorphology sections in Standards 8, 9 and 10, the syllabus suggested that 'at least one excursion should be undertaken'.

In 1983, the Inter-departmental Geography Syllabus Committee produced a revised syllabus which was implemented in 1985. Ballantyne (1986) observed that this syllabus encompassed the four traditions identified by Pattison (1973). The inclusion of these traditions reflected an attempt to create a balance between physical and human geography, and the integration of man-environment relationships.

One of the features of the 1985 Senior Secondary School Geography Syllabus was the inclusion of guidelines for teachers regarding the aims and objectives of geography education, and those on teaching approaches. The syllabus was based on the principle that education is concerned with the development of the whole being and not merely with imparting knowledge (Provincial Administration Of The Cape Of Good Hope 1985). In keeping with this principle, Clark (1989) argued that fieldwork promotes the understanding of concepts and the development of skills, values and attitudes which are all major global aims of teaching/learning geography.

The emphasis evident in the 1985 syllabus on fieldwork was

significant as it showed the South African attempt to keep abreast with the global developments in education which emphasize practical, learner-centred and experience-oriented approaches, and the study of man-environment relationships and interrelationships therein.

The 1985 South African senior secondary school geography syllabus specified the following:

1. That fieldwork techniques should be developed using either the traditional or the scientific approach but that the emphasis should be placed on the scientific method of inquiry.
2. With regard to the teaching approaches, it was suggested that teachers should assist their pupils to undertake well planned and meaningful fieldwork which includes observation and measurement in the field, the recording and processing of data and the interpretation and presentation of written and graphical information.
3. At the end of each section on general geographic techniques in Stds 8, 9 and 10, it is suggested that well-planned and meaningful fieldwork should be undertaken wherever possible. In Std 9, however, it is suggested that the scientific method could be applied while in Std 10, the scientific method should be applied. This means that some progression in the selection and use of the approaches to

fieldwork is expected. By the time the learner reaches Std 10, it is expected that s/he has gained a broad general experience in fieldwork techniques.

4. In the section on geomorphology and settlement geography in Std 10, it was suggested that well-planned and meaningful fieldwork should be undertaken where possible. In 'settlement geography' in Std 10, it was again emphasized that the scientific approach should be applied.
5. In the section on ecosystems, environmental balance and conservation the importance of the role of fieldwork was again reiterated.

In analysing the 1985 senior secondary school geography syllabus, it can be concluded that fieldwork has been accepted as an integral aspect of geographical education in South Africa. This acceptance can be attributed to the recognition of the value of fieldwork in facilitating the development of the child as a whole in that it promotes understanding of concepts and the development of skills, attitudes and values.

However, research has proved that teachers still find difficulty in applying fieldwork effectively. One of the reasons for this can be traced to the failure to choose the appropriate fieldwork approach.

2.5 THE CHOICE OF A SUITABLE APPROACH TO FIELDWORK IN GEOGRAPHY

The discussion in the first part of this chapter has shown that each paradigm is characterised by a particular type of fieldwork approach. However, each of the new approaches has tended to retain elements of the previous ones, thereby confirming the belief expressed by Wise (1985) that 'in seeking progress, it will be necessary to balance innovation and tradition'.

The important problem that faces the South African teacher is the type of fieldwork approach that s/he can select to facilitate effective teaching of geography.

According to Rawling (1986), one's teaching approach should be determined by the pupil-teacher relationship, as well as by the aims and objectives of that particular exercise. This applies to fieldwork approaches in geography.

One way of considering different approaches to fieldwork is to envisage a continuum just as Rawling (1986) does with the teaching approaches in general. Such a continuum helps in making the link between both the fieldwork approach and fieldwork activities.

On such a continuum of fieldwork approaches, one would have observational field teaching occupying the extreme left characterised by a relatively low level of pupil autonomy since

the teacher is totally in control of the situation. Moving along the continuum, other approaches such as the use of worksheets to guide pupils in the field, issue-based fieldwork, field research and framework fieldwork can be identified. As one moves towards the right, the pupil retains an active role in hypothesis formulation, deciding on what data to collect, and how to record it, and what questions to include in the questionnaire.

Rawling (1986) maintained that a teacher who is sensitive to the needs of the pupils is likely to use strategies characteristic of any point in the continuum. This means that the learner's needs, age, ability, level of development, experience and background must be considered in deciding which approach has to be used. For example, Graves (1980) recommended the use of observational field teaching for younger inexperienced pupils, and an increasing emphasis on issue-based, problem-oriented fieldwork, as pupils' ages increase and they become more able to cope with more advanced and exacting work. However, senior secondary pupils, with no experience in fieldwork, may not manage with a field research method despite their age. These demand some degree of systematic progression and grading of fieldwork activities (Boorman, 1972).

The idea of developing a suitable approach to fieldwork, which encourages the teacher to draw on various methods in a balanced way, is one which is recommended by geographers (especially for senior pupils). This is probably the reason why the integrative framework fieldwork suggested by Hart and Thomas (1986) is

regarded as one of the most suitable.

However, despite the fact that many teachers have gradually become aware of the different approaches, the amount of fieldwork undertaken in Transkei has not shown a marked increase. This points to the presence of certain constraints on the use of fieldwork in school geography.

2.6 CONSTRAINTS ON THE USE OF FIELDWORK IN GEOGRAPHY

Nicol (1978) observed that the senior secondary school geography syllabus (1985) offers enough motivation and incentive for teachers to undertake fieldwork. However, research has shown that fieldwork is not being used widely and effectively in teaching and learning geography. Many reasons have been advanced by many geographers worldwide, as shown below.

Bailey (1981) maintained that in secondary schools, the question of method brings teachers against the inexorable relationship between feasible teaching method, time available, staff-load, the amount of syllabus content and examination demands. Nicol (1978), UWG (1984), Laws (1984) and Bailey (1987) saw lack of time as the main deterrent to the use of fieldwork as a teaching/learning method. Time is needed by teachers to prepare the practical activities to be carried out in the field. Dunlop (1976) emphasized that the creation of successful fieldwork exercises would further increase the work load of teachers who are already overloaded by large numbers of pupils. Yet Jones (1968) and

Marker (1980) have asserted that the case for fieldwork as a teaching strategy must be argued against the benefit conferred by such practical exercises. Without these, very little benefit may accrue from fieldwork in geography.

In addition, Nicol (1978) and Marker (1980) saw lack of understanding of what fieldwork involves as one of the problems militating against the use of fieldwork. This was because most teachers have not been trained in fieldwork techniques. Teachers often found it difficult to decide what type of fieldwork to undertake for each particular topic.

Nightingale (1981) also saw lack of knowledge of suitable local sites for undertaking fieldwork as another hindrance to fieldwork.

2.7 STRATEGIES FOR FACILITATING THE USE OF FIELDWORK IN GEOGRAPHY

The problems mentioned above point to the need to devise strategies that may facilitate the use of fieldwork by teachers in the teaching/learning of geography. These include the development of a programme of fieldwork, guiding teachers on how to use the local environment for fieldwork, integrating fieldwork into the normal daily teaching schedules, and the identification of sites for fieldwork in each district. Such fieldwork programmes and exercises would need to be readily available to teachers to adapt to their conditions.

Dunlop (1976) asserted that, eventually, there might be banks of exercises in their local resource centres from which teachers can draw. He gave an example of a series called 'Field Studies for Schools' in Britain in which each volume contains exercises for a particular region. This could be done for South Africa, especially in such relatively disadvantaged areas as Transkei. Weston (1977), Nightingale (1981), Long and Roberson (1966) and Geographical Association (1981) claimed that for fieldwork to be accepted as the fundamental basis for the effective learning of geography, and to be treated as such by teachers, a carefully thought out programme of fieldwork, lasting throughout the pupils' school career, must be developed. Weston (1977) maintained that such a fieldwork programme fulfils the following:

1. It makes it possible to include fieldwork in every year of the secondary school, and to match the topics against the fieldwork activities that can be undertaken. In this way, fieldwork may be integrated into the curriculum, and be seen to contribute to the total understanding of geography. The teacher is left in no doubt as to what activities s/he should do.
2. It makes grading of fieldwork according to difficulty and pupils' stage of development possible. Boorman (1972) defines a graded fieldwork as 'one arranged to suit the pupils' abilities and stages of development so that they proceed gradually from the simple to the more difficult fieldwork aspects; from observational field teaching to

field research and framework fieldwork (Nightingale, 1981).

3. It facilitates progression in fieldwork activities by building systematically upon the pupils' previous fieldwork experiences. This means that the fieldwork activities undertaken earlier must be revisited and refined.

Thus, such field activities as those outlined above could have an element of necessary repetition, with each repeating what has been done before, and then introducing something new (Weston, 1977).

Each exercise is aimed at building up a repertoire of techniques until a later senior secondary school stage at which the pupils may command a wide range of techniques, and decide for themselves which to use for any given situation. The amount of time devoted to fieldwork should also increase from junior to senior secondary school level. A fieldwork programme must also take into consideration the pupils' interests and capabilities, and the way these develop as a result of maturation (Weston, 1977).

2.8 THE USE OF THE LOCAL ENVIRONMENT FOR TEACHING/LEARNING GEOGRAPHY THROUGH FIELDWORK

The problems of transport costs, time spent travelling to and from the fieldwork sites and the subsequent disruption of the school routine associated with long distance fieldwork, can be

solved by using the local environment as much as possible for fieldwork. Jones (1968) observed that the amount of work and the detail that can be achieved on long excursions do not compare with the high standards and quality of learning that can be achieved in local fieldwork. This is because of the fact that on long excursions most of the time is spent travelling. According to Biddle and Stimson (1968), the local area includes the school grounds and the area around the school that can be visited within a single lesson, in half a day, in a day on foot or by means of a vehicle.

Local fieldwork, therefore, saves time and money, minimizes transport problems, and causes minimal disruption to the school routine. The fact that local fieldwork sites can be revisited as frequently as the need arises by pupils is another reason for the high value accorded to local sites (Biddle and Stimson, 1968; Boorman, 1972; Pick, 1979 and Nightingale, 1981).

The local environment, particularly the school environment, in addition to the advantages already mentioned, is significant for introducing and training pupils in field-techniques before venturing further to work on their own. The school environment is readily available for illustrating and reinforcing concepts taught in the classroom, and for introducing a topic by exposing pupils to the real world feature before they hear about it in the classroom or read about it (Biddle and Stimson, 1968). The local environment provides a standard of reference by which pupils can evaluate the nature of problems in other areas. The teacher can

use the local environment for all standards. Complexity of skills and techniques, however, should increase with the gradual maturing of the pupils.

To be able to make maximum use of the local environment a systematic fieldwork programme must be prepared so that it is properly integrated with the coverage of all aspects of any given geography syllabus. This programme should provide for the grading of the systematic study of the local area and for the integration of its study with that of other geographical topics and areas. Again, this means that the teacher must carefully explore the area and decide on suitable features that can be studied. Then s/he must scrutinize the syllabus and integrate the proposed fieldwork lessons in the most appropriate places (Boorman, 1972).

Fitting fieldwork within the time-table is another way of ensuring the effective use of the local environment. Though certain exercises can be done in a single period, double periods per week towards the end of the day must be sought. These allow the teacher more flexibility, and give the pupils a little extra time to complete their fieldwork (Biddle and Stimson, 1968).

2.9 SUMMARY

The foregoing discussion has revealed that the South African senior secondary school geography syllabus has adopted enquiry methods that have characterised the British geography curricula,

including field work. The changes in fieldwork approaches have mirrored characteristics of the paradigm shifts, although each fieldwork approach, like the paradigms, has tended to retain elements of the previous ones.

All the approaches described are relevant and appropriate, depending on the ages of the pupils, their stages of development and experience. Despite the recognition of the value of effective fieldwork, teachers in South Africa and Transkei have identified certain constraints which they regard as militating against their making maximum use of fieldwork in geography teaching. These constraints need to be overcome to facilitate the successful use of fieldwork in geography teaching/learning.

CHAPTER 3

RESEARCH METHODS AND PROCEDURES

3.1 INTRODUCTION

For fieldwork to be accepted and used widely and effectively as a teaching/learning strategy in geography, the problems militating against its use will have to be solved. As described in the previous chapter, the solution would seem to be in the use of the local environment and in the provision of a programme of fieldwork activities that will encourage teachers to integrate fieldwork in their normal daily classroom teaching. Accordingly, this study aims to demonstrate how local fieldwork sites can be identified; how fieldwork activities (units) can be developed and undertaken on the identified sites; and how a programme of graded fieldwork activities can be developed.

In order to achieve these aims the research methodology adopted involved:

1. the identification of potential sites for studying selected topics in geography in the Umtata District of Transkei;
2. the development of a programme of graded fieldwork activities for Stds 8-10 pupils based on selected topics for each of the major systematic sections of the senior secondary school geography syllabus;

3. the development, implementation and evaluation of three graded fieldwork units.

The elements cited above were based on Nightingale's (1977) Resource Perception Model (RPM). Nightingale (1977) claimed that something becomes a resource when it has been identified and assessed as being valuable to man. According to him, before a resource can be utilized, the following are important:

- (i) The resource must have an identified potential for exploitation.
- (ii) Demand for the exploitation of the potential of the resource must exist. (This refers to the needs which the resource can satisfy.)
- (iii) The potential of the resource must be matched to the demand. (This means that the potential of the resource must be perceived.)
- (iv) Efforts must be made to identify and overcome the problems that could hinder the exploitation of the resource.

In adopting this model for the study, the Umtata District was identified as the resource for teaching/learning geography. The analysis of the area was based on information gathered from topographic maps, orthomaps and air photographs, and by an in situ exploration of river valleys, rural settlements, forests and farm units in the Umtata District.

The South African senior secondary school geography syllabus was analysed to establish the demand for fieldwork. This involved establishing the needs of the syllabus in relation to fieldwork.

In this regard, major topics which present opportunities for fieldwork were identified and developed into a programme of fieldwork for Stds 8-10. The Umtata District as a resource for fieldwork was then matched to the needs of the syllabus by linking three of the actual fieldwork sites identified to the demands of the syllabus in terms of possible activities that could be undertaken.

The model influenced the development of all three phases of the research. Thus, the programme of graded fieldwork activities was linked to the potential of the identified sites, and the development and design of fieldwork activities were related to the sites in order to illuminate how the sites and the programme could be linked to develop meaningful and relevant activities for a specific group or groups of pupils.

3.2 RESEARCH POPULATION, SAMPLE CHARACTERISTICS AND SAMPLING PROCEDURES.

The identification of the fieldwork sites was undertaken in order to incorporate all eighteen senior secondary schools offering geography in the Umtata District. The researcher is a lecturer at a university, therefore it was necessary to select volunteers from a school who would be prepared to become involved in the

programme of the three fieldwork units which were designed to illuminate how the fieldwork programme could be utilized to develop particular field activities. Two schools were involved in the development, implementation and evaluation of the field units. It had initially been intended to use the pupils of one school only. However, problems at this school necessitated the involvement of the second school. The first school was selected on the basis of the following:

- (i) The school had to have retained at least some of the aspects of its natural landscape as the envisaged school trail needed to illustrate the broadest possible activities from the fieldwork programme. (Plates 1, 2, 3 and 4).
- (ii) The second criterion was that of easy proximity to the researcher and the non-participant observer. This measure was taken to cut down on transport costs given that frequent visits would have to be made to the school.
- (iii) The school selected had to have boarding facilities so that it would be possible for the researcher to find pupils together in the afternoons, as the researcher had been given permission to arrange the entire project extra-murally.

However, the application of this criterion had to be abandoned when the first school proved problematic. Nevertheless, this did not adversely affect the planned activities and their results.



Plate 1 School No.1 used for the implementation of the school trail. The school has retained most aspects of its natural landscape



Plate 2 School No.1 - Showing the transect line



Plate 3 School No.1 - Control Point No.2 - The 'Ridge Area' (Worksheet - School Trail)



Plate 4 School No.1 - Control Point No.3 - (Worksheet - School Trail)

The other criteria were retained in selecting the second school. The two schools used were selected by using convenience sampling (Cohen and Manion, 1987).

The research sample used in the first school consisted of 35 pupils (18 Std 8s and 17 Std 10s) who volunteered for the project. The two class groups were used firstly because the Std 8 pupils are at the start of the senior secondary phase while the std 10 pupils are at the end of this. Secondly, limiting the sample to two classes was convenient to the researcher in terms of organising pupils for attendance and punctuality. With the second school the research sample consisted of all thirty four Std 10 pupils doing geography and mathematics. It was decided to use one class only because problems had been experienced during the implementation of the first unit in the first school with regard to the use of the two class groups. Firstly, the level of understanding of concepts and skills of the Std 8 pupils was obviously lower than that of the Std 10 pupils because of their different levels of development and maturity. This tended to slow down the progress during the preparation and the actual fieldwork and necessitated increasing the time spent with the pupils , which was problematic. The use of the whole Std 10 class in the second school was to ensure that no member of the class would be disadvantaged in any way since most of the work to be done was selected from the Std 10 syllabus. In addition to this the sections on rural and urban settlements and ecosystems, conservation and management, which were to be the foci of these

units, had not yet been covered by the pupils' geography teacher.

3.3 RESEARCH METHODOLOGY

Data for this study was gathered in the following three phases:

1. field visits for the identification and exploration of fieldwork sites;
2. the development of a programme of fieldwork for Stds 8-10;
3. the development, implementation and evaluation of the field study units.

3.3.1 Identification of Potential Fieldwork Sites

The researcher analysed air photographs, topographic and land use maps in order to identify and locate all senior secondary schools found in Umtata District.

This was followed by an in situ exploration of each of these schools and their respective environments within a radius of approximately 5 km. On all these visits, an attempt was made to enlist the company of one geography teacher/lecturer to act as a non-participant observer in the evaluation of the sites.

Several schools in the urban area tend to have completely artificial surfaces, or are covered by buildings so that it is almost impossible for some aspects of physical geography to be studied. For these reasons, the researcher decided to identify

sites for the study of physical and rural settlement geography only around schools in the rural areas, on the one hand, and sites for the study of urban geography around schools in the urban areas, on the other.

However, it must be noted that while some pupils attending schools in the rural areas have to travel for approximately 36 km to reach the town, all schools in the urban area can easily reach rural sites for the study of aspects of physical and rural settlement geography. This means that pupils attending urban schools tend to have an advantage over their counterparts in the rural areas with respect to proximity to various fieldwork sites.

The analysis of the Umtata District resulted in the identification of sites which could be divided into three distinct categories:

- (i) those sites which were directly related to school environs;
- (ii) those sites which could be classified as urban;
- and (iii) rural sites.

3.3.1.1 Sites within the school premises

All the selected senior secondary schools in the Umtata District were regarded as potential sites for fieldwork undertaken in this study. This was based on the notion that the school premises form part of a wider human and physical environment which had

been identified as a potential resource for fieldwork in geography teaching/learning.

3.3.1.2 Sites in the urban area

The land-use map of Umtata (1988), obtained from the municipality, was used to identify potential sites for studying aspects of urban geography such as industrial location, residential function, planned shopping centres, the Central Business District, problems of the city and general geographic techniques.

3.3.1.3 Sites in the rural areas

Sites within walking distance (5 km) from each senior secondary school in the rural area were identified and located on the 1:50 000 topographic map. Thereafter, they were visited to assess their accessibility and suitability for fieldwork. In order to be included in the study, the sites had to facilitate the teaching of such geography concepts as soil profiles, slopes and river valleys in addition to those aspects that can be taught anywhere around the school. For this reason, all sites selected in the rural area were near or in valleys.

3.3.2 The development of the programme of fieldwork

The researcher analysed the Stds 8-10 geography syllabus in order to identify topics in each of the major systematic areas

that are potentially useful for fieldwork in Stds 8, 9 and 10. The procedures listed below were followed:

- (i) in each systematic area and for each topic in that area, key ideas or possible hypotheses were identified;
- (ii) these were translated into potential activities and
- (iii) each activity was considered in terms of the skills, values, attitudes and techniques which were appropriate.

The above data was recorded in the form of a table in the following manner:

- (i) activities suited to either school premises, urban sites or rural sites were grouped together, and
- (ii) individual programmes for each of the three site categories were drawn up for Stds 8, 9 and 10.

In determining the standard at which certain skills such as hypothesis formulation and testing should be included in the programme, the suggestions given in the syllabus document were observed (Provincial Administration Of The Cape Of Good Hope, 1985). For example, it is suggested that in std 9 field research could be used but in Std 10 it emphasizes that field research should be used. A degree of repetition and progression in the activities and skills was maintained in developing the programme.

3.3.3 The selection of sites for the development implementation and evaluation of fieldwork units

For the field unit relating to the school premises the criteria which were considered in selecting the school for the development, implementation and evaluation of the three study units (discussed earlier) were applied as the premises of this school would be used for the implementation of the school trail while for the other study units only the pupils of this school would be used.

With regard to the urban area, limited time and extensive distance from certain schools would make the study of the whole area impossible. The CBD was selected as a site for the implementation of the urban study unit because it permits a wide variety of activities within a small area and because of its proximity to most senior secondary schools, none of which are further than 7 km from the CBD. (Figures 4)

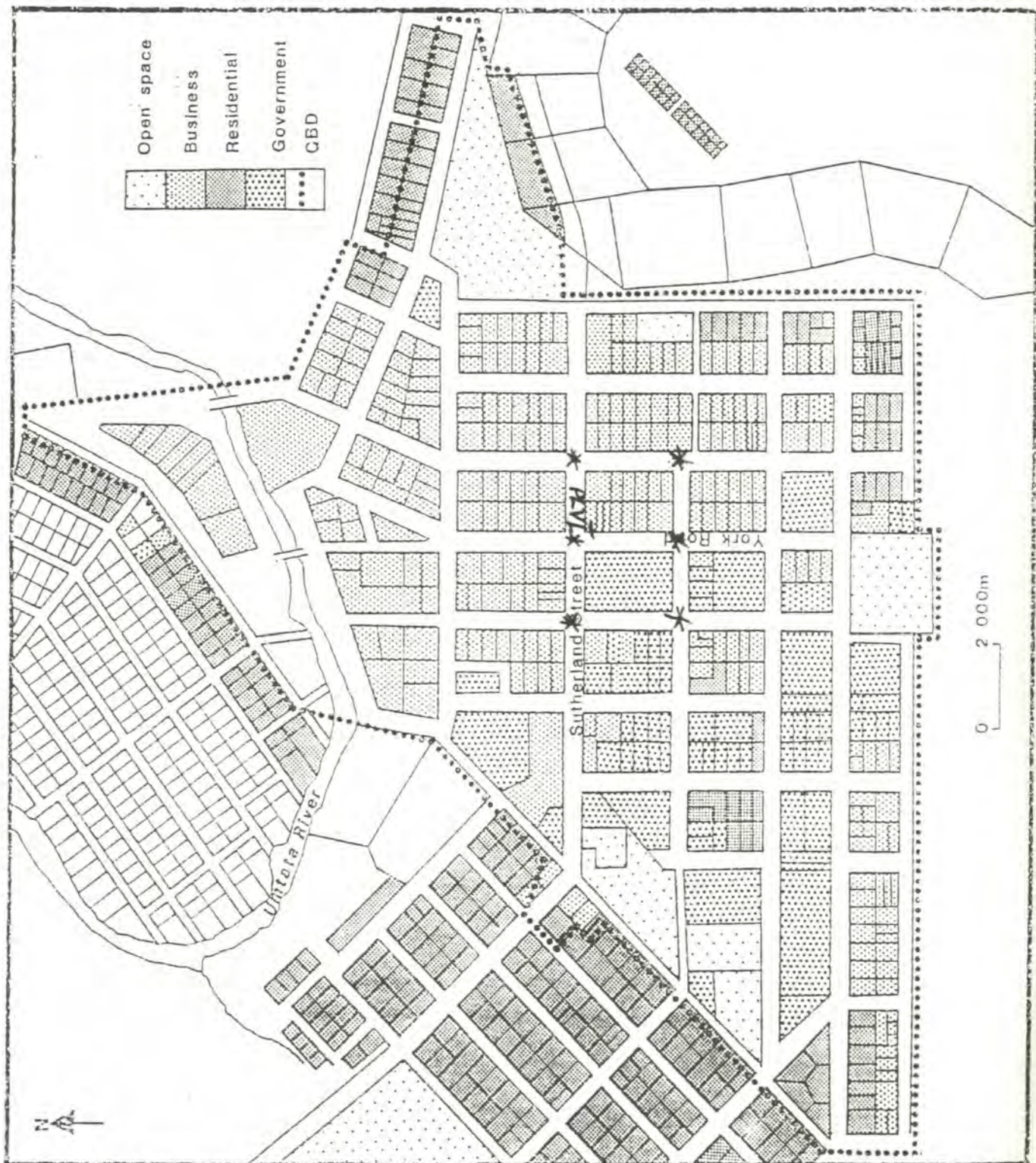


Figure 4 The CBD of Umtata

- * The intersection where traffic & pedestrian counts were done
- * The PLVI was found at the intersection of York Road and Sutherland Streets



Plate 5 The Peak Land Value Intersection (PLVI) of Umtata during a week day. The pedestrians and vehicular traffic turns the city centre into a traffic nightmare



Plate 6 The PLVI of Umtata on a Sunday. During the night and on Sunday the city centre is deserted.

The choice of a site for the development, implementation and evaluation of the rural fieldwork unit was determined by the following criteria:

- (i) proximity to a particular senior secondary school;
- (ii) that the site could be used for teaching/learning a wide variety of aspects of the senior secondary school geography syllabus, namely rocks, weathering, soil types, soil profiles, rural settlements, conservation, ecosystems and, particularly, microclimate. The area that was finally selected is one of the few areas in which the Transkei Department of Agriculture is actively involved in environmental management e.g. the construction of dams, anti-erosion walls and where resettlement has taken place. In addition, this site was universal in terms of the type of activities that could be developed in any rural site. (Plates 7, 8, 9 and 10).



Plate 7 Ross Mission Area - The Tabase Nek and evidence of resettlement



Plate 8 - Ross Mission - Rural settlement (used for interviews) - People were moved from Area A (Plate 7) to Area B (Plate 8)



Plate 9 Ross Mission Area - river terraces



Plate 10 Ross Mission Area - Deep steep-sided valleys showing soil horizons

iii) that it was along the main road and offered enough parking facilities (Plate 11)



Plate 11 Ross Mission area used for transect activities and observations.

(iv) that it was not far (20 km) from the researcher's place of work as frequent visits would have to be made to this place by the researcher.

3.3.4 Development, implementation and evaluation of fieldwork study units.

In order to match the potential of the Umtata District as a resource for fieldwork with the elements in the syllabus, three of the potential fieldwork sites identified were linked to the requirements of the syllabus by developing fieldwork units/activities that could be undertaken in each of these three sites. Each fieldwork unit was then implemented and evaluated.

The development, implementation and evaluation of the three fieldwork units was effected through 'action research'. Thus, the following subsection will discuss the features, advantages and limitations of action research in order to justify its use in this study.

3.3.4.1. Characteristics, advantages and disadvantages of action research

Cohen and Manion (1987:208) define 'action research' as a 'small-scale intervention in the functioning of the real world and a close examination of the effects of such intervention'. The need to improve practice is seen as the principal justification for the use of action research.

This study represents an intervention by the researcher in a practical teaching situation to improve the teaching of geography through fieldwork. Kemmis (1983) regards 'practice' as the strategic action undertaken with commitment in response to a practical problem. In order to solve practical problems something has to be done practically. This study represents a practical response to an identified practical problem of the current insufficient and ineffective use of fieldwork in geography teaching and learning.

In action research, the researcher embarks on a course of action, strategically monitors the action, the circumstances under which it occurs and its consequences, and then reconstructs

retrospectively an interpretation of the action in context as a basis for future action (Kemmis, 1983).

The use of action research is based on the premise that knowledge is achieved through practical intervention. This intervention provides reliable information and leads to improvement in planning in relation to the practical situation being considered, and the practitioner's general theory (Kemmis, 1983; Dane, 1990; Cohen and Manion, 1987). Since team members and individuals undertaking action research participate directly or indirectly in its implementation, it is described as 'participatory'. This study can also be described as being participatory in nature since the researcher was directly involved in the identification of sites and, together with the pupils, also participated directly in the development, implementation and evaluation of fieldwork units.

Any study conducted through action research can be evaluated and modified continuously as it progresses so as to improve the practice under consideration. Such a study is described as self-evaluative'. Kemmis (1983), Walker (1985) (a) and Cohen and Manion (1987) described such a method as a 'self-reflective spiral of cycles of planning, acting, observing and reflecting'. This was also apparently characteristic of the present study. While the researcher was developing and implementing the fieldwork units, she was also involved in observing, evaluating, replanning, and acting according to the results of such evaluation. For example, the final worksheet included in this

study for the school trail was shortened and improved after preliminary implementation.

There are several advantages of undertaking action research on its own or in conjunction with other designs. An attempt is made below to describe such major advantages upon whose basis the researcher decided to adopt the use of action research in this study.

- (i) In undertaking action research, the researcher has to analyse critically what is being done and thus develops greater perception of the process involved.
- (ii) Action research ensures positive and active pupil involvement in a process which provides them with opportunities for greater educational growth.
- (iii) According to Bodgan and Biklen (1982), action research is a method that strengthens one's commitment to a particular field, initiating and encouraging change and improvement in its practice. Therefore, action research stimulates change and improvement within the educational situation in which it occurs (Kemmis, 1983; Hustler et al., 1986).
- (iv) Since action research accommodates the natural behaviour of people, their creativity and predictability, it shows respect for the integrity of individuals. It is one of the methods in which all parties involved are allowed to behave naturally (Mcniff, 1988), hence it can be described as naturalistic research.
- (v) One of the most important advantages of action research is its adaptability and flexibility. The study or project can

be modified and adapted as it progresses (Walker, 1985; a and Cohen and Manion, 1987). This is possible because its focus rests on the enquirer or researcher rather than his/her methodology (Mcniff, 1988 and Bodgan and Biklen, 1982).

According to McNiff (1988), action research is frequently challenged as being subjective and therefore unreliable, that is, the solutions that it claims to generate cannot be universally tested which reduces validity of the research. Validity refers to the extent to which the results of a given piece of research can be accurately interpreted and universally tested and applied. Reliability is the consistency of the research and the extent to which two or more researchers studying the same setting or subjects come up with the same findings (Bodgan and Biklen, 1982). McNiff (1988) claimed that for action researchers, the validity of a study in education seems to be the degree to which it is useful in guiding practice for particular teachers and its power to inform and precipitate debate in the wider professional community. Walker (1985); b) claimed that the problem of validity can be readily tackled by employing qualitative methods which enable the researcher to get 'close to the data'. Bogden and Biklen (1982:44) view reliability as a 'fit between what they record as data and what actually occurs in the setting under study rather than the consistency across different observations.' Therefore two action researchers studying a single setting may come up with different findings, yet both studies may be reliable. The reliability of one or both studies would only be

questioned if they yielded contradictory or incompatible results. The non-participant observer, who was used in this study, may also be subjective and record what s/he wants to see instead of what is actually there.

3.3.4.2 Evaluation in action research

In action research an attempt is made to reduce subjectivity and to increase validity and reliability through evaluation. Evaluation refers to a process aimed at providing information about the value or worth of a programme or strategy (Keeves, 1988)

According to Keeves (1988), evaluation in action research is more effective if it is done at every stage or level. Action research therefore favours the use of formative evaluation. Formative evaluation is a continuous process and is often dependent on the responses of the people involved and takes into consideration the effects of these responses on the programme and the subjects. It therefore aims at providing information for improvement, modification and management. Action researchers tend to favour formative evaluation because it allows the use of a variety of methods which creates flexibility.

The naturalistic evaluation model accepts that there are multiple realities, which are primarily constructs existing in the minds of people. These constructions are, therefore, perceptions of meaning and interpretation of the object and events. A

naturalistic model of evaluation helps one to understand people and the meanings behind their activities. It uses observers to describe the natural human processes and responses of those involved. It thus places more emphasis on process than on outcomes. (Williams, 1986 and Guba and Lincoln, 1988).

Williams (1986) claimed that naturalistic evaluation is identified by such other names as participant observation and respondent evaluation. In reality there is an overlap among these terms which necessitates their explanation as understood and used in this study. Participant observation is a process in which the observer's presence in a social setting is maintained for the purpose of scientific investigation. The observer is in a face-to-face relationship with the observed, and by participating with his/her subjects in their natural life setting. S/he gathers data. The researcher's concern is to allow the social meanings and lived experiences of his/her subjects to determine the primary focus and significant empirical reference of the study. The researcher is perceived as the main tool of investigation and his/her primary strategy is being with the subjects in their setting (Ball, 1988:508). Responsive evaluation rests on the notion that the truth of the researcher's analyses and its validity can be ascertained by establishing some degree of correspondence between the researcher's and the subjects' views of the activities undertaken and/or the setting under study (Ball, 1988). In this study, forms of respondent evaluation were used as a way of improving validity and reliability.

Naturalistic and responsive evaluation therefore share common criteria, namely:

- (i) Both allow the evaluator to respond to issues that emerge along the way as well as to preconceived ideas and problems.
- (ii) They focus more on programme activities and processes than on results.
- (iii) They respond to and permit the value requirements, alternative interpretations of the people involved and need evidence that such interpretations were sought.
- (iv) They include evaluation at a number of levels using a variety of instruments, be they other people or multiple procedures. The use of triangulation allows the results to be readily transferred to other settings (Williams, 1986).

Triangulation is a procedure in which multiple sources, methods or instruments are used to obtain evidence regarding the same phenomenon. In triangulation, reality is seen as being located in the different perceptions and suppositions of teachers (researchers), pupils and observers, both participant and non-participant (Walker, 1985: b and Taft, 1988). The triangulation used in this study incorporated the use of a variety of instruments and evaluation by a variety of people.

Firstly, it involved self-evaluation which was effected through participant observation by the researcher. This implies that participant observation in this study was used for both

collecting data and for self-evaluation. The participant observer used a method of narrative description. Everything that was deemed relevant to the purpose was recorded, the main emphasis being placed on interpretation of the behaviour and responses of the pupils during the whole interaction process.

Secondly, it involved peer evaluation which was effected through non-participant observation by a non-participant observer. A non-participant 'observer is an observer who does not participate in the setting, development and implementation of activities at the setting. He or she looks at the scene, literally or figuratively, through a one-way mirror (Bodgan and Biklen, 1982:127). The non-participant observer used for the purposes of this study is a lecturer in the Transkei Teachers' In-service College with extensive experience in teaching and in in-service training of teachers of geography.

The non-participant observer used observation schedules. An observation schedule is an instrument used in systematic classroom observation for recording a description of selected features of activities and interactions in classrooms or, as in this study, in any teaching and learning situation (Croll, 1986). The suitability of an observational schedule can be assessed with reference to its purpose (Croll, 1986). The observational schedules used in this study were drawn by the researcher in accordance with the cognitive, psychomotor and affective objectives of each of the activities included in the three fieldwork units. A feature of the observation schedule was the

use of the 5 point Likert scale with values ranging from 1 to 5 which enabled the non-participant observer to assign a numerical value to his descriptions. The use of the numerical value helps to remove part of the subjectivity which occurs when individuals describe events (Croll, 1986). The observation schedules were scrutinised by colleagues prior to their implementation.

Thirdly, triangulation involved learner evaluation. Pupil evaluation forms were prepared and improved through the involvement and comments of colleagues. As in the observation schedules, the items included in the pupil evaluation forms were related to the cognitive, psychomotor and affective objectives of the activities included in the three fieldwork units. The 5-point Likert scale was also used in the pupil evaluation forms. In using the three instruments for evaluation it was recognized that 'all reports of social phenomena require a degree of intersubjectivity between the researcher, the subject and the audience (non-participant observer) for the research' (Croll, 1986:8). At the end of the whole project, pupils were required to complete a semantic differential. A semantic differential is a technique used to measure the meaning a concept or a strategy (as in the case of this study) has to different people and it is frequently used to measure attitudes in research (Phillips, 1988). It is grounded on the idea that meaning occurs within a definite semantic space.

Using factor analysis, Osgood (1976) identified three factors or dimensions within the semantic space, namely evaluation, potency

and activity. According to Dane (1990) the evaluation dimension has a bearing on the overall positive or negative meaning attached to a concept. Potency refers to the overall strength or importance of the concept. Activity refers to the extent to which the concept is associated with action or motion.

Oosthuizen (1986) argues that an interesting parallel is inferred between Oosgood's evaluative, potency and activity factors and the categories of significance (or meaning) attribution, experience and involvement respectively.

Significance attribution focusses on the cognitive domain, that is, knowing, recognising, naming, understanding and applying. It implies that the nature and quality of relations with something or someone are determined by the meaning or significance assigned. Experience can be described as the intentional, definite, subjective and personal stance of a person in his communication with reality and consists of the affective domain. Through experience, the potency or varying degrees of pleasantness or unpleasantness of a situation is evaluated. Involvement may be defined as the person's concern with a particular situation which prompts him to act and it is distinguished by conative action.

Each pupil was asked to rate his position with respect to word pairs related to the fieldwork project and representing the three categories of experience, involvement and significance attribution. The ratings chosen provided a score between 1 and 5

which serves as a measure of the degree of negativity or positivity that the pupil attached to each item. Rating scores could then be totalled and averaged to provide a clearer picture of the overall impact of the lessons on the pupils.

Each unit chosen for testing utilised the same methodology which further attempted to increase reliability and validity.

3.3.4.3 Research procedures

The procedures used with the action research model discussed above are to be described in this section.

After scrutinising the syllabus and exploring each of the three fieldwork sites selected for the development, implementation and evaluation of the three study units with colleagues to decide on the parts of the sites to be covered in the excursions, the researcher decided on the aims and objectives of each of the study units, the actual activities to be undertaken, the equipment and material to be used and the follow-up activities.

An attempt was made to choose activities from the Stds 8, 9 and 10 syllabi. With the school trail most of the activities were selected from the Std 8 syllabus and a few from the Std 10. With the urban and the rural study units, most of the activities were selected from the Std 10 syllabus. With the school trail, activities were kept as simple as possible since the pupils seemed to have no previous experience and therefore this would

serve as an introduction to fieldwork techniques. With the later two units an attempt was made to increase the level of difficulty, particularly with the rural unit, since the pupils had acquired practice during the trail in some of the techniques required for the units. Thus for the two units hypothesis to be tested were decided upon with pupils although, through lack of relevant experience, their contribution was limited. Observation schedules and pupil evaluation forms were also prepared in accordance with the aims, objectives and the activities of each unit.

a. Preparation

Before the project started pupils were informed that the work being done was not an examination so that they would relax and participate freely. Secondly, their attention was drawn to the presence of the non-participant observer. Thirdly, they were made aware that at the end they would be expected to evaluate each of the units and the project as a whole.

Initially, the preparation with the pupils involved explaining the meaning, aims and role of fieldwork in geography teaching/learning. This was necessary in view of their inexperience and lack of knowledge of fieldwork. This was followed by an explanation of the objectives of the study as a whole. For all the units the preparation started with the discussion of the aims and objectives of that particular unit.

The pupils were divided into five groups of seven each with its own leader so that pupils would learn to work together right from the start. Worksheets that had been prepared were discussed. The researcher gave a detailed explanation of the concepts and skills to be developed in each of the units. Pupils were involved actively in the preparation and construction of some of the materials to be used. They were encouraged to discuss amongst themselves to ensure that each member of the group understood what was expected of her/him and to decide on how to share and rotate the responsibilities amongst themselves during the actual fieldwork.

b. The field excursions

The actual data collection in the field involved visual observations, measuring distances and slopes along the transect, taking and labelling soil and rock samples, and recording the data collected in the worksheet and in the interview schedules. The pupils were encouraged to discuss their findings generally before recording the same. The latter was done in the form of note-taking and field-sketching.

c. Follow-up

During the follow-up phases the pupils had to remain in their respective groups except in the rural unit which involved pupils in different sections. Pupils therefore had to collaborate to obtain all the data collected in the field.

3.3.5 Data analysis

The data collected was analysed in the following manner:

1. The concepts and skills in the worksheet were analysed in terms of the major systematic sections of the syllabus and standards to which each concept and skill could be taught. These were then presented in the form of a table and conclusions were drawn.
2. The activities in the worksheet were, furthermore, analysed and presented in the form of a table in terms of the concepts and skills that each question could be used to develop. This table was then described and analysed.
3. The results of the non-participant observer recorded in the 5 point Likert scale were analysed and interpreted in terms of the adjectives used in the key. These were then compared to the researcher's and to the pupil evaluation.
4. Pupil evaluation recorded in the 5-point Likert scale was presented in the form of percentages and tables. These were then described, analysed, interpreted and compared with the researcher's observations and the non-participant observer's.
5. The results of the semantic differential were presented as percentages in table form and in the form of a bar chart, and analysed and interpreted in terms of the literature reviewed.

3.4 LIMITATIONS OF THE STUDY

The following were perceived as the major limitations of the study:

1. The fact that the non-participant observer could not be present during all the activities with the pupils proved to be a major problem. It meant that the use of triangulation was highly limited and therefore the reliability and validity of the study are also limited. Firstly, the non-participant observer was fully employed. Secondly since there were no research funds available to the researcher he had to limit the visits to the major activities.
2. Financial constraints proved to be another major limitation to the study. This necessitated limiting the visits to schools and to the three fieldwork sites on which the units were based. Indirectly this limited the time that she could spend with the pupils. For example, during the June school holidays when the urban unit was implemented the pupils were willing to spend another day in the field, but financial constraints militated against this. In addition meals had to be provided for the pupils on such trips at the expense of the researcher. Again, the researcher had to provide transport funds for the non-participant observer who could not travel with her as their places of work are far from each other.

3. The limited time that the researcher was able to spend with the pupils particularly in view of their inexperience with fieldwork proved to be another limitation. The Std 10 pupils, for example, were already preparing for examinations at the end of August when the rural unit was implemented. Therefore, the time for the preparation and the follow-up had to be kept to a minimum. The follow-up was seen as the most rewarding and thus more time would have increased the benefits.
4. Another important limitation of this study is the fact that the results were not subjected to rigorous statistical techniques.

3.5 SUMMARY

Problems militating against the use of fieldwork in geography can be limited by using the local environment as a resource.

The Umtata District was used as a case study to demonstrate the effectiveness of the local environment for teaching/learning aspects of the senior secondary school geography syllabus through fieldwork. This was achieved through action research.

Data collection was done through field visits, the development of the programme and the development, implementation and evaluation of the three fieldwork units. The data collected was presented in the form of tables, analysed and interpreted. The

effect of fieldwork on pupils' development and understanding of concepts and skills and their attitudes towards fieldwork were assessed through analysing the evaluations of the pupils, the non-participant observer's and the researcher's. Validity and reliability were ensured through triangulation.

CHAPTER 4

A GEOGRAPHICAL BACKGROUND OF THE STUDY AREA AND THE DEVELOPMENT OF A FIELDWORK PROGRAMME FOR STDS 8-10

4.1 INTRODUCTION

This phase of the research was designed to give the geographical background of the study area and to develop a programme of fieldwork for Stds 8-10.

4.2 THE STUDY AREA

The study area is the magisterial district of Umtata which is centrally located in Transkei. The study area covers an area of approximately 169 965 hectares. The town of Umtata is situated on the north eastern part of the district as shown on the map (Figure 5).

The N2 national road linking Umtata to East London and Durban follows the eastern side of the district while the road to Queenstown runs along the north eastern part. Umtata is linked by a railway line to East London which largely follows the same route as the N2 national road. Umtata is served by the KD Matanzima airport which provides an air link between Transkei and the Republic of South Africa.

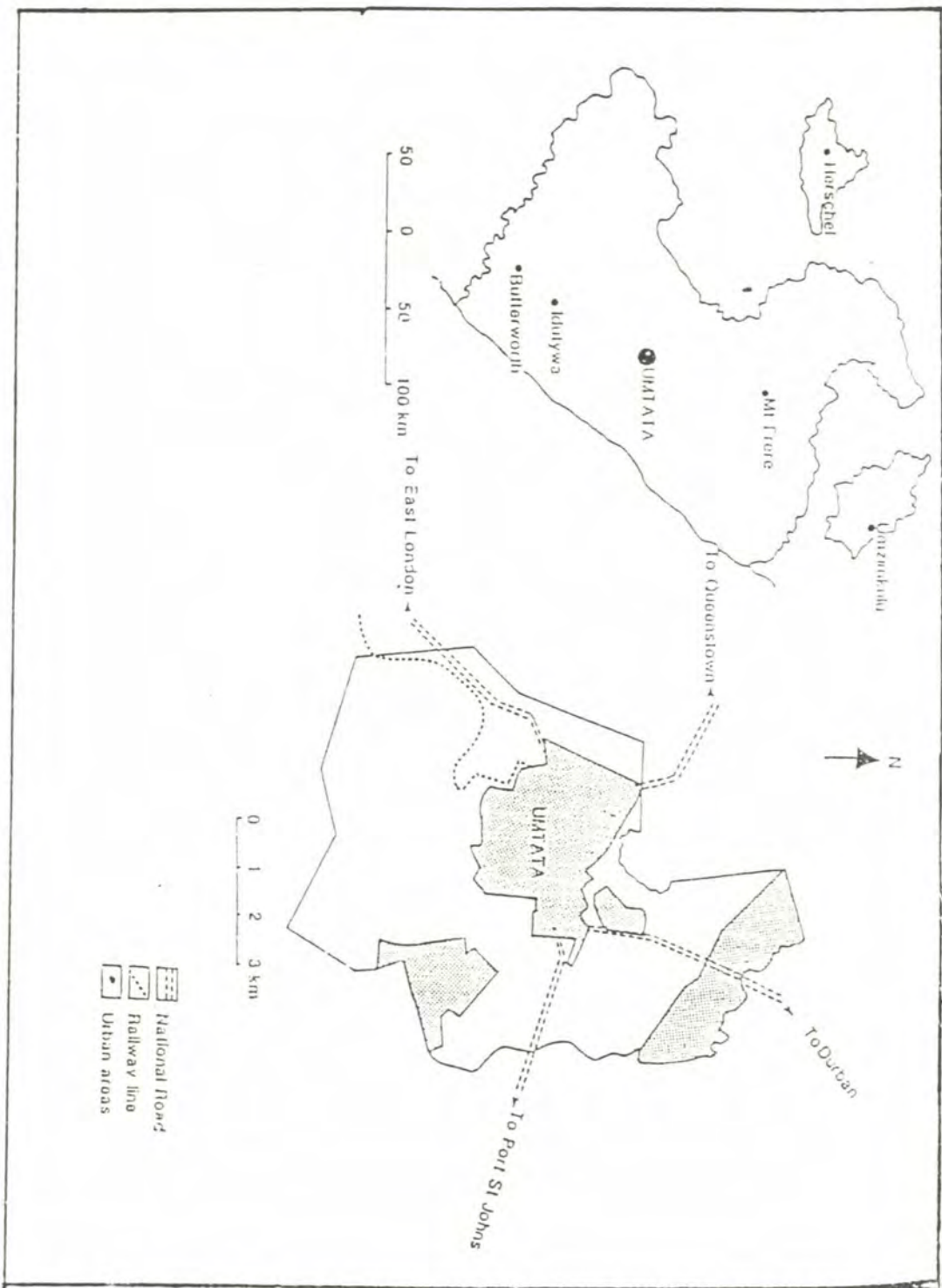


Figure 5 The location of the Umtata District

The city of Umtata has been the administrative centre of Transkei since 1931. With the granting of self-government in 1963 and independence in 1976, it became the capital of Transkei (Siyongwana, 1991). With the introduction of decentralisation in 1981, Umtata has become one of the industrial growth points in Region D. This has meant considerable growth of industries and employment opportunities with the resultant population increases.

In the rural areas there are well-developed gravel roads which help form arterial links between the two national roads, rural settlements and Umtata. The well-developed national roads and secondary roads have made it possible for vehicular traffic to move freely between Umtata and its adjacent rural settlements. This has made it possible for pupils in the overcrowded urban area to attend school in the rural areas.

Umtata is bounded by the Mbashe river on the west and south, and forest land comprising the Baziya, Langeni, Mhlahlane and Kambi forests to the north and north-west and the Umtata river on the north-east (Figure 6).



Figure 6 Senior Secondary Schools and Potential Fieldwork Sites identified in the rural areas

Perennial drainage includes Mbashe, Umtata, Xugxwala, Cicira, Tabase and Xongora rivers. The district is criss-crossed by many perennial (Plate 15) and non-perennial rivers (Plates 12,13,and14). Deep steep-sided river valleys and dongas resulting from river erosion, overstocking, overgrazing and indiscriminate veld burning are evident in all the sites in the rural areas such as in the case of the site identified near Kulanathi and Joyi senior secondary schools where dongas are as deep as four metres (Plate 12 and 16).



Plate 12 Kulanathi fieldwork site (more than 4 metres deep)



Plate 13 River valleys criss-cross the district



4 metres deep)

4 A non-perennial river in Umtata District



Plate 15 Joyi Fieldwork site - perennial river with steep sides showing clear soil horizons



Plate 16 Kulanathi Fieldwork Site - a non-perennial river with a very deep steep-sided valley

The mean annual temperature range is approximately is 9°C. The temperature varies between 27°C in January and 12.8°C in July.

Frost is common in winter.

The average annual rainfall is 560 mm. From November to March the rainfall is approximately 90 mm whereas in June it can be as low as 20 mm. 80% of the rain falls in summer but it is unreliable. Periodic droughts are not uncommon.

Arable farming, particularly maize farming, is no longer the source of livelihood in this area, probably because of periodic droughts and unreliable rainfall. Consequently, there has been a marked decrease in maize yields in relation to the rapid increase in population. Livestock farming is widely practised, with cattle, sheep and goat farming being the main activities. Cattle and sheep farming activities have generally shown a slight increase between 1984 and 1989 (Transkei Central Statistical Office, 1990).

In 1981 Tracor (Transkei Agricultural Corporation Limited) was established as a statutory body to assist the Department of Agriculture and Forestry in developing Transkei's agricultural potential, increase food production, create jobs and increase productivity, thus raising the standard of living of people in the rural areas of Transkei which is generally low. One of the main objectives of the agricultural policy of the Transkei

government is conserving and preserving natural agricultural resources such as soil vegetation and water as evident in the Ross mission area.

The town of Umtata has the highest population in Transkei. This results from the rapid development that has taken place in Umtata since self-government and independence respectively. The rapid development resulted in increased employment opportunities in both the government, the professional and the industrial sectors. The government sector employs 70% of the total labour force. There are generally more females than males, which is evidence of the migratory labour to the PWV area.

The population of the Umtata district is 80% rural with rural settlement patterns being largely nucleated and planned with few remnants of the traditional isolated type. This can be attributed to the communal type of land ownership practised in Transkei and to the government policy of resettlement that has recently occurred in parts of Transkei. Each inhabitant, therefore, has his own piece of land but it is subject to common grazing after the crop has been harvested.

The increase in population in the Umtata district has caused a tremendous increase in the school population and the number of schools. There are eighteen senior secondary schools in the Umtata district. Eight of these are within the municipal area and nine in the rural area.

4.3 THE FIELDWORK POTENTIAL OF UMTATA

The physical characteristics of the rural areas offer many opportunities for fieldwork activities. This means that even the most disadvantaged schools can undertake fieldwork without much cost and with minimum disruption to the school time-table since most of the schools have fieldwork sites nearby suited to local studies in geomorphology, climatology, economic and settlement geography.

The independence of Transkei was followed by a rapid growth in the physical structure of the city of Umtata. Public buildings, businesses, industries and residential areas increased tremendously. This growth has increased the potential of Umtata as a site for urban fieldwork. Most schools in the municipal area which are all within 5 km of the CBD can undertake fieldwork in the town either in a double period and/or in the afternoon. For schools in the urban area, therefore, fieldwork can be undertaken without any transport cost. On the other hand, the schools in the rural area can reach the town at very low cost and with minimum disruption to the running of the school as the furthest school in this district is approximately 36 km from the town.

4.4 THE IDENTIFICATION OF SITES

The fieldwork sites identified were grouped into three categories for the development of the fieldwork programme and for the three

fieldwork study units. The three categories included the school environs, urban and rural sites.

4.4.1 The school environs as potential sites

Most of the schools in the rural area have certain features that can be used for teaching different aspects of the syllabus. While this is true to a certain extent of urban schools, very little of their original landscape remains. Some of them do not even have sports fields within the premises while the others are almost covered by buildings up to the fence.

The features within school premises providing resources included the following:

- (i) School grounds: these included concave and convex slopes, erosion weathering, rocks, vegetation and soils.
- (ii) Sports fields: these and the rest of the school environs can be used for teaching aspects of general geographic techniques such as direction and measuring.
- (iii) Buildings: these can be used for teaching general geographic techniques and microclimatology.
- (iv) Population: the population of the school can be used for giving training in population movements and in doing traffic counts and drawing traffic flows.

4.4.2 Fieldwork sites in the urban area

The urban area offered a wide variety of sites. The land-use zones such as the CBD, residential areas, industrial areas (Vulindlela industrial complex), the rural-urban fringe (Ncambedlana) and the transition zone are suitable for studying land use in each of the functional zones. The CBD of Umtata (Figure 4) was regarded as the most important of these as it offers a wide variety of activities within a small compact area. The possible activities include observation and recording of land-uses, urban transects, buildings with different architectural styles (Plates 17 and 18), migration of functions and urban renewal, problems of the city, changes in urban profile, conducting pedestrian and traffic counts, land-use-mapping.



Plate 17 St Johns Anglican Cathedral - (Buildings with different architectural styles) - in the CBD



Plate 18 Government department and parliamentary building in the CBD - with different architectural



Plate 19 Fort -Gale planned shopping centre situated close to a densely populated area of flats

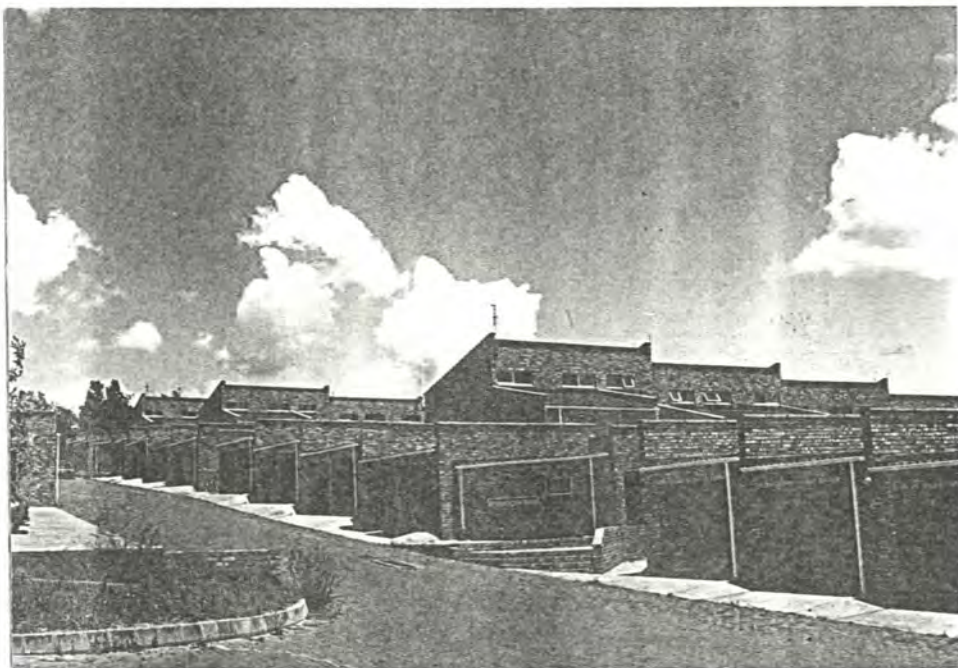


Plate 20 Fort-Gale TDC Flats- close to a shopping centre.

The residential areas such as Myezo Park (Plate 21), Southridge Park, North Crest, Hillcrest, Mbuqe Park and Ngangelizwe (Figure 7) were regarded as suitable for studying residential segregation and population density. The store clusters in the residential areas and the planned shopping complex in Fort Gale (Plate 19) were regarded as potential sites for studying distribution of retail functions in the suburbs.



Plate 21 Residential segregation—upper class residential area (Myezo Park)

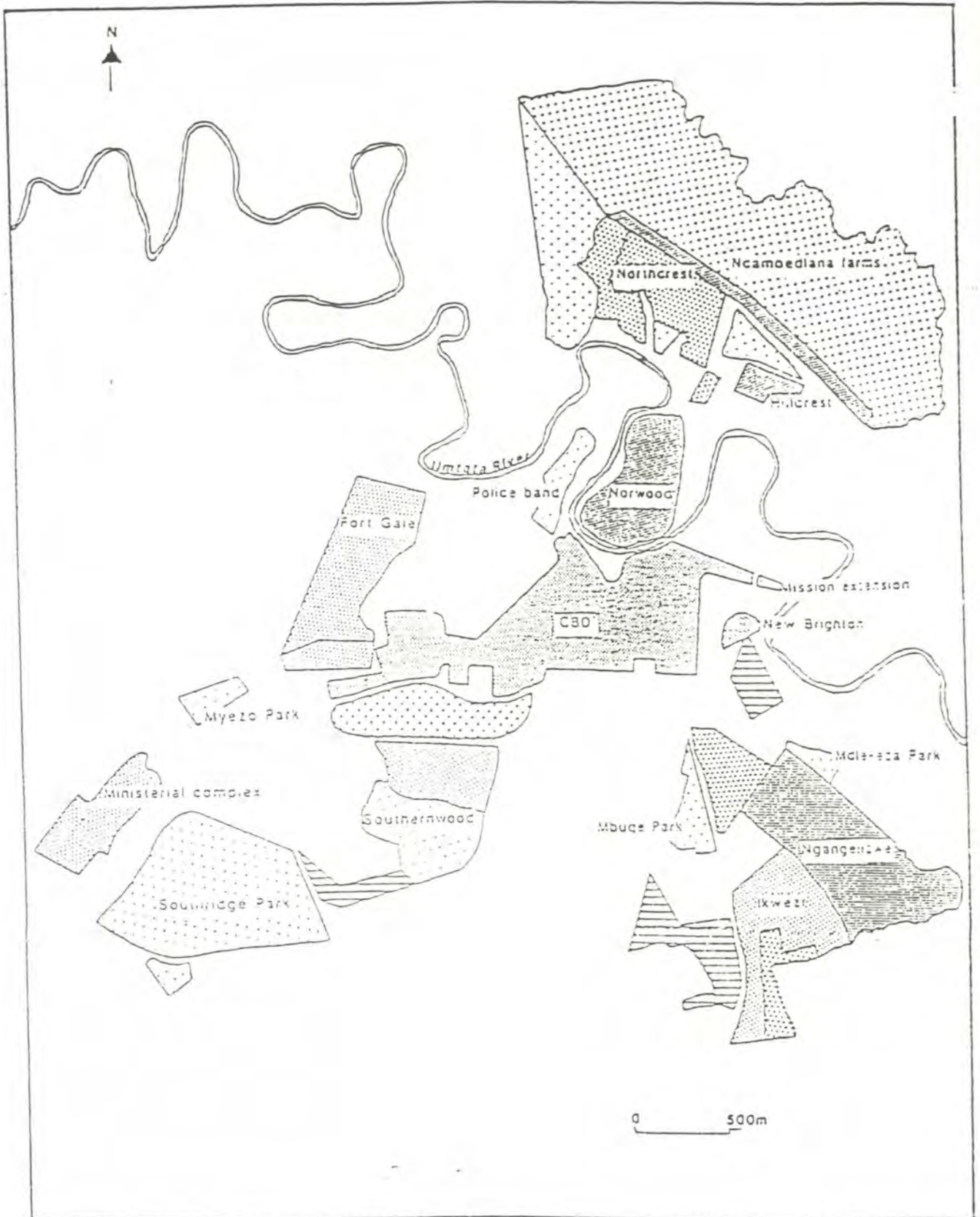


Figure 7: Residential areas in Umtata, 1993

The Vulindlela industrial complex was regarded as a site for studying types of industries and their location in relation to other activities.

4.4.3 Fieldwork sites in the rural areas

In the rural areas an attempt was made to identify sites within a radius of 5 km from each senior secondary school. All the sites have common features with very few exceptions which will be highlighted in the discussion that follows.

The site selected for the implementation of the rural unit had certain characteristics, discussed in chapter 3, which made it suitable for showing how framework fieldwork can be applied in studying an area.

The sites included the following features:

Geomorphological features which included gullies, rivers, slopes, vegetation and swamps. These could be used for teaching and learning a variety of hydrological and fluvial studies, ecology and soil analysis.

The river valley at the Kulanathi site (Plate 12 and 22) was a good example of a non-perennial river. The great depth and steepness of the river valley (approximately 4 metres) would make taking measurements by pupils very risky. However, it offers a unique spectacle for observation and analysis through photographs.



Plate 22 Kulanathi site—the great depth makes it risky to work with pupils

Slopes and valleys offer potential for studying microclimatological studies, such as influence of slope aspect on temperature, distribution of frost and dew, temperature inversions, transect up the slope for studying temperature and pressure variations, and observing conditions during and after a thunderstorm and a cold front.

Only one site, the Ross Mission area, shows evidence of environmental management and conservation by the Transkei Department of Agriculture in the form of dams, windmills, anti-erosion walls and grazing camps. The area offered potential for the evaluation of the landscape and the attitude of residents towards the environment through questionnaires. The whole area could be studied as an ecosystem while swamps (Plate 25) in the very low lying areas also offer potential for ecosystem studies. In all the other sites ecosystem studies could be conducted.



Plate 23 Joyi Fieldwork site - (soil profile - soil horizons could be measured)



Plate 24 Ross Mission Area - The effect of anti-erosion walls is evident



Plate 25 Ross Mission Area - A swamp - could be used for ecological studies.

The forests at Baziya (Joyi area) represent an example of primary activities, that is, forestry and conservation.

Rural settlements: These offer potential for identification, classification and analysis of settlement patterns, the factors determining the location of settlements and their patterns, conducting interviews for assessing the attitudes of the people towards the environment and the changes that have occurred in settlement patterns.

Farming and agricultural sites: Cattle and crop-farming could be studied in all these sites. Methods and problems of farming, factors determining location of crop farming units, methods of preventing soil erosion, farming systems and types of landownership could be observed and analysed.

Population: The population of the school could be used for the collection, analysis and interpretation of data on population composition, population movements (from rural to urban areas and from Transkei to the PWV area) including migrant labour and its influence on population composition, age and sex structure, and standards of living and education.

On the basis of the identified sites and the demands of the syllabus, a programme of fieldwork activities was drawn up as described in Chapter 3. In designing the programme the three environments, the school premises, the urban area and the rural

area, were considered because these are the parameters within which the pupils interact and they are also directly related to the syllabus.

4.5 FIELDWORK PROGRAMME FOR STDS 8-10

The programme of fieldwork for Stds 8-10 was developed in terms of the fieldwork potential of all the sites identified in the Umtata district and the demands of the syllabus.

The primary objective of developing the programme was to provide a ready resource that would serve as a guide for the development of fieldwork units in terms of activities and skills relevant to each systematic section being taught in the classroom. This would enable teachers to match the fieldwork site with the hypotheses to be proved or ideas to be developed, the potential activities, the skills to be developed and the equipment to be used.

The following is a programme of fieldwork for Stds 8-10 based on the school premises, the urban and the rural sites and the systematic sections of the senior secondary school syllabus.

STD 8: FILEDWORK SITE : RURAL AREA

TOPIC	SOME KEY IDEAS	FIELDWORK POTENTIAL	SKILLS, ATTITUDES & VALUES	GEOGRAPHIC TOOLS
General Geographic Techniques	Use of: *Large and small scale maps *Models for teaching contours *Variations in slopes	*Orientating maps *Identifying and recognizing features on a map and on the ground *Using the 1:50 000 topographical mapsheet to find bearing *Identifying and classifying landforms and slopes on the ground e.g. steep and gentle, concave and convex, mountains, valleys and spurs *Showing contour lines on a sand model *Field sketching and sketch mapping *Measuring height above the ground *Tabulating data *Measuring linear distances *Finding direction and bearing in the field *Verbal presentation and discussion of field work results *Presentation of fieldwork reports	*Observing *Orienting *Map reading *Identifying *Recording *Describing *Field sketching *Field mapping *Collecting *Sampling *Interpreting *Classifying *Counting *Making models *Calculating *Tabulating *Analysing (at a simple level) *Managing time, handling group situations and some cases leadership *Accepting responsibility *Exercising tolerance and understanding of others *Co-operating and interacting with others *Taking initiative *Making decisions *Developing concern for the environment *Developing confidence *Developing love for geography as a subject.	*Watch *Compass *Stick *Stones or marbles *Tape or knotted string *Sand 1:50 000 topographic map Map drawing equipment
Geomorphology	Variations of Rock types Erosion and weathering Landforms *Gradient and aspect influence human activities and natural vegetation	*Identifying and classifying rocks, weathering and erosion types *Collecting and labelling rock samples *Identifying land forms resulting from external and internal forces e.g. river valleys, mountains, spurs etc. *Finding compass directions and orientating the 1:50 000 topographical maps *Sketching the landscape *Identifying the influence of weathering, erosion,	*Field sketching *Field mapping *Observing *Collecting *Labelling *Recording *Orienting *Classifying *Identifying *Sampling *Recognising *Analysing *Associating (at a simple level) *Interpreting *Appreciating	*Compass *Drawing equipment *Polythene bags *Sticky labels 1:50 000 topographical map sheets *Orthomaps

TOPIC	SOME KEY IDEAS	FIELDWORK POTENTIAL	SKILLS, ATTITUDES & VALUES	GEOGRAPHIC TOOLS
		e.g. Fertile land for agriculture *Studying responses of vegetation to different gradients and different aspects of slopes *Presenting, analysing, interpreting and discussing fieldwork data *Presenting field work reports	*Accepting responsibility *Handling groups situations and sometimes leadership *Exercising tolerance and understanding of others *Co-operating and interacting with others *Communicating *Developing concern for the environment *Developing confidence *Developing love of geography as a subject. *Taking initiatives *making decisions	
Climatology	*Temperature and rainfall vary over time and latitude *Temperature varies with height, horizontally, according to aspect, cloud cover and over land and water masses. *In the Southern Hemisphere north-facing slopes are warmer than south-facing slopes.	*Finding compass direction *Observing *Reading and recording temperature and rainfall *Identifying and classifying clouds and rainfall types. *Recording cloud cover *Relating temperature and rainfall readings to synoptic weather charts from newspapers *Calculating the duration of sunlight on different pitches of roofs (aspect). *Recording diurnal temperature changes hourly on cloudless and cloudy days *Measuring temperature over a wide variety of different surfaces in the sun, shade, over grass, tarmac, gravel, over water etc. *Measuring relative humidity *Observing the direction in which buildings face. *Measuring temperature on different heights and on different aspects of the buildings (North and South facing sides) *Observing dew and frost and relating these to temperatures recorded, cloud cover and wind *Interpolating *Verbal presentation and discussion of fieldwork results. *Presenting fieldwork reports.	*Observing *Orienting *Recording *Identifying *Classifying *Measuring *Counting *Calculating *Interpreting *Analysing *Associating (at a simple level) *Managing (time) *Handling group situations and in some cases leadership *Accepting tolerance and understanding, co-operating and interacting with others.	*Compass *Watch *Barometer *Maximum and minimum thermometer *Rain gauge *Synoptic weather maps *Cuttings of weather charts from newspaper *Wet and dry bulb thermometer *Base maps (for interpolation).

TOPICS	SOME KEY IDEAS	FIELDWORK POTENTIAL	SKILLS, ATTITUDES & VALUES	GEOGRAPHIC TOOLS
Population Geography	*Population density, birth rates, occupations and age structure of populations vary.	<ul style="list-style-type: none"> *Collecting data on school population (use one or two classes) from school registers *Determining places of origin of pupils (of the chosen class) *Drawing flow charts from data *Listing occupations of pupils' parents *Determining diversity of occupation of pupils' parents *Interviewing pupils (chosen) in size of their families, the number of babies, school children workers or retired people *Determining age structure of the families of the pupils interviewed. *Conducting traffic counts in the school. 	<ul style="list-style-type: none"> *Interviewing *Drawing *Counting *Listing *Calculating *Selecting *Collecting *Labelling *Classifying *Analysing (at a simple level) *Associating *Interpreting *Managing time *Handling group situations and in some cases leadership *Accepting responsibility *Exercising tolerance and understanding of others *Taking initiatives *Making decisions *Developing concern for the environment *Developing confidence *Developing love for geography as a subject. 	<ul style="list-style-type: none"> *Drawing equipment *School registers

STD 8 : FIELDWORK SITE - SCHOOL PREMISES

TOPIC	SOME KEY IDEAS	FIELDWORK POTENTIAL	SKILLS, ATTITUDES & VALUES	GEOGRAPHIC TOOLS
General Geographic Techniques	Use of: *Large and small scale maps	*Orientating maps *Identifying and recognizing features on a map and on the ground	*Observing *Orienting *Map reading *Identifying *Recording *Describing	*Watch *Compass *Stick *Stones or mables *Tape or knotted string
	*Models for teaching contours *Variations in slopes	*Using plans of the school and 1:50 000 topographical mapsheet to find bearing *Identifying and classifying landforms and slopes on the ground e.g. steep and gentle concave and convex, mountains, valleys and spurs. *Showing contour lines on a sand model *Field sketching and sketch mapping *Measuring height above the ground *Tabulating data *Measuring linear distances *Finding direction and bearing in the field *Verbal presentation and discussion of field work results. *Presentation of fieldwork reports	*Field sketching *Field mapping *Collecting *Sampling *Interpreting *Classifying *Counting *Making models *Calculating *Tabulating *Analysis (at a simple level) *Managing time; handling group situations and in some cases leadership *Accepting responsibility *Exercising tolerance and understanding of others *Co-operating and interacting with others *Taking initiatives *Making decisions *Developing concern for the environment *Developing confidence *Developing love for geography as a subject.	*Sand *plan of the school *1:50 000 topographic map *Map drawing equipment
Geomorphology	Variations of *Rock types *Erosion and weathering *Land forms *Gradient and aspect influence human activities and natural vegetation	*Identifying and classifying rocks, weathering and erosion types *Collecting and labelling rock samples *Identifying land forms resulting from external and internal forces e.g. river valleys, mountains, spurs etc. *Finding compass directions and orientating the 1:50 000 topographic maps *Sketching the land scape *Identifying the influence of weathering, erosion, deposition and slope on human activities	*Field sketching *Field mapping *Observing *Collecting *Labelling *Recording *Orienting *Classifying *Identifying *Sampling *Recognising *Analysing *Associating (at a simple cover) *Interpreting *Appreciating *Managing time	*Compass *Drawing equipment *Polythene bags *Sticky labels *1:50 000 topographic map sheets *Orthomaps

TOPIC	SOME KEY IDEAS	FIELDWORK POTENTIAL	SKILLS, ATTITUDES & VALUES	GEOGRAPHIC TOOLS
		deposition and slope on human activities e.g. fertile land for agriculture *Studying responses of vegetation to different aspects of slopes *Presenting, analysing, interpreting and discussing fieldwork data *Presenting field work reports.	*Managing time *Accepting responsibility *Handling group situations and sometimes leadership *Developing tolerance and understanding of others *Co-operating and interacting with others *Communicating *Developing concern for the environment *Developing confidence *Developing love of geography as a subject *Taking initiative *Making decisions.	
Climatology	*Temperature and rainfall vary over time and latitude *Temperature varies with height, horizontally, according to aspect, cloud cover and over land and water masses *In the Southern Hemisphere north-facing slopes are warmer than south facing slopes.	*Finding compass directions *Observing *Reading and recording temperature and rainfall *Identifying and classifying cloud and rainfall types *Recording cloud cover *Relating temperature and rainfall readings to synoptic weather charts from newspapers *Calculating the duration of sunlight on different pitches of roofs (aspect). *Recording diurnal temperature changes hourly on cloudless and cloudy days *Measuring temperature over a wide variety of different surfaces in the sun, shade, over grass, gravel, over water etc. *Measuring relative humidity *Observing the direction in which buildings face *Measuring temperature on different aspects of the buildings (North and South facing sides) *Observing dew and frost and relating these to temperatures recorded, cloud cover and wind *Interpolating *Verbal presentation and discussion of fieldwork results *Presenting fieldwork reports.	*Observing *Orienting *Recording *Identifying *Classifying *Measuring *Counting *Calculating *Interpreting *Analysing *Associating (at a simple level) *Managing time *Handling group situations and in some cases leadership *Exercising tolerance and understanding, *Co-operating and interacting with others *Taking initiative *Developing concern for the environment *Developing confidence *Developing love for geography as a subject.	*Compass *Watch *Barometer *Maximum and minimum thermometer *Rain gauge *Synoptic weather maps *Cuttings of weather charts from newspaper *Wet and dry bulb thermometer *Base maps (for interpolation).

TOPIC	SOME KEY IDEAS	FIELDWORK POTENTIAL	SKILLS, ATTITUDES & VALUES	GEOGRAPHIC TOOLS
Population	Population density, birth rates, death rates, occupational and age structure of populations vary.	<ul style="list-style-type: none"> *Observing, identifying and explaining the factors which have determined the distribution and density of population in their location e.g. relief, soil fertility, accessibility, natural vegetation etc. *Interviewing local residents in a street or location around the school *Counting and listing the number of people per house (population density) *Counting and listing the number of babies, school children, workers or retired and the number of males and females per house (age structure) *Listing occupations of people living in each house *Determining the diversity of population occupations *Obtaining population data from local authority (from official registration systems and official census data) on location in which the school is located *Calculating (from data collected from local authority) birth rate, death rate and growth rate of the population *Determining the factors that influence birth rates and death rates from interviews) *Determining the age groups into which the population of the area can be grouped *Calculating life expectancy *Processing the data collected into tables *Drawing population pyramids. *Determining patterns of migration through questionnaires *Drawing barcharts and tables *Relating patterns of migration to levels of education 	<ul style="list-style-type: none"> *Interviewing *Drawing *Counting *Listing *Calculating *Selecting *Collecting *Labelling *Classifying *Analysing (At simple level) *Interpreting *Associating *Managing time *Handling group situations and in some cases leadership *Accepting tolerance and understanding *Co-operating and interacting with others *Taking initiative *Developing concern for the environment *Developing confidence *Developing love for geography as a subject. 	<ul style="list-style-type: none"> *Drawing equipment *Interview schedules *Questionnaires

STD 9 : FIELDWORK SITE : SCHOOL PREMISES

TOPIC	SOME KEY IDEAS	FIELDWORK POTENTIAL	SKILLS, ATTITUDES & VALUES	GEOGRAPHIC TOOLS
General Graphic	<ul style="list-style-type: none"> *Large and small-scale maps *Contour maps *Variations of land-forms *Field research 	<ul style="list-style-type: none"> *Orientating maps identifying and recognising features on a map and on the ground *Using plans of the school and 1:50 000 topographical mapsheet to find bearing *Measuring linear distances *Finding direction and bearing *Undertaking transects *Identifying a geographical problem *Formulating a hypothesis. *Developing data-collecting and recording techniques. *Collecting and recording data *Analysing and interpreting data *Testing the hypothesis and drawing conclusions *Evaluating of data (with be help of the teacher). *Drawing slope and rivers profiles and cross sections. *Verbal presentation and discussion of fieldwork results. *Presentation of fieldwork reports. 	<ul style="list-style-type: none"> *Observing *Orienting *Map readings *Identifying *recording *Describing *Field sketching *Labelling *Fieldmapping *Collecting *Sampling *Interpreting *Classifying *Counting *Calculating *Analysing *Questioning *Answering *Tabulating *Identifying a problem *Formulating and testing a hypothesis *Drawing conclusions *Evaluating techniques used and data collected *Managing time *Accepting responsibility *Handling group situations and in some cases leadership *Exersing tolerance and understanding of others *Co-operating and interacting with others *Developing love of geography is a subject. 	<ul style="list-style-type: none"> *Watch *Compass *Clinometer *Knotted string and tap tape *Plan of the school *1:50 000 topographical mapsheet *Orthomap *Drawing equipment and any tools of equipment and any tools or equipment required for providing the hypothesis formulated.
Geomorph- ology	<ul style="list-style-type: none"> *Landforms and slopes vary with rock type 	<ul style="list-style-type: none"> *Finding direction. *Orientating maps *Identifying and classifying rocks, landforms and slopes in or visible from the school premises e.g. steep and gentle slopes, spurs, river valleys, convex and concave slopes), saddle, longitudinal and transverse valleys, cliffs, water-falls etc. *Groundwater and drainage problems in the school grounds *Verbal presentation analysis and discussion of fieldwork results *Presentation of fieldwork reports. 	<ul style="list-style-type: none"> *Observing *Orienting *Collecting *Drawing *Labelling *Recording *Classifying *Identifying *field sketching and sketch mapping *Sampling *Counting *Recognising *Analysing *Interpreting 	<ul style="list-style-type: none"> *Compass *Drawing equipment *Polythene bags *Stick labels

STD 9: FIELDWORK SITE : SCHOOL PREMISES

TOPIC	SOME KEY	FIELDWORK POTENTIAL	SKILLS, ATTITUDE & VALUES	GEOGRAPHIC TOOLS
			<ul style="list-style-type: none"> *Associating *Questioning and answering *Identifying a problem *Formulating and testing a hypothesis *Drawing conclusions *Evaluating techniques used and data collected *Managing time *Accepting responsibility *Handling group situations and in some cases leadership *Exercising tolerance and understanding of others *Co-operating and interacting with others *Developing love of geography as a subject. 	
Climatology	<ul style="list-style-type: none"> Temperature and pressure vary with latitude. altitude, land and water masses, water-vapour and cloud cover Pressure gradient determiners windforce. 	<ul style="list-style-type: none"> *Finding and using compass directions *Reading and recording temperature and rainfall *Identifying and classifying clouds and rain *Recording cloud cover and relating these to synoptic weather charts from news papers. *Measuring wind velocity on either side of a building block *determining wind gradients as distance from obstruction increases. *Reading and recording atmospheric pressure. *Relating atmosphere pressure to temperature recorded *Observing and recording wind direction during the day and during the night on wind rose. *Observing and recording atmospheric conditions preceding, during and after a thunderstorm. *Verbal presentation, analysis and discussion of fieldwork results. *Presentation of fieldwork reports 	<ul style="list-style-type: none"> *Observing *Orienting *Recording *Drawing *Labelling *Classifying *Identifying *Recognising *Measuring *Counting *Calculating *Analysis *Associating *Questioning *Answering *Identifying a problem *Formulating and testing a hypothesis *Drawing conclusions *Evaluating techniques used and data collected *Managing time *Accepting responsibility *Handling group situations and in some cases leadership *Exercising tolerance and understanding of others *Co-operating and interacting with others *Developing love of geography as a subject. 	<ul style="list-style-type: none"> *Compass *Watch *Barometer *Maximum and minimum thermometer rain-gauge *Dry bulb thermometer *Weather-cock *Synoptic weather cuttings of weather cuttings from newspapers.

STD 9: FIELDWORK SITE : RURAL AREA

TOPIC	SOME KEY IDEAS	FIELDWORK POTENTIAL	SKILLS, ATTITUDES & VALUES	GEOGRAPHIC TOOL
General Geographic Techniques	<ul style="list-style-type: none"> *Large and small scale maps *Contour maps *Variations of land-forms *Field research 	<ul style="list-style-type: none"> *Orientating maps identifying and recognising features on a map and on the ground *Using the 1:50 000 topographical mapsheet to find bearing *Measuring linear distances *Undertaking transects *Identifying a geographical problem *Formulating a hypothesis *Developping data-collecting and recording techniques *Collecting and recording data *Analysing and interpreting data *Testing the hypothesis and drawing conclusions *Evaluating of data (with the help of the teacher). *Drawing slope and rivers profiles and cross sections. *Verbal presentation and discussion of fieldwork results. *Presentation of fieldwork reports 	<ul style="list-style-type: none"> *Observing *Orienting *Map readings *Identifying *Recording . *Describing *Field sketching *Labelling *Fieldmapping *Collecting *Sampling *Interpreting *Classifying *Counting *Calculating *Analysing *Questioning *Answering *Tabulating *Identifying a problem *Formulating and testing a hypothesis *Drawing conclusions *Evaluating techniques used and data collected *Managing time *Accepting responsibility *Handling group situations and in some cases leadership *Exercising tolerance and understanding of others *Co-operating and interacting with others *Developing love of geography is a subject. 	<ul style="list-style-type: none"> *Watch *Compass *Clinometer *Knotted string and tape *1:50 000 topographical mapsheet *Orthomap *Drawing equipment and any tools of equipment and any tools or equipment required for providing the hypothesis formulated.
Geomorphology	<ul style="list-style-type: none"> *Erosion and weathering modify the shape of the earth's crust. *Varying resistance of rocks to erosion and weathering results in different landforms viz. waterfalls *Landforms vary viz. 	<ul style="list-style-type: none"> *Finding compass direction *Orientating a topographical map *Sketching the landscape *Identifying the type of river found in the area *Identifying and stating the flow pattern of the river in the area *Observing and identifying the drainage basin and the watershed 	<ul style="list-style-type: none"> *Field sketching *Sketch mapping *Observation *Collecting *Labelling *Recording *Orienting *Classifying *Identifying *Sampling 	<ul style="list-style-type: none"> *Compass *Drawing *Polythene bags *Stick label *1:50 000 topographical map sheet

STD 9: FIELDWORK SITE : RURAL AREA (CONT.)

TOPIC	SOME KEY IDEAS	FIELDWORK POTENTIAL	SKILLS, ATTITUDES, & VALUES	GEOGRAPHIC TOOL
	<p>river valleys, mountain cliff</p> <p>*Rivers and drainage patterns vary</p> <p>*Running water can have its origin underground</p> <p>*Water can flow in different ways viz. laminar and turbulent flow</p> <p>*On the outer bank of a meandering river (concave bank) erosion occurs while on the inner bank (convex bank) deposition occurs</p>	<p>(if visible), the river valley the concave and the convex bank at a meander</p> <p>*Observing and identifying the part of the river where erosion and deposition occur and the results of those two processes</p> <p>*Observing and identifying any potholes, waterfalls</p> <p>*Stating whether the particular part of the river exhibits characteristics of upper, middle, or lower characteristics and identifying those characteristics stage. Identifying of landforms e.g. spurs, mountain pass, saddle, longitudinal and transverse valleys</p> <p>*Verbal presentation, analysis and discussion of fieldwork reports</p> <p>*Presentation of fieldwork reports</p> <p>*Identifying a geographical problem</p> <p>*Formulating a hypothesis</p> <p>*Developing data collecting and recording techniques</p> <p>*Collecting and recording relevant data</p> <p>*Analysing and interpreting data</p> <p>*Testing the hypothesis and drawing conclusions</p> <p>*Evaluating data collected and techniques used.</p>	<p>*recognising</p> <p>*analysing and associating (at a simple level)</p> <p>*Interpreting</p> <p>*Management of time</p> <p>*Identifying a problem</p> <p>*Formulating and testing a hypothesis</p> <p>*Drawing conclusions</p> <p>*Evaluating techniques used and data collected</p> <p>*Managing time</p> <p>*Accepting responsibility</p> <p>*Handling group situations and in some cases leadership</p> <p>*Exercising tolerance and understanding of others</p> <p>*Co-operating and interacting with others</p> <p>*Developing love of geography as a subject.</p>	
Climatology	<p>Temperature and pressure vary with latitude, alti altitude, land and water masses, water-vapour and cloud cover</p> <p>*Pressure gradient dter determiners windforce</p>	<p>*Finding and using compass directions</p> <p>*Reading and recording temperature and rainfall</p> <p>*Identifying and classifying clouds and rain</p> <p>*Recording cloud cover and relating these to synoptic weather charts from news papers</p> <p>*Measuring wind velocity on either side of a building</p> <p>*Determining wind gradients as distance from obstruction increases.</p> <p>*Reading and recording atmospheric pressure</p> <p>*Relating atmosphere pressure to temperature recorded</p>	<p>*Observing</p> <p>*Orienting</p> <p>*Recording</p> <p>*Drawing</p> <p>*Labelling</p> <p>*Classifying</p> <p>*Identifying</p> <p>*Recognising</p> <p>*Measuring</p> <p>*Counting</p> <p>*Calculating</p> <p>*Analysis</p> <p>*Associating</p> <p>*Questioning</p> <p>*Answering</p> <p>*Identifying a problem</p> <p>*Formulating and testing a</p>	<p>*Compass</p> <p>*Watch</p> <p>*Barometer</p> <p>*Maximum and minimum thermometer</p> <p>*rain gauge</p> <p>*Dry bulb thermometer</p> <p>*Weather-cock</p> <p>*Synoptic weather charts from newspapers</p>

STD 9: FIELDWORK SITE : RURAL AREA (CONT.)

TOPIC	SOME KEY IDEAS	FIELDWORK POTENTIAL	SKILLS, ATTITUDES, & VALUES	GEOGRAPHIC TOOLS
		<ul style="list-style-type: none"> *Observing and recording wind direction during the day and during the night on wind rose *Observing and recording atmospheric conditions preceding during and after a thunderstorm *Verbal presentation, analysis and discussion of fieldwork results. *Presentation of fieldwork reports 	<ul style="list-style-type: none"> hypothesis *Drawing conclusions *Evaluating techniques used and data collected *Managing time *Accepting responsibility *Handling group situation and in some cases leadership *Exercising tolerance and understanding of others *Developing love in geography as a subject. 	

STD 10: FIELDWORK SITE - SCHOOL PREMISES

TOPIC	SOME KEY IDEAS	FIELDWORK POTENTIAL	SKILLS, ATTITUDES & VALUES	GEOGRAPHIC TOOLS
General Geographic	*Use of maps *Variations in landforms *Field research	*Orientating maps *Identifying and recognising features on the map and on the ground *Using the plan of the school and the 1:50 000 topographical sheet to find bearing. *Identifying and classifying landforms and slopes e.g. steep, gentle, concave and convex slopes, cliffs, river-valleys, spurs mountains in or visible from the school premises. *Measuring linear distances *Undertaking transects *Identifying a geographical problem *Formulating and testing the hypothesis *Developing data, collecting and recording techniques *Collecting and recording relevant data *Analysing and interpreting data *Testing hypothesis *Evaluating the data and drawing conclusions (with little or no assistance from the teacher) *Drawing slopes and river profiles and cross sections *Verbal presentation and discussion of field work results *Presentation of field work reports including graphs and maps	*Observing *Orienting *Map reading *Identifying *Recording *Describing *Field sketching *Field mapping *Collecting *Sampling *Interpreting *Classifying *Counting *Calculating *Analysing *Questioning *Answering *Tabulating *Identifying a problem *Formulating and testing a hypothesis *Drawing conclusions *Evaluating techniques used and data collected *Managing time *Accepting responsibility *Handling group situations and in some cases leadership *Exercising tolerance and understanding of others *Co-operating and interacting with others *Developing love of geography as a subject	*Watch *Compass *String or tape *Clinometer *Plan of the school *1:50 000 topographical mapsheet. *Orthomap *Auger *Drawing equipment and tools required for proving the hypothesis formulated.
Geomorphology	Variations in rock and soil types result in variations in landforms such as slopes and valleys	*Finding direction *Orientating maps *Identifying and classifying land forms in or visible from school premises e.g. spurs, river valleys, concave and convex slopes, cliffs, saddle, longitudinal and transverse valleys, mesas, buttes *Identifying and classifying drainage patterns and slope	*Observing orienting *Orienting *Collecting *Drawing *Labelling *Recording *Classifying *Identifying *Field sketching and sketch mapping *Sampling *Counting	*Compass *Drawing equipment

TOPIC	SOME KEY IDEAS	FIELDWORK POTENTIAL	SKILLS, ATTITUDES & VALUES	GEOGRAPHIC TOOLS
		forms visible in or from the school premises e.g. crest, freeface, talus and pediment.	*Tabulating *Recognising *Analysing *Interpreting *Associating *Questioning *Answering *Identifying a problem *Formulating and testing a hypothesis *Drawing conclusions *Evaluating techniques used and data collected *Managing time *Accepting responsibility *Handling group situations and in some cases leadership *Exercising tolerance and understanding of others *Co-operating and interacting with others *Developing love of geography as a subject.	
Ecosystems environmental balance and conservation	*Distribution of soil types varies *Soil horizons vary *Soil quality and depth decrease with increase in slope and altitudes. *pH of the soil and its moisture influence vegetation *Soil may be related to underlying rock	*Soil studies (a road cutting may be used or a pit may be dug within the school premises) *Identify and describe the soil profile, the horizons, the different soil types, depth, *Relate the soil type to underlying rock. *If unrelated, trace the origin *Determine soil depth at different heights to see if there are any variations *Undertake transects:- undertake quadrats, slope survey, take soil samples (for later analysis of pH, soil moisture and soil temperature) study soils forming under different vegetation types along the transect *Determine the age of the soil *Undertake an ecological study of one or two areas within the school premises *Examine physical environment, fauna and flora to establish the relationship between them	*Map and photograph reading *Observing *Orienting *Collecting *Labelling *Recording *Classifying *Identifying *Field-sketching *Sketch-mapping *Sampling *Recognising *Analysing and associating at an advanced level *Interpreting *Identifying a geographical problem *Formulating a hypothesis *Analysing and evaluating a hypothesis *Testing a hypothesis *Making conclusions *Describing	*Compass *Drawing *Equipment *Polytheine Bags *Auger *Tape or Knotted strip *Clinometer *Metre-stick *Sticky labels *Distilled water *Digging tool *pH indicator *Quadrats

STD 10: FIELDWORK SITE - SCHOOL PREMISES (CONT.)

TOPIC	SOME KEY IDEAS	FIELDWORK POTENTIAL	SKILLS, ATTITUDES & VALUES	GEOGRAPHIC TOOLS
Macro-climatology and Micro climatology	<ul style="list-style-type: none"> *The eastward moving cyclones influence the weather of South Africa *Slopes facing the equator than slopes facing away from the equator are warmer than slopes facing away from the equator. *Distribution of frost in valley areas varies *Temperature varies according to surface. 	<ul style="list-style-type: none"> *Test pH of the soil sample, the soil moisture and temperature *Draw a slope profile and graphs (correlation) between pH and vegetation characteristics, height and depth of the soil *Verbal presentation, analysis and discussion of fieldwork results. *Presentation of fieldwork reports. *Observing, measuring and recording the pattern of weather conditions associated with a cold front temperature, pressure, winds clouds and rainfall *Measuring temperature on the north facing and south facing sides of the school buildings *Measuring temperature on a variety of surfaces within the school premises e.g. tarmac, grass, white concrete, over bare earth and among the trees *Recording humidity over bare earth and under the trees *Measuring wind force at various positions between and away from buildings *Identifying a geographical problem *Formulating a hypothesis *Developing data collecting and recording techniques *Collecting and recording relevant data *Analysing and interpreting data *Testing the hypothesis and drawing conclusions *Evaluating data collected and techniques used. *Verbal presentation, analysis and discussion of fieldwork results *Presentation of fieldwork reports. 	<ul style="list-style-type: none"> *Evaluating techniques used and data collected *Managing time *Accepting responsibility *Handling group situations and in some cases leadership *Exercising tolerance and understanding of others *Co-operating and interacting with others *Developing love of geography as a subject. *Observing *Orienting *Recording *Drawing *Identifying *Classifying *Measuring *Counting *Calculating *Interpreting *Analysing and associating (at an advanced level). *Managing (time) *Handling group situations and in some cases leadership accepting responsibility, exercising tolerance and understanding, co-operating with others *Language skills *Evaluation of techniques used. 	<ul style="list-style-type: none"> *Watch *Compass *Barometer *Maximum & minimum thermometer *Weather-cock *Rain gauge *Wet and dry bulb thermometer *Synoptic weather maps *Cuttings of weather charts from newspapers

TOPIC	SOME KEY IDEAS	FIELDWORK POTENTIAL	SKILLS, ATTITUDES & VALUES	GEOGRAPHIC TOOLS
General Geographic Techniques	*Use of maps *Variations in landforms *Field research	*Orientating maps *Identifying and recognising features on the map and on the ground *Using the 1:50 000 topographical topographical sheet to find bearing *Identifying and classifying landforms and slopes e.g. steep, gentle, concave and convex slopes, cliffs, river valleys, spurs, mountains in or visible from the area. *Measuring linear distances *Undertaking transects *Identifying a geographical problem formulating a hypothesis. *Developing data collecting and recording techniques *Collecting and recording relevant data *Analysing and interpreting data *Testing hypothesis *Evaluating the data and drawing conclusions (with little or no assistance from the teacher) *Drawing slopes and river profiles and cross sections Verbal presentation and discussion of field work results *Presentation of field work reports including graphs and maps	*Observing *Orienting *Map reading *Identifying *Recording *Describing *Field sketching *Field mapping *Collecting *Sampling *Interpreting *Classifying *Counting *Calculating *Analysing *Questioning *Answering *Tabulating *Identifying a problem *Formulating and testing a hypothesis to drawing conclusions *Evaluating techniques used and data collected *Managing time *Accepting responsibility *Handling group situations and in some cases leadership *Exercising tolerance and understanding of others *Co-operating and interacting with others *Developing love of geography as a subject	*Watch *Compass *String or tape *Clinometer *1:50 000 topographic mapsheet *Orthomap *Auger *Drawing equipment and tools required for proving the hypothesis formulat
Geomorpho- logy	*Erosion and weathering modify the shape of the earth's crust *Varying resistance of rocks to erosion and weathering results in different landforms viz. waterfalls *Landforms vary viz. river valleys, rivers and drainage patterns vary	*Findings compass directions *Map orientating *Identifying the drainage basin and any groundwater source *Identifying and classifying the drainage patterns and relate to the underlying rock *Identify landforms e.g. convex and concave slopes, saddle, longitudinal and transverse valleys, river terraces,	*Observating *Recording *Levelling *Orienting *Sketching *Drawing cross and long profile *Slope profile	*Level *1:5000 map *Clinometers *Tape or knotted

STD10: FIELDWORK SITE : RURAL AREAS (CONT.)

TOPIC	SOME KEY IDEAS	FIELDWORK POTENTIAL	SKILLS, ATTITUDES & VALUES	GEOGRAPHIC TOOL
	<ul style="list-style-type: none"> *The gradient of a river varies from its source through its mid course to its mouth. *Cross-profiles of one river vary from the source to the mouth 	<ul style="list-style-type: none"> incised rivers, knickpoints, meanders *Measure and draw long and cross profiles of the river *Identifying a watershed and any features of river capture (if any) *Observing and identifying land-forms resulting from erosion of uplifted horizontal strata e.g. mesas, butte, conical hills, badlands (if any) *Draw field sketches and sketch-maps *Identify and classify any land-forms resulting from erosion of inclined strata e.g. dip slope, scarp slope, homoclinal ridges, cuestas, hogsback and observe any influence they may have on human activities. *Identifying and classifying any landforms (if any) resulting from erosion of massive igneous rocks e.g.: batholith, laccolith, laccolith, lipolith, tors. *Identification of slope forms visible from field site e.g. crest, free face falus and pediment. Undertake a slop survey. Identifying a geographical problem Formulating a hypothesis Developing data collecting and recording techniques Collecting and recording relevant data Analysing and interpreting data Testing the hypothesis and drawing conclusions *Evaluating data collected and techniques used. 		
Ecosystems Environmental balance and conservation	<ul style="list-style-type: none"> Distribution of soil types varies. *Soil horizons vary *Soil quality and depth decrease with increase in slope and altitude 	<ul style="list-style-type: none"> *Soil studies: a road cutting or a dong may be used. Determine direction, orientating maps 	<ul style="list-style-type: none"> *Observation *Collecting *Recording *Sampling *Sketching *Orienting 	<ul style="list-style-type: none"> *1:50 000 topo-graphical sheet *Poles and markers *Tape or knotted string *Drawing equipment

STD 10: FIELDWORK SITE : RURAL AREAS (CONT.)

TOPIC	SOME KEY IDEAS	FIELD WORK POTENTIAL	SKILLS, ATTITUDES & VALUES	GEOGRAPHIC TOOLS
	<p>*Quality vegetation decrease with inc increasing in slope and altitude</p> <p>*Soil is sometimes related to the underlying rock.</p> <p>*pH of the soil influences vegetation</p>	<p>*Identifying soil horizons and relating to underlying rock</p> <p>*If unrelated to underlying rock, tracing the origin of soil profile.</p> <p>*Sketching and mapping the profile</p> <p>*Setting up a line of transect from maps and from field observation such that it is representative of the profile and alignment of the area and the flora and fauna of the area.</p> <p>*Drawing a field sketch of the area marking the line of transect.</p> <p>*Measuring and marking the spacing of locations for data collection.</p> <p>*At each location measuring recording angle of slope</p> <p>*Determining altitude</p> <p>*Measuring depth of the soil using auger</p> <p>*Taking soil samples for subsequent pH analysis and for subsequent analysis of water and humus content</p> <p>*Recording soil temperature</p> <p>*Determining vegetation characteristics (using quadrat).</p> <p>*Testing pH and relating pH to vegetation</p> <p>*Drawing correlation graphs (between pH and vegetation, height and slope; height and depth of the soil and slope)</p> <p>*Studying the soils forming under different types of vegetation.</p> <p>*Undertaking an ecological study of one area e.g. swamp/pond</p> <p>*Examining the physical environment, fauna and flora to establish their relationship.</p> <p>*Establish the rate of air and water pollution and a</p>	<p>*Measuring</p> <p>*Classifying</p> <p>*Analysing</p> <p>*Interpreting</p> <p>*Drawing</p> <p>*Identifying of a problem</p> <p>*Formulating and testing a hypothesis</p> <p>*Making conclusions</p> <p>*Interpretation of data</p> <p>*Map reading</p> <p>*Soil description</p> <p>*Library research skills</p> <p>*Accepting responsibility</p> <p>*Handling group situations</p> <p>*Tolerance and understanding of others</p> <p>*Ability to take initiative</p> <p>*Appreciating the land scape</p> <p>*Developing positive attitudes towards conservation and care for the landscape.</p> <p>*Love and understanding of geography as a school subject.</p>	<p>*Maps</p> <p>*Clinometer</p> <p>*Auger</p> <p>*Polythene</p> <p>*Bags</p> <p>*Soil thermometer</p> <p>*Standard thermometer</p> <p>*Quadrat</p> <p>*pH indicator</p> <p>*Labels, ecology key and distilled water</p> <p>*Crucibles</p> <p>*Gauges</p> <p>*Tripods</p> <p>*Bunsens</p> <p>*Oven</p> <p>*Pocket calculators</p> <p>*Critical values for spearman's</p> <p>*Rank correlation test.</p>

TOPIC	SOME KEY IDEAS	FIELD WORK POTENTIAL	SKILLS, ATTITUDES & VALUES	GEOGRAPHIC TOOLS
		<ul style="list-style-type: none"> availability of clean water. *Observing and identifying any evidence of environmental conservation and management. *Identifying a geographical problem *Formulating a hypothesis *Developing data collecting and recording techniques *Collecting and recording relevant data *Analysing and interpreting data *Testing the hypothesis and drawing conclusions *Evaluating data collected and techniques used. *<u>Conducting Interviews</u> To establish the influence and attitude of people to the environment/ecosystem. Establishing the attitude of residents to resettlement (where it is evident), deterioration of vegetation and farmland. 		
Microclimatology and Microclimatology	<ul style="list-style-type: none"> *The eastward moving cyclones influence the weather of South Africa *Slope facing the equator are warmer than slopes facing away from the equator *In mountainous and valley areas katabatic and anabatic winds occur *Insolation and radiation increase with height *Many dwellings in rural areas are located high up on the slopes rather than down in the valleys 	<ul style="list-style-type: none"> *Observing, measuring and recording the pattern of weather conditions associated with a cold front:- *Measuring temperature on the north facing and south-facing sides of the dwellings *Observing the distribution of dew and frost within the valleys Identify a geographical problem *Formulating a hypothesis *Developing data collecting and recording techniques *Collecting and recording relevant data *Analysing and interpreting data *Testing the hypothesis and drawing conclusions *Evaluating data collected and techniques used. *Observing and describing the location of dwellings along the slopes in mountainous areas. 	<ul style="list-style-type: none"> *Observing *Orienting *Recording *Drawing *Identifying *Classifying *Measuring *Counting *Calculating *Interpreting *Analysis and associating (at an advanced level). *Managing (time) *Handling group situations and in some cases leadership accepting responsibility, exercising tolerance and understanding, co-operating with others. *Language skills *Evaluation of techniques used. 	<ul style="list-style-type: none"> *Watch *Compass *Barometer *Maximum & minimum thermometer *Weather-cock *Rain gauge *Wet and dry bulb thermometer *Synoptic weather maps *Cuttings of weather charts from newspapers

STD 10: FIELDWORK SITE : RURAL AREAS (CONT.)

TOPIC	SOME KEY IDEAS	FIELDWORK POTENTIAL	SKILLS, ATTITUDES & VALUES	GEOGRAPHIC TOOLS
Rural Settlement	*The location of settlement is determined by physical, social, cultural agro-economic and historical factors	<p>Visiting a farm (e.g. Bedford farm in Umtata) and studying its activities</p> <p>*Observing and identifying advantages and disadvantages of the farm</p> <p>*Describing the location of a rural settlement in relation to slope and aspect</p> <p>Observing, describing and analysing the factors which have determined the location of the rural area</p> <p>*Identifying and accounting for the type of landownership and the resultant pattern.</p>	<p>*Measuring temperature on different points along the slope - valley, middle and up on the mountain</p> <p>*Observing, determining and describing the changes in wind direction in valleys and mountainous areas (anabatic and katabatic winds)</p> <p>*Measuring temperature over grass and over bare earth and among trees</p> <p>*Recording relative humidity over bare earth over grass and under the trees</p> <p>*Measuring wind force at various positions between and away from dwellings.</p>	

STD 10 - FIELDWORK SITE : URBAN AREA

TOPIC	SOME KEY IDEAS	FIELDWORK POTENTIAL	SKILLS, ATTITUDES, VALUES	GEOGRAPHICAL TOOLS
Urban structure, factors determining site and situation of towns.	The location of a town is determined by factors such as water, topography, transport.	<ul style="list-style-type: none"> *Analysing the 1:50 000 topographical map of the area *Driving in a bus and observing physical factors such as the river, the topography and road. *Finding information from the records of the town clerk. *Analysing and interpreting data from the municipal office and comparing it with observations. *Drawing conclusions 	<ul style="list-style-type: none"> *Observing *orienting *recording *recognising *analysing *sampling *surveying . *sketching and land use mapping, counting *interviewing *evaluating *making decisions about data collecting and recording techniques *Identifying a geographical problem (with little or no assistance from the teachers). *Formulating and testing hypothesis *drawing conclusion. *developing awareness of, interest in and concern for the environment. *Identifying a problem *formulating and testing a hypothesis *drawing conclusions *Evaluating techniques used and data collected *Managing time *Accepting responsibility *Handling group situations and in some cases leadership *exercising tolerance and understanding of others. *co-operating and interacting with others *developing love geography as a subject. 	<ul style="list-style-type: none"> *Topographic maps *Urban land use maps *Air photographs *Tape, or knotted string *drawing equipment *evaluation of the environmental appraisal sheets *pedestrian and traffic count recording sheets *multi-storey function recording sheet.
Sphere of influence of town	*Sphere of influence of a town is a combination of the individual service areas of several different functions.	<ul style="list-style-type: none"> *Field survey: make enquiries at various institutions in the city concerning the distribution of their rural customers *mapping the data. *Administer questionnaires to find out from the rural population which central place they visit for each central function. 	<ul style="list-style-type: none"> *Formulating and testing hypothesis *drawing conclusion. *developing awareness of, interest in and concern for the environment. *Identifying a problem *formulating and testing a hypothesis *drawing conclusions *Evaluating techniques used and data collected *Managing time *Accepting responsibility *Handling group situations and in some cases leadership *exercising tolerance and understanding of others. *co-operating and interacting with others *developing love geography as a subject. 	
Urban profile and land values.	<ul style="list-style-type: none"> *Distribution of functions in the multi-storeyed buildings follows the same pattern as on the ground *those functions that need to be accessible to the public are accommodated on the lower floors *Certain functions like doctors, lawyers tend to group together <p>Due to highland values in CBD land is used intensively, therefore tall buildings are concentrated in the CBD.</p>	<ul style="list-style-type: none"> *Record functions of the various floors of the multi storeyed-building *map the results. <p>*Land use mapping</p> <ul style="list-style-type: none"> *record functions and note and record the number of storeys of multi storeyed buildings in base map of the town. 	<ul style="list-style-type: none"> *Evaluating techniques used and data collected *Managing time *Accepting responsibility *Handling group situations and in some cases leadership *exercising tolerance and understanding of others. *co-operating and interacting with others *developing love geography as a subject. 	

TOPIC	SOME KEY IDEAS	FIELDWORK POTENTIAL	SKILLS, ATTITUDES, VALUES	GEOGRAPHICAL TOOLS
		<ul style="list-style-type: none"> *Drawing flow maps. *Identifying the street plan and lay out *observing any advantage or disadvantage of the street plan identified and its effect on traffic. *Identifying the PLVI and finding out if its where you expect it to be by analysing the results of the pedestrian and traffic counts 		
	Certain functions tend to group together for functional convenience.	<ul style="list-style-type: none"> *mapping certain functions like shops, offices, industries *drawing landuse maps. 		
	Residential segregation is one of the consequences of improved means of transport.	<ul style="list-style-type: none"> Delimiting different residential zones in terms of housing types, streets, provision of services (in big towns study sample block of the residential areas). *Determining which residential has the highest status 		
	Distribution and location of retail functions in the suburbs follows a certain pattern	<ul style="list-style-type: none"> *Recording on the base map the location of retail functions in the suburbs *Listing all the types of shops found in a planned shopping complex as well as the number of each type. *Administering a questionnaire or interviewing people to find out how they travel and which shopping areas they prefer and why. 		
	Problems of the city.	<ul style="list-style-type: none"> *Observing and commenting about the parking facilities. Identifying the effect of such facilities on the traffic density in the CBD Measuring pollution at different points from the CBD outwards. Conducting environmental appraisal along a trail. Noting if the structure of the city conforms to any of the models of urban structure 		

TOPIC	SOME KEY IDEAS	FIELDWORK POTENTIAL	SKILLS, ATTITUDES, VALUES	GEOGRAPHICAL TOOLS
	<p>*The height of buildings decrease as distance from city the centre increases.</p>	<p>*observing the decrease in height of buildings, with distance from the city centre. *Counting number of storeys as you move outwards *measure distances *draw a correlation graphs</p>		
	<p>*Building densities decrease from the CBD outwards.</p>			
	<p>*The city is always characterised by constant change-urban renewal but certain buildings are conserved for their cultural, historical or aesthetic value.</p>	<p>*Land use mapping indicating those buildings that have been replaced noting and identify those buildings that are conserved.</p>		
Functional differentiation	<p>*With the growth and expansion of the town there is a tendency for the various functions to be separated from one another (functional differentiation).</p> <p>Functions in the city can be arranged in the form of a hierarchy</p>	<p>*Land use surveying and mapping *Classifying buildings according to function and record in the basemap. *Conducting transects and drawing graphs from transect data. *Grade functions in order of importance (by allocating points to buildings or functions and then arranging in descending order). *Studying the age, nature and use of buildings and using the buildings to determine the original site of the town.</p>		Land use classification list.
Influence of improved means of transport.	<p>*The CBD is theoretically the most accessible part of the city but traffic congestion renders it inaccessible practically. The result is the decentralisation of retail functions to the suburbs.</p>	<p>*Delemiting the CBD, *measuring accessibility. *Conducting pedestrian and traffic counts drawing correlation graphs between the traffic density and the distance from the city centre.</p>		

TOPIC	SOME KEY IDEAS	FIELDWORK POTENTIAL	SKILLS, ATTITUDES, VALUES	GEOGRAPHICAL TOOLS
	Industries tend to be located away from residential and retail functions and have specialised requirements.	<ul style="list-style-type: none"> *Land use mapping-marking in the industries and residential areas to show the relative distance between them. *Asking questions from employees of industries about their places of residence or *questioning managers about employees, imported materials, product, markets. *Identifying the causes of locational change and factors that determine the new location. 		
Microclimatology	Large cities have unique microclimatological characteristics.	<ul style="list-style-type: none"> *Transect *Measuring temperature, humidity, wind speed and direction from the centre to the outskirts *Measuring temperature changes in tall buildings *Drawing graphs. 	As above	<ul style="list-style-type: none"> *watch *compass *barometer *maximum & minimum thermometer *weather-cock *rain gauge *wet and dry bulb thermometer *synoptic weather maps *cuttings of weather charts from newspapers

In demonstrating the effectiveness of the fieldwork programme, the researcher first considered the potential of each of the sites that would be used through an in situ exploration and in terms of the demands of the Stds 8-10 syllabus, the standards to be used, the experiences of the pupils with regard to fieldwork, the time that would be available and the aims and objectives of the trail.

Thereafter, the researcher selected relevant ideas, activities to be undertaken and skills to be developed through these activities and the tools to be used from the programme.

For example, in preparing for the school trail, the activities were selected (as shown in Table 5.1) from the programme for each standard. The equipment to be used was then identified and selected from the programme. The same procedure was followed with both the urban and the rural units. For example, the hypotheses that appear in the worksheet of the rural unit (Appendix 13) such as 'that soil quality and depth decrease with increase in slope and altitude' and 'that vegetation quality decreases with increase in slope' correspond with those that appear in the programme for Std 10. The criterion for selecting these hypotheses was that the site to be used offered potential for the activities related to these hypotheses. The Transkei Department of Agriculture was actively involved in constructing dams and anti-erosion walls and people have been moved from one part of the area to the other. Therefore those activities

appearing in the programme which were related to environmental management were selected. The programme therefore facilitates the selection of activities for conducting fieldwork in any site.

4.6 EVALUATION OF THE PROGRAMME

The programme reveals that many skills and concepts in general geographic techniques, climatology, geomorphology and ecology can be developed in the premises of many schools. This implies that fieldwork can be integrated into the daily classwork and that by using double periods teachers can conduct fieldwork without disturbing the normal school time-table. This means that even the most disadvantaged schools in Transkei can undertake fieldwork.

The tables reveal that in Umtata most rural fieldwork can be done within a radius of 5 km from the senior secondary schools, which is a reasonable walking distance.

Overlapping of certain activities and skills is evident in the programme. Certain activities and skills are relevant to all class levels but as the pupils reach higher class levels the skills have to be repeated and in the process of repetition they are refined. This leads to the internalisation of these concepts and skills.

Although there is repetition there is also some degree of progression with the increase in class levels and the mental maturity of the pupils. For example, in Std 7 pupils study many

elements of the urban structure of cities but the emphasis will be on observations and field-teaching and simple worksheets. In Std 10 field research will dominate and pupils are expected to work as independently as possible in formulating and testing hypotheses and evaluating the data collecting and recording techniques used. To a certain extent, the tables therefore reveal the spiral nature of the curriculum.

Most skills of rural and urban fieldwork overlap, for example, map reading, measuring, sketching, counting, hypothesis formulation and testing, data analysis, drawing land-use maps and interpreting. The extent to which a teacher permits repetition of the skills and concepts will depend on the experience of the pupils. For Umtata pupils involved in the project, most of whom have never done fieldwork, the repetition of concepts, activities and skills proved necessary during this research.

4.7 SUMMARY

This chapter has highlighted the value of the local environment of the Umtata district as a 'laboratory' for teaching/learning the senior secondary school geography syllabus, namely, general geographic techniques, geomorphology, ecosystems and environmental management, climatology, population and settlement geography.

The value of a fieldwork programme in facilitating the determination of activities, ideas and hypotheses to be tested

has also been made clear.

CHAPTER 5**PRESENTATION AND ANALYSIS OF ACTION RESEARCH RESULTS****5.1 INTRODUCTION**

With a view to demonstrating the effectiveness of the immediate school environment for teaching/learning geography through fieldwork, three fieldwork study units were developed and implemented within the school premises, in a rural area and in the Central Business District. The implementation of these units was subjected to continuous evaluation by the researcher, the non-participant observer and the pupils. Time constraints prevented the non-participant observer from evaluating all the phases involved in the implementation of the unit. At least one activity from each unit was, however, evaluated by the non-participant observer.

5.2 ACTION RESEARCH RESULTS

The following section presents and analyzes the results of the action research undertaken.

5.2.1 The school trail.

The two major aims of the school trail were:

(i) to help pupils understand that the immediate school

environment can be used for teaching/learning geography through fieldwork. This was done by developing and implementing a field study unit with the pupils in their own school environment and letting the pupils evaluate its effect on their understanding of the aspects covered as well as their attitude towards them.

- (ii) As indicated in Chapter 3, the pupils had no previous experience in fieldwork, this unit was therefore used to give the pupils initial training in basic field techniques to prepare them for the two further fieldwork excursions that would be undertaken.

5.2.1.1 Phase One of the school trail- the preparation

In grouping the pupils for the exercise, an attempt was made to balance the number of pupils from Std 8 and Std 10 in each group. Each group was then given a worksheet showing the areas to be covered by the trail, the aims and objectives, the equipment to be used and the actual activities to be undertaken (Appendix 2). Questions included in the worksheet were selected from the major systematic sections as shown in Table 5.1 while Table 5.2 is a summary of the concepts, skills and field techniques which were incorporated into the worksheet for the School Trail.

Table 5.1 reveals that although there is a certain degree of repetition in concepts and skills between Std 8 and Std 10 work

TABLE 5.1 Relationship between worksheet (for the school trail), syllabus units and class levels

SYLLABUS UNIT	CLASS		
	8	9	10
General Geographic Technique	Reading & analysis of vertical aerial photographs. Reading, analysis & interpretation of 1:50 000 topographic maps. Direction, bearing, horizontal distance contours, landforms, gradient conventional signs & cultural landscape.	Reading, analysis & interpretation of aerial photographs & 1:50 000 topographic maps. Orientating maps, calculating distance, bearing, sampling, transect, location, direction & description of relief.	Reading, analysis & interpretation of aerial photographs & 1:50 000 topographic maps. Orientating maps, calculating distance, bearing, sampling, transect, location, direction, description of relief, association of features & resultant patterns.
Geomorphology	Rocks, weathering, erosion	Fluvial erosional processes, transect.	
Ecosystems, Environmental balance & Conservation			Properties of soil : colour, pH, texture. Transect
Climatology	Factors influencing horizontal temperature gradient: slope aspect.		Effect of aspect on temperature.

as the class level increases, this is accompanied by a gradual increase in the level of complexity expected from the Std 10 pupils.

The pupils showed great enthusiasm and participated actively in preparing some of the materials to be used. The preparation for the school trail proved to be the most demanding phase of this unit because many of the concepts were new to the pupils since the Std 10s had not yet handled the section on soils while most of the concepts relating to soils were not included in the syllabus.

Combining the Std 8s and the Std 10s and including concepts and skills from the std 10 syllabus proved to be a mistake as the Std 8 pupils found it difficult to understand some of the concepts and skills having had no prior exposure to the areas covered. Organisational problems with regard to regular attendance and punctuality retarded progress. This was because the researcher had perforce to organise the project extramurally and on many occasions sporting activities proved to be more attractive to the pupils. The result was that by the time the preparation was completed not all the pupils involved in the project had attended regularly.

TABLE 5.2 Concepts and skills incorporated in the school trail
(Scores in percentages)

Question	Concepts	Skills
1	Direction location	Observation, measuring, Orientation, drawing, calculating.
2	Sampling quadrat	Observation, identification, sampling, recording, classifying counting, surveying, recogni- tion, communication, analysing and co-operating.
3	Soil charac- teristics & classifica- tion	Observation, identification, sampling, recording, classifying, labelling, ana- lysis and communication.
4	Sketching	Observation, analysis, sketching selecting and annotating.
5	Direction	Observation, measuring, orientation, recording, identifying and classifying.
6	Bearing	Observation, measuring, orientation, recording, identifying, classifying and drawing.
7	Direction and slope	Observation, recording, orientation, identify- ing and classifying.
8		Observation, classifying, recording, analysing and inter- preting.
9	Slopes	Observation, recording, identifying, classifying and recognition.
10		Observation, recording, association and analysing,
11	Relationship between vege- tation and slope	Observation, recording, classifying, association, interpretation and identi- fication.

TABLE 5.2 (Cont.)

(Scores in percentages)

Question	Concepts	Skills
12	Soil characteristics and classification	Observation, labelling, sampling, communication identification, classification, analysis and recording.
13	Gradient	Observation, measurement, classification and identification.
14	Influence of slope on human activities	Observation, recording, classification, identification, orienteering, analysis, association, evaluation and communication.
15	Conservation	Observation, recording and association.
16	Sketching	Observation, sketching and annotating.
17	Rocks	Observation, sampling, identification and labelling.
18	Weathering	Observation, recording, identification, recognition, association and analysis.
19	Drainage	Observation, recording, analysis, association and identification.
20	Soil erosion	Observation, recording, identification, analysis and association.
21	Gradient analysis and vegetation sampling	Observation, recording, identification, sampling, measuring, labelling, classification, counting, surveying and analysis.

Evaluation by the non-participant observer:

The non-participant observer described the following aspects of the preparation phase as good:

- (i) provision of equipment and related material,
- (ii) explanation of aims and objectives of fieldwork in geography teaching/learning and of the school trail,
- (iii) clarity of language,
- (iv) logical expression in concepts and procedure,
- (v) integration of cognitive, psychomotor and affective skills,
- (vi) group organisation,
- (vii) explanation of methods of recording information, and
- (viii) pupils' interest and motivation.

It is necessary to emphasise the importance of the role of the teacher in motivating pupils during the preparation phase of fieldwork. The non-participant observer emphasised the large extent to which the enthusiasm of the researcher ensured the success of the field study in the light of problems such as the inexperience of the pupils and their lack of spontaneity with the teacher. This factor emphasizes that where the teacher is confident herself, she is able to motivate and to develop the pupils' confidence in their own abilities, which does much to ensure the success of fieldwork from the outset.

The following aspect of the preparation phase were seen as satisfactory by the non-participant observer :

- (i) appropriateness of the activities for the developmental level of the pupils,
- (ii) integration of concepts and materials,
- (iii) consideration of pupils' level of development in explaining,
- (vi) pupils' spontaneity in asking questions,
- (v) pupils' assimilation of concepts, and
- (vi) interaction among the pupils and with the teacher.

It is important to note that, while working with the first school, spontaneity among the pupils and with the teacher/researcher which is very important for the success of fieldwork and the development of affective skills, was limited. This was the result of the limited time that the Std 8s in particular had spent with the Std 10s (whom they respected as their seniors) and with the teacher. This aspect was not a problem in working with the second school as spontaneity among the pupils was considerably higher because these pupils were classmates and were thus used to each other. Interaction between the teacher and the pupils was improved because of the greater level of co-operation.

With regard to the researcher's consideration of the pupils' developmental level in preparing and explaining concepts and activities, the observer's assessment is significant and corresponds with the researcher's findings. The researcher found it difficult to keep her explanations at a suitable level for the Std 8s without boring the Std 10s. On the other hand, it was

difficult keeping explanations at the level of the Std 10s without risking not being understood by the Std 8s. This situation demanded longer contact with the teacher which was not possible. However, it must be noted that with the teacher doing fieldwork with her own pupils, time would not be as much of a problem, because she would be handling one homogeneous class and concepts and skills relevant to their developmental level. The teacher would have time to ensure that the concepts were understood and internalised.

5.2.1.2 Phase Two of the school trail : actual fieldwork

The following observations were made by the researcher during the actual fieldwork:

1. Pupils displayed great enthusiasm, interest and willingness to work on their own once they were in the company of peers. Even the shy pupils engaged in discussion with others. This is supported by the non-participant observer. However, there was a tendency in the first school for the Std 8s to be dependent on the Std 10s. With the second school where only the Std 10s were involved, there was a tendency to assign simpler duties like labelling soil samples to girls and for boys automatically to monopolise such activities as digging in order to take soil samples. Cultural tendencies seemed to determine which duties were done by girls and which were done by boys.
2. Experience in the field revealed that the worksheet was too

long. Questions on vegetation sampling and finding the texture of the soil were repeated many times at different control points and along the transect. It was concluded that doing these along the transect only would have been sufficient to give the pupils the necessary experience. In addition pupils spent considerable time asking questions from the researcher and discussing among themselves. This the researcher welcomed as there was much background information that the pupils needed to be reminded of, as many concepts had been introduced over too short a period for the pupils to have internalised them. This is why the non-participant observer evaluates the pupils' assimilation of concepts as merely satisfactory. Moreover the primary aim of this trail was training pupils in the basic field techniques.

3. With the first school the researcher discovered that the reaction and the attitude of the two class groups to the various activities was different, although neither had had any previous experience. The Std 10s seemed to be more interested in those activities that were more challenging, such as measuring slope angles, determining the texture and colour of the soil and sampling vegetation. They showed less interest in the simpler activities like finding directions and measuring distances which, although they had not done them before, they found easy. They therefore tended to leave those to the Std 8s. This would seem to suggest the need for progression in planning a programme of

fieldwork for the different class levels. The researcher also concluded that each class group was more interested in those sections of fieldwork that were directly relevant to their syllabus. Again this demonstrates the need for integration of fieldwork activities into the school geography programme.

The pupils' worksheets completed in the field revealed the following:

1. Pupils' performance was particularly poor in field sketching and drawing despite an attempt to give initial training. For example, not a single group attempted questions 5.1 and 23 requiring them to draw field sketches (Appendix 2). On discussing this with the pupils, they revealed that they had never been trained to draw field sketches. Boqwana (1992) found similarities in this respect working with Ciskei pupils.
2. Pupils failed to give satisfactory and full answers to questions which demanded reasoning and long answers, e.g. questions 5.5 and 9 while they did well in those answers dependent on observation and which needed short answers, e.g. question 7. This could be attributed to pupils' lack of confidence, lack of fieldwork experience and language problems. This again concurs with Boqwana's findings (1992) with Ciskei pupils.

5.2.1.3 Phase Three of the school trail - follow-up

During the follow-up to the fieldwork the following were observed:

1. During the discussions and the consolidation pupils demonstrated understanding of concepts such as the pH of the soil, transects, relationships that were tested, for example, the relationship between density and soil texture. It was noteworthy that a high level of understanding could be achieved within such a short time. This could be attributed to the fact that these concepts and skills had been introduced through real self activity.
2. Data presentation in the form of graphs (slope profile) which the pupils had to draw from the data collected was poorly developed.

Pupil evaluation of the school trail:

Although the pupils of the first school could not finish all the activities of the school trail, they were asked to evaluate the part that they had undertaken.

The following key was used for all pupil evaluation in this study:

Key**Sections 1 to 5**

- 1 - Very weak/very limited
- 2 - Weak/limited
- 3 - Satisfactory/moderate
- 4 - Good/great
- 5 - Excellent/very great

Section 6

- 1 - None
- 2 - Preparation
- 3 - Satisfactory
- 4 - Follow-up

Tables 5.3 and 5.4 show summaries of the pupils' evaluation of the items in the first and the second school. The opinions expressed by the pupils about some aspects of the fieldwork unit may be summarised as follows:

TABLE 5.3 (School No. 1) Pupils' evaluation of the school trail
(Scores in percentages)

	1	2	3	4	5
1. Understanding of :					
1.1 Location			14	77	9
1.2 Vegetation sampling		2	15	79	4
1.3 Soil characteristics		8	23	65	4
1.4 Bearing		4	31	65	
1.5 Slope types			12	80	8
1.6 Gradient		12	14	62	12
1.7 Slope aspect			14	80	6
1.8 Rock types		6	11	79	4
1.9 Weathering			15	79	6
1.10 Drainage		8	21	59	12
1.11 Soil erosion			13	68	19
1.12 Slope profile	10	79	11		
2. Development of skills					
2.1 Observation			10	81	9
2.2 Measuring distances			10	85	5
2.3 Measuring slope angles		8	22	64	6
2.4 Orientating maps			7	73	20
2.5 Drawing sketches	87	13			
2.6 Drawing profiles	85	15			
2.7 Identification of phenomena		12	20	63	5
2.8 Recording of data			11	79	10
2.9 Classification of rocks		10	20	65	5
2.10 Counting			2	90	8
2.11 Recognition of features			14	71	15
2.12 Labelling soil samples			9	83	8
2.13 Annotating sketches	88	12			
2.14 Associating			12	78	10
2.15 Interpreting data and graphs	15	25	57	3	
2.16 Selecting		5	24	65	6
2.17 Sampling vegetation			10	85	5
2.18 Testing the pH of the soil	85	10	5		
2.19 Finding direction		7	10	80	3
2.20 Testing the texture of the soil	85	7	8		
2.21 Finding bearing		10	15	70	5
2.22 Calculating area	6	65	24	5	
2.23 Analysing data		65	29	6	
2.24 Interpretation of data	10	43	38	9	
2.25 Decision-making	5	20	58	17	
2.26 Co-operating with others			10	81	9
2.27 Communicating			10	85	5
2.28 Questioning			15	80	5
2.29 Evaluating information		58	20	22	
2.30 Appreciation of the landscape		7	70	23	
3. Understanding role of fieldwork in:					
3.1 Clarifying concepts		11	11	71	7
3.2 Developing practical skills		4	9	82	5
3.3 Developing affective skills	3	14	13	65	5
3.4 Studying the local environment		5	16	75	4

TABLE 5.3 (Cont)

(Scores in percentages)

Pupil Evaluation of School Trail	1	2	3	4	5
4. The extent to which :					
4.1 you enjoyed the fieldwork			19	61	20
4.2 the fieldwork interested you				75	20
4.3 you found the preparation clear		16	59	15	15
4.4 you found actual field study clear			13	77	10
4.5 you found the follow-up clear				-	-
4.6 you found fieldwork as a whole clear			12	76	12
5. Understanding of relationships:					
5.1 between human activities and slope direction		10	25	53	12
5.2 between drainage and vegetation		12	24	56	8
5.3 between drainage and soil texture		8	26	58	8
5.4 between slope & vegetation quality		11	27	53	9
6. Part of the fieldwork -preparation, actual excursion & follow-up, found:					
6.1 most interesting		22	78		
6.2 most effective		19	81		
6.3 most boring	89	11			
6.4 most rewarding		18	82		
6.5 most practical		20	80		
6.6 easiest to understand		27	63		

**TABLE 5.4 (School No. 2) Pupils' evaluation of school trail
(Scores in percentages)**

	1	2	3	4	5
1. Understanding of:					
1.1 Location			9	81	10
1.2 Vegetation sampling			8	87	5
1.3 Soil characteristics			10	83	7
1.4 Bearing		4	12	77	7
1.5 Slope types			7	85	8
1.6 Gradient			12	79	9
1.7 Slope aspect			10	84	6
1.8 Rock types		3	8	83	6
1.9 Weathering			16	81	3
1.10 Drainage		4	20	61	15
1.11 Soil erosion			18	62	20
1.12 Slope profile		12	18	63	7
2. Development of skills					
2.1 Observation			10	85	5
2.2 Measuring distances			10	86	4
2.3 Measuring slope angles			21	74	5
2.4 Orientating maps			6	72	22
2.5 Drawing sketches	85	15			
2.6 Drawing profiles		12	20	58	10
2.7 Identification of phenomena		5	20	65	10
2.8 Recording of data			14	81	5
2.9 Classification of rocks		6	15	76	3
2.10 Counting		3	16	78	3
2.11 Recognition of features		15	12	68	5
2.12 Labelling soil samples			14	79	7
2.13 Annotating sketches	80	16	4		
2.14 Associating		6	12	72	10
2.15 Interpreting data and graphs		10	18	58	14
2.16 Selecting		6	23	65	6
2.17 Sampling vegetation		5	10	75	10
2.18 Testing the pH of the soil		5	10	75	10
2.19 Finding direction		10	10	78	2
2.20 Testing the texture of the soil		4	10	78	8
2.21 Finding bearing		10	13	72	5
2.22 Calculating area		10	20	65	5
2.23 Analysing data		9	20	65	6
2.24 Interpretation of data		16	14	64	6
2.25 Decision-making		9	15	60	16
2.26 Co-operating with others			10	83	7
2.27 Communicating			12	83	5
2.28 Questioning			15	80	5
2.29 Evaluating information		10	40	45	5
2.30 Appreciation of the landscape		10	30	55	5
3. Understanding role of fieldwork in:					
3.1 Clarifying concepts		14	9	71	6
3.2 Developing practical skills		4	9	82	5
3.3 Developing affective skills		10	15	70	5
3.4 Studying the local environment			11	85	4

TABLE 5.4 (Cont.) (Scores in percentages)

	1	2	3	4	5
4. The extent to which :					
4.1 you enjoyed the fieldwork			9	71	20
4.2 the fieldwork interested you				85	15
4.3 you found the preparation clear		10	15	60	15
4.4 you found actual field study clear			12	83	5
4.5 you found the follow-up clear			10	85	5
4.6 you found fieldwork as a whole clear			10	85	5
5. Understanding of relationships:					
5.1 between human activities and slope direction		10	25	55	10
5.2 between drainage and vegetation		10	20	60	10
5.3 between drainage and soil texture		10	18	60	12
5.4 between slope & vegetation quality		10	20	58	12
6. Part of the fieldwork - preparation, actual excursion & follow-up, found:					
6.1 most interesting		12	81	7	
6.2 most effective			54	46	
6.3 most boring	76	24			
6.4 most rewarding			55	45	
6.5 most practical			58	42	
6.6 easiest to understand			55	45	

KEY**Sections 1 to 5**

- 1 - Very weak / very limited
- 2 - Weak / limited
- 3 - Satisfactory / moderate
- 4 - Good / great
- 5 - Excellent / very great

Section 6

- 1 - None
- 2 - Preparation
- 3 - Satisfactory
- 4 - Follow-up

1. In both schools more than 80% of the pupils indicated that the fieldwork had helped them to understand locacation, vegetation sampling, soil characteristics, bearing, slope types, gradient, slope aspect, rock types, weathering and soil erosion to a great extent. For the first school, 79% of the pupils described their understanding of slope profiles as weak and 11% as satisfactory. This could be attributed to the fact that the pupils did not get an opportunity to draw these as this was done during the follow-up phase. With the second school which did the follow-up, 55% described their understanding of soil profiles as good. This figure is still relatively lower, however, than those for the other aspects. This could be attributed to the fact that these were new concepts while with the other concepts the high level of comprehension can be attributed to the fact that the pupils knew the concepts well from classroom teaching. The fieldwork, however, served to increase and consolidate their understanding.
2. In both schools more than 70% of the pupils thought that the trail had helped them to develop the following skills to a great extent: observation, measuring distances and slopes, orientating maps, identifying phenomena, recording information classifying, counting, recognising phenomena, associating, selecting, sampling vegetation and soils, labelling samples, finding direction and bearing, co-operating with others, questioning and communicating.

It must be noted that for the first school the number of pupils who regarded their development of skills such as drawing profiles, interpreting and analysing data and graphs and testing the pH of the soil as satisfactory was very low. 87% also regarded their ability to draw sketches as very weak while 13% regarded it as weak. In fact, as noted before not a single pupil could draw a sketch of the area required despite the initial training given. For the second school 58% of the pupils thought that their ability to draw profiles was good. This figure is lower than for the other aspects. This could be attributed to the fact that this was their first experience with this exercise. More pupils in the first school found decision-making difficult than in the second school. This could be attributed to their overall higher level of development and maturity so that, once guided, they were able to make most of the decisions on their own.

3. Only 50% of the pupils in the second school thought that their ability to evaluate information was good. Evaluation represents a high level of cognition and in the light of their experience this can be regarded as an indication of success. For the first school only 22% thought their ability to evaluate information was good. Again this can be regarded as an indication of success considering that this group included the Std 8 pupils who had limited experience in the conceptual development needed for this exercise.
4. More than 70% in both schools thought that the fieldwork had helped them to understand the role of fieldwork in

classifying concepts and developing skills. This figure corresponds with the high percentages for their understanding of the individual concepts and skills discussed above.

5. More than 60% of the pupils indicated that they understood the relationship between human activities and direction of the slope, drainage and vegetation, drainage and soil texture, slope and vegetation quality. While pupils' understanding in these areas was relatively lower than for concepts and skills, the results are, however, realistic considering the inexperience of the pupils and the limitations of time as well as the fact that relationships are not always so obvious to the pupils.
6. It is significant that all pupils thought that fieldwork was interesting to them. More than 60% thought that the preparation, the actual field activities and the follow-up were clarified to a great extent. This aspect was included to ensure that the teacher had clarified all the phases of the fieldwork from the pupils' point of view.

Again it is worth noting that more than 75% of the pupils found no part of the whole fieldwork project boring. The fact that there are a few who found the preparation boring could be attributed to their irregular attendance during this phase and their consequent lack of understanding. For both schools the score attributed to the actual excursion as the most interesting part of the whole project is more than 75%. This is a very high figure which proves that pupils enjoy working on their own if

activities are properly planned and they know what to do. The scores for the first school are based only on two phases but still indicate very high scores for the actual fieldwork excursion as the most rewarding, most effective and easiest to understand. In the second school where all phases were done, although the scores for the actual field activity of 54% (most effective), 55% (most rewarding), 55% (most practical) and 58% (easiest to understand) are higher than for the follow-up, the scores for the follow-up for the same aspects are also high. There is therefore a tendency towards a balance in the scores for the two phases. This shows that these are perceived as being nearly equally effective, practical, rewarding and easy to understand.

5.2.2 The urban fieldwork

The urban fieldwork involved 35 Std 10 pupils from the second school. For the traffic and pedestrian counts the pupils were divided into 5 groups of 7 pupils. For the land-use survey the pupils worked in pairs.

5.2.2.1 Phase One of the urban unit: preparation

The main objective of this unit was to help pupils acquire fieldwork skills and develop a better understanding of the concepts related to urban geography and of general geographic techniques. The land-use map of Umtata (1988) was obtained and many copies were produced. The pupils were asked to draw the

relevant street maps using the land-use map provided. Each group was also given the following :

- i. land-use map of Umtata showing the erven with their numbers
- ii. worksheet showing the hypotheses to be tested, the aims and objectives and the exercises/activities to be conducted (Appendix 6);
- iii. the land-use classification key showing the functions with their codes (Appendix 7);
- iv. traffic and pedestrian count sheets (Appendices 8 and 9);
- v. a multiple-function recording sheet for those streets with tall buildings (Appendix 10).

As the pupils had not yet handled the section on urban settlements with their teacher, thorough preparation in terms of concept development was done. Topographic and land-use maps were used. Techniques involved in the construction of an urban land-use map, traffic and pedestrian counts, and other related activities were also explained. The preparation took two afternoons of two hours each.

The activities to be undertaken included observation of CBD characteristics, the process of urban renewal, succession and invasion, clustering of functions, land-use and vertical land-use zoning and doing traffic counts. Follow-up activities were also planned. These included drawing land-use maps and graphs, and analysis and interpretation of these and the data collected in the traffic counts.

A pupil evaluation sheet was produced . The school principal was requested to inform the parents of the trip on behalf of the researcher. Transport was also arranged by the researcher.

5.2.2.2 Phase Two of the urban unit: actual fieldwork

During the actual fieldwork activity, the groups came together and decided amongst themselves how to do the traffic and pedestrian counts. Each count took ten minutes. After each count pupils gathered at a central point decided on previously to to combine their data.

After this exercise, the pupils proceeded with the land-use mapping, using the street map and the land-use classification key. Data collection was effected through visual observation, recording the existing functions on the blank street map and in the multiple-function form (Appendix 10) using the relevant codes. This exercise took an average of approximately three hours depending on the length of the street. Groups working in Sutherland and York Road were instructed to record functions in multi-storey buildings.

5.2.2.3 Phase Three of the urban unit: follow-up

The researcher transferred the data on the individual street maps to one land use map using the relevant codes. Thereafter, copies of this map were produced. Another blank land-use map was also produced. Copies of the completed land-use maps for ground and

upper level functions in the multi-storey buildings were also produced.

During the follow-up phase each group of pupils was provided with these two maps. The pupils had to transfer the functions in code form onto the blank maps using colours. Thus, land-use maps of CBD functions in both single floor and multi-storey buildings were produced. These maps were then analysed and interpreted during the discussion in terms of the hypotheses to be tested. Conclusions were reached and recorded. The results of the traffic counts were also analysed and interpreted during the discussion.

The following observations were made by the researcher:

1. It took a very short time for pupils to understand concepts such as land-use zones, land-use maps, functional differentiation, and functional magnetism. This may be ascribed to the fact that when explaining these concepts the teacher referred constantly to the town of Umtata which was their own local environment. This highlights the value of the local well-known environment in teaching/learning geography. Furthermore, most of the concepts had been covered in Std 7. This again highlights the fact that there is a degree of repetition and continuity in some concepts and skills in urban geography for Stds 7 and 10. In developing a programme of fieldwork, this repetition and

continuity has to be observed. Finally, these concepts were not only relevant to the pupils' syllabus but also suitable for their level of cognitive development.

2. During the actual fieldwork phase pupils showed great enthusiasm and excitement . However, the greatest enthusiasm was produced by the traffic counts, particularly of the pedestrians. This is where the pupils showed their ability to make decisions as they were left on their own to decide how to organise this count.
3. The pupils found it easy to classify the urban functions found in the CBD.
4. Recording of the functions on the street maps was done with accuracy, although for the tall buildings there were inaccuracies. This occurred because some pupils experienced problems in entering some of the buildings. This could be considered an inevitable shortcoming of the present study. Despite this limitation, sufficient information had been collected to prove the hypothesis related to vertical land-use zoning.
5. Graphical data presentation and analysis helped reveal that the pupils' graphic skills were poorly developed. This observation corresponds with Bogwana's findings (1991) with Ciskei pupils. However, pupils in the present study found it easy to interpret the land-use map as well as the graphs

drawn by other pupils (those who managed to draw them) and by the researcher.

6. The pupils displayed considerable ability to work co-operatively.

Although it had been envisaged that the non-participant observer would evaluate this unit, he could not do so mainly because it was conducted during the holiday when the In-service college was closed.

Pupils' evaluation

Pupils were required to evaluate the unit using a form designed by the researcher (Appendix 5.9). This evaluation revealed several interesting trends as Table 5.5 shows.

**TABLE 5.5 Pupil evaluation of urban fieldwork
(Scores in percentages)**

	1	2	3	4	5
1. Understanding that:					
1.1 as the town expands there is a tendency for the various functions to occupy separate distinct zones				80	20
1.2 the tallest buildings are found in the city centre			10	85	5
1.3 the tallest buildings correspond to areas of highest pedestrian density			10	87	3
1.4 there is a general decrease in pedestrian/traffic flow with increasing distance from the city centre			27	68	5
1.5 there is a positive correlation between high accessibility and high pedestrian density			26	64	10
1.6 vertical distribution of functions in the city centre corresponds to ground distribution of functions		15	20	55	10
1.7 certain types of shops selling shoppers' goods tend to cluster			10	85	5
1.8 certain types of professional services tend to cluster to facilitate business contact			7	83	10
1.9 CBD functions tend to invade the transition zone (succession and invasion)		7	20	63	10
1.10 the CBD is heterogenous			5	90	5
2. Development of skills					
2.1 Formulate hypotheses	3	15	20	57	5
2.2 Decide on data to collect to test the hypotheses		18	15	60	7
2.3 Decide on how to record data in the field		2	18	70	10
2.4 Observe functions in a city				90	10
2.5 Record data in a land-use map			6	89	5
2.6 Do a pedestrian and traffic count			20	75	5
2.7 Analyse data in traffic counts			20	75	5
2.8 Draw a land-use map		5	20	70	5
2.9 Make conclusions based on land-use maps		10	20	65	5
2.10 Relate land-use map to reality			26	65	9
2.11 Relate what is in the field to what is in the textbook			20	70	10
2.12 Work within a group situation			15	75	10
2.13 Work informally with a teacher			25	65	10
2.14 Share duties with peers			12	78	10

TABLE 5.5 (Cont.)
(Scores in percentages)

	1	2	3	4	5
3. The extent to which :					
3.1 you enjoyed this fieldwork			10	85	5
3.2 the fieldwork interested you			17	78	5
3.3 you found the fieldwork as a whole clear			19	73	8
3.4 this fieldwork helped you to understand the role of fieldwork in learning geography			22	69	9
4. Part of the fieldwork (preparation, actual field activity or follow-up) found:					
4.1 most interesting		16	63	21	
4.2 most effective			51	49	
4.3 most boring	95	5			
4.4 most rewarding			53	47	
4.5 most practical			59	41	
4.6 easiest to understand			55	45	
4.7 hardest to understand	72	28			

KEY**Section 1 to 3**

- 1 - Very weak / very limited
- 2 - Weak / limited
- 3 - Satisfactory / moderate
- 4 - Good / great
- 5 - Excellent / very great

Section 4

- 1 - None
- 2 - Preparation
- 3 - Actual field activity
- 4 - Follow-up

1. More than 85% of the pupils in the sample thought that the fieldwork had helped them to understand the following to a great extent: functional differentiation, clustering of certain functions, that the tallest buildings are always found in the CBD and that these correspond to areas of highest pedestrian density, that pedestrian density decreases with increasing distance from the PLVI, that there is a positive correlation between high accessibility and high pedestrian density. This can be attributed to the fact that
 - (i) the concepts and ideas had been covered in Std 7;
 - (ii) the pupils' practical involvement in observing, recording, analysing and interpreting data during the school trail made these techniques meaningful to the same pupils;
 - (iii) these concepts and skills were also relevant to the pupils' level of intellectual development;
 - (iv) the researcher had made sure that everything was quite clear for the pupils to follow.

It is, however, worth noting that fewer pupils indicated an understanding of the way in which functions on the ground level of the CBD corresponded to a vertical distribution of functions. This can be attributed to two factors:

1. firstly, only a few pupils were involved in the observation and recording of functions in these tall buildings; secondly, the vertical distribution of functions is not

always so observable and obvious. This highlights the effect of the pupils' involvement in field activities in improving the pupils' understanding of geography concepts and skills. In addition, the pupils had experienced problems in recording functions owing to tight security. This meant that most of the pupils could only be involved in this during the preparation and the follow-up phases. This applies to the idea of succession and invasion. Few pupils had undertaken the transect, therefore few experienced and observed the changes in functions .

2. More than 60% of the pupils thought that the fieldwork had helped them to develop the following skills to a great extent: ability to formulate hypotheses and to decide on data to collect to prove the hypotheses was good. Considering that this was their first experience with the field research approach, the level of pupils' understanding can be regarded as an indication of the success of field work.
3. More than 80% of the pupils indicated that they had enjoyed this excursion to a great extent and that it had helped them understand and appreciate the role of field work in geography teaching/learning.
4. It is also significant that 95% of the subjects in the sample found no part of the urban field work unit boring. The 5% of the pupils who found the preparation exercise

boring may have done so because of their absence during this phase and their subsequent failure to understand what had been done. It is also significant to note that 63% found the actual field activity the most interesting, 51% most effective, 53% the most rewarding, 59% the most practical and 55% easiest to understand. Furthermore, the scores for the follow-up activity for the same aspects were nearly as high, indicating that the follow-up work is as important as the actual fieldwork. Of the subjects in the sample 72% found no part of the whole urban fieldwork difficult to understand. But the fact that 28% regarded the preparation exercise as the hardest to understand could be attributed to their inexperience with the subject matter so that, until they were actually involved in the practical activity in the field and in the follow-up phase, it was not easy for them to understand what was discussed during the preparation phase.

5.2.3 The rural fieldwork

The 34 Std 10 pupils of the second school were involved in this research. For the rural fieldwork unit, three main activities were prepared. These included questions based on observations, interviews and transects.

5.2.3.1 Phase One of the rural unit: preparation

The questions on observation (Appendix 11) were to be answered

by all the pupils. These demanded responses based on observations of the surrounding landscape. An attempt was made to confine the pupils to a radius of 1km for answering the questions.

The aims, objectives and questions for the interviews of the local residents (Appendix 12) were based on the environmental management of the area and on the attitude of the local residents towards the environment. The questions demanded a 'yes/no' answer. They also provided opportunities for further comments and/or explanation. Pupils were to complete the interview schedules themselves. The interviews would be conducted within a radius of 3 km from the fieldwork site. Two groups were selected to conduct the interviews.

Transect lines (Appendix 13) were determined by all the pupils and the researcher from the topographic maps, orthomaps and slides. These transect lines were 3 km each.

To economise on time, it was decided that all pupils would be allowed to answer the questions based on observations as individuals though they would be permitted to discuss their findings in groups before recording their observations. For the two other major activities, namely, the interviews and the transect, the pupils would be divided into two sections. Three groups would undertake the transects while the other two would conduct the interviews. All the pupils were involved in the preparation and in the follow-up of all activities irrespective of whether they had been involved in undertaking them in the

field. This would ensure that, while time was saved by involving pupils in different activities concurrently in the field, the pupils would still benefit from the discussions and activities during the preparation and the follow-up phases.

As the pupils had already gained experience in using fieldwork techniques such as the use of the quadrat, measuring slope angles with clinometers and recording data, very little time was spent on this. The observations, interview questions and the information-recording sheets to be used were simple enough for the Std 10 pupils to understand. Materials such as topographic maps, pH indicators and distilled water had also been used during the trail. These techniques therefore posed no serious problems to the pupils. Pupils had, however, to be taught how to use augers. Only a few concepts were explained since many of them had been taught during the preparation of the trail. Hypotheses to be tested were decided upon with the pupils' involvement and the former were included in the final work-sheet. Possible follow-up activities were also decided upon. These included tables, graphs and discussions. Pupils were given guidance on how to conduct interviews. For each person interviewed, a separate form was completed.

The preparation phase was limited to two hours. This proved to be most enjoyable and easy. This may be explained by the fact that the information needed was taken from the pupils' textbook. This helped them to realise the importance and relevance of this fieldwork unit, particularly given that they had not yet handled

the section on soils and environmental management in class.

The pupils conducting the interviews were asked to interview at least five people per group. Older people were preferred as respondents because they were likely to have a long history in the area and could, thus, be expected to provide information on rehabilitation and activities conducted by the Transkei Department of Agriculture.

5.2.3.2 Phase Two of the rural unit: actual fieldwork

The pupils managed to interview only three people per group, because some residents were reluctant to be interviewed and time was spent on persuading them. The pupils also had to walk too far to reach the homesteads in the area.

The groups undertaking the transect also experienced problems as it was very dry and thus not easy to use the auger. This necessitated increasing distances between the recording points. The transect lines also proved to be too long. Time also proved problematic. Consequently, it was decided to test the pH of the soil samples during the follow-up phase.

The exercises proved to be interesting, and pupils were particularly interested in observing and understanding the changes in the soil depth from one point to the other up the slope. This explains why 81% of the pupils thought that their understanding of the relationship between soil depth and slope

was good. Using the clinometer to measure the slope angles was found interesting by the pupils. By the time the top of the hill was reached, pupils were actually vying to take the measurements of the slope angles.

The change in vegetation type also became obvious. As they reached the top of the hill, it gradually became difficult to use the quadrat as the vegetation consisted mainly of aloes. Again, this explains why more than 80% thought that their understanding of the relationship between slope and vegetation quality was good.

The researcher observed the following during the actual fieldwork:

1. The pupils experienced no problems in using the auger after some initial training during the preparation phase. They had also learnt how to measure the depth of the soil, slope distances and slope angles during the same phase. The sharing and exchange of duties as well as decision-making on certain issues was done through the pupils' co-operation. As explained earlier, there was a tendency for the boys to leave simpler duties such as recording and taking soil samples to the girls.
2. The pupils experienced no serious problems in identifying most of the relationships mentioned in the work-sheet either during direct observation or the actual fieldwork

nor with the analyses of the tables and graphs drawn during the follow-up phase. This could be attributed to the fact that certain relationships were observable, for example, the relationship between slope and vegetation. The relationship between soil depth and slope became clear during the transect and from the analysis of the data collected. Some relationships were, however, not easy for pupils to identify, namely, the one between land-use and government policy. This was clearly discernible from the poor responses of the pupils to question 9 on observations and in their evaluation. For example, only 43% of the pupils in the sample thought that their understanding of such a relationship was good. This was because it was not easy for them to associate the dams, the anti-erosion walls and the grazing camps with the efforts of the government to rehabilitate the area.

3. The pupils' responses in the first exercise, in which each pupil had to complete his own work-sheet, revealed that their ability to respond correctly and clearly was hampered by their poor command of English.

5.2.3.3 Phase Three of the rural unit: follow-up phase

Two two-hour afternoon sessions were allowed for the follow-up phase. This included the following:

- (i) A pooling of the data on interviews and on the transect among the group members;

- (ii) Discussion of and feedback on all the questions based on observation and the responses of the residents;
- (iii) Analysis, organisation, interpretation and processing of data;
- (iv) Drawing conclusions.

The researcher observed the following during the follow-up:.

Although these pupils were all studying mathematics and therefore should have had some knowledge of drawing graphs, only 38% of them managed to draw the types of graphs expected correctly. This was, however, contrary to what they said in their evaluation. Of all the subjects in the sample, 85% thought that their ability to draw graphs was good. This can be attributed to the fact that very limited time had been allocated to this aspect, given that it had been assumed that they had the necessary experience in drawing graphs, and because of the time constraints. More than 70% of the pupils could, however, interpret the graphs that were drawn by both the researcher and other pupils.

Pupils' evaluation - Table 5.6

Pupils were required to evaluate this unit using a form designed by the researcher (Appendix 14). The summary in Table 5.6 indicates the pupils' evaluation of the various items of the rural unit. The opinions expressed by the pupils about some aspects of the unit may be summarised as follows:

TABLE 5.6 Pupils' evaluation of the rural unit
(Scores in percentages)

	1	2	3	4	5
1. Understanding of :					
1.1 Soil profiles			19	81	
1.2 Soil horizons	4	15	46	35	
1.3 Soil colour		8	11	77	4
1.4 Parent material		4	31	65	
1.5 Rock types		8	23	65	4
1.6 Relationship between soil depth and slope			19	66	15
1.7 Relationship between slope and vegetation quality			19	81	
1.8 Relationship between land-use and aspect		9	47	39	5
1.9 Relationship between land-use and slope		4	42	50	4
1.10 Relationship between land-use and government policy		15	42	35	8
1.11 Environmental management		4	15	35	46
1.12 Attitude of people to environmental management	2	6	22	64	6
1.13 Effect of environmental management			12	80	8
1.14 Influence of physical factors on human activities		12	46	42	
2. The extent to which:					
2.1 you understood the role of fieldwork		4	26	58	12
2.2 the fieldwork interested you				73	27
2.3 you enjoyed the fieldwork			19	62	19
2.4 you found the fieldwork, as a whole, clear		4	26	58	12
3. The extent to which you can:					
3.1 formulate hypotheses		8	58	34	
3.2 decide on data to collect to test the hypotheses		12	50	38	
3.3 decide on how to record data in the field		4	42	54	
3.4 draw graphs			15	70	15
3.5 analyse data			35	50	15
3.6 interpret graphs			54	38	8
3.7 make conclusions based on graphs		12	50	30	8
3.8 relate maps to reality		4	26	58	12
3.9 relate work in the field to the textbook		12	18	58	12
3.10 lead a group		8	30	54	8
3.11 work within a group			15	55	30
3.12 work informally with a teacher		8	15	46	31
3.13 share duties with classmates			31	50	19

TABLE 5.6 (Cont.)

(Scores in percentages)

	1	2	3	4	5
4. The extent to which you can:					
4.1 orientate a map		19	46	35	
4.2 measure distances		8	15	65	12
4.3 measure slopes using clinometer		15	8	65	12
4.4 use an auger		8	15	50	27
4.5 take soil samples		8	15	50	27
4.6 measure pH of the soil	4	4	11	54	27
4.7 record information		12	14	62	12
4.8 find directions using a watch	8	12	38	38	4
4.9 find the texture of the soil		4	8	69	19
4.10 observe			19	66	15
5. Part of the fieldwork-preparation, actual excursion & follow-up found					
5.1 most interesting		15	82	3	
5.2 most effective			54	46	
5.3 most boring	73	23	4		
5.4 most rewarding			53	47	
5.5 easiest to understand			58	42	

KEY**Section 1 - 4**

- 1 - Very weak / very limited
- 2 - Weak / limited
- 3 - Satisfactory / moderate
- 4 - Good / great
- 5 - Excellent / very great

Section 5

- 1 - None
- 2 - Preparation
- 3 - Field excursion
- 4 - Follow-up

1. More than 60% of the pupils in the sample thought that fieldwork had helped them to understand soil profiles, soil colour, parent material, rocks, the relationship between soil depth and slope, slope and vegetation quality, attitude of people to environmental management and the effect of environmental management to a great extent. This could be attributed to the fact that pupils had gained experience in such aspects as measuring slopes and sampling vegetation, rocks and soil colour during the trail. Furthermore, the activities in this unit involved considerable self-activity and observation which have been highlighted as being conducive to a deeper understanding of concepts and development of skills. The researcher found it interesting that concepts such as environmental management, soil profiles and parent material, which had not been taught previously except during the short preparation, could be understood in such great depth within such a short space of time. This highlights the considerable value of fieldwork as a teaching/learning strategy.

2. It is also important to note that only 35% of the pupils in the sample thought their understanding of soil horizons was good. This could be due to the fact that the researcher omitted the activity on sketching and labelling of the soil horizons. These activities would have made the pupils observe and identify them.

3. Although activities involving orienteering and direction were not included in the rural unit, the researcher included these items on the evaluation form. The fact that fewer than 50% of the pupils rated their ability in this respect highly was noteworthy and highlighted the necessity for skills and techniques to be practised regularly.

4. Less than 50% of the subjects thought that their ability to formulate hypotheses, decide on data to collect for testing the hypotheses, interpret graphs and make conclusions based on graphs was good. This low figure could be attributed to their inexperience with the fieldwork research method. Their first experience with it had been during the urban fieldwork. This was apparently not enough to give them the necessary understanding and confidence. The scientific approach demands training and a certain level of maturity and development. However, the fact that more than 80% of the subjects thought that their ability to formulate hypotheses was satisfactory is significant considering their short and limited experience with the approach, and in the light of the arguments presented above.

5. More than 70% of the pupils in the sample thought that they enjoyed fieldwork and understood its role in facilitating understanding of concepts and developing geographical skills to a great extent. This shows that teachers would not experience any serious problems with fieldwork with regard to the pupils' motivation and interest if the

teachers themselves were enthusiastic in their approach.

6. It is significant that 85% of the pupils regarded the actual activities in the field as the most interesting. This shows that the pupils enjoyed self-activity and personal involvement. This corresponds with the results of the semantic differential discussed below. It is also worth noting that 54% saw the actual field activities as the most effective, whereas 46% of the same sample saw the follow-up activities as such. The small difference between these figures indicates that both the actual fieldwork and the follow-up activities were regarded as the most important. In fact, very limited time spent on the follow-up work could have led to the lower score. Again, there is a small difference between the percentage of those who saw the actual field activities (53%) and those who saw the follow-up work (47%) as the most rewarding. Again this lower figure for the follow-up work could be attributed to the limited time spent on that work.

Evaluation by the non-participant observer

In evaluating the follow-up of the rural unit, (Appendix 15) the non-participant observer watched the pupils while processing and analysing the data collected in the field and discussing with the researcher and among themselves. Then he scrutinised the pupils' work, that is, the tables, the graphs, their responses to the questions based on observations, their records of the interview

schedules and their comments on the fieldwork project as a whole.
(Table 5.6)

The non-participant observer described the following aspects of the follow-up as good: varying of activities, the arrangement of the activities in logical progression, simplicity and clarity of instructions, appropriateness of materials to be used, and the pupils' ability to use the material and the data collected.

The design and structure of the field activities could be regarded as an explanation for the success of the rural fieldwork unit which is evident from the comments of pupils, the researcher and the non-participant observer.

The fact that the pupils' involvement in activities, their interaction and discussion, and their interest and enthusiasm were described by the non-participant observer as good highlights the fact that they gained some experience in fieldwork during the two previous units.

It is significant that the non-participant observer's evaluation of the pupils' understanding of the relationship between land-use and government policy, which he described as satisfactory, corresponds with that of the researcher. As mentioned earlier, this is one of the relationships which are not too obvious to the pupils. This could be attributed to the fact that such a

TABLE 5.7

OBSERVATION SCHEDULE FOR RURAL FIELDWORK-FOLLOW-UP

1. Please indicate your observations concerning each of the items below by circling the appropriate rating in the column not to each item. The ratings used are:-

1 Very weak

2 Weak

3 Satisfactory

4 Good

5 Excellent

2. Please be frank and as detailed as possible-every piece of information will help illumine the research area.

1. Nature of Follow-up activities.

1.1 The pupils' activities are sufficiently varied.

1.2 The pupils' activities have a logical progression.

1.3 The instructions are simple and clear to be followed by the pupils.

1.4 The material proposed for pupils' use is appropriate (graph paper and Ph indicators).

1.5 The pupils can use the material.

2. Group Dynamics.

2.1 Every pupil is doing meaningful work.

2.2 The pupils are following the logical sequence suggested group interaction and discussion.

2.3 There is evidence of effective group interaction and discussion.

2.4 The pupils are using the data collected in the field effectively.

	1	2	3	④	5
	1	2	3	④	5
	1	2	3	④	5
	1	2	3	④	5
	1	2	3	④	5
	1	2	3	④	5
	1	2	③	4	5
	1	2	3	④	5
	1	2	3	④	5

TABLE 5.7 cont.)

2.5 The pupils are interested in and enthusiastic about the work they are doing.	1	2	3	④	5
3. Pupils' understanding of the following relationships:-					
3.1 between slope and soil depth	1	2	3	④	5
3.2 between slope and vegetation quality.	1	2	3	④	5
3.3 between slope aspect and land-use.	1	2	3	④	5
3.4 between land and-use and government policy.	1	2	3	④	5
3.5 between physical factors and human activities.	1	②	3	4	5
4. Pupils' understanding of the following concepts and principles.					
4.1 river terraces	1	2	3	④	5
4.2 soil profiles.	1	2	3	④	5
4.3 soil horizons.	1	2	③	4	5
4.4 soil types.	1	2	3	④	5
4.5 Soil colour.	1	2	3	④	5
4.6 parent material.	1	2	3	④	5
4.7 Ph of the soil.	1	2	3	④	5
4.8 transect	1	2	3	④	5
4.9 slope profile	1	2	③	4	5
4.10 resettlement	1	2	3	④	5
4.11 anti-erosion walls.	1	2	3	④	5
4.12 effect of environmental management.	1	2	3	④	5
4.13 attitude of people towards environmental management.	1	2	③	4	5

TABLE 5.7 cont.)

5. Pupils' development of the following skills :-

5.1 ability to process data collected in the field (e.g tables).	1	2	3	④	5
5.2 ability to analyze and the data.	1	2	3	④	5
5.3 ability to draw graphs.	1	②	3	4	5
5.4 ability to interpret graphs.	1	2	3	④	5
5.5 ability to draw conclusions from the graphs related to hypotheses.	1	2	③	4	5
5.6 ability to work with a group	1	2	3	④	5
5.7 ability to share solutions with clasmates.	1	2	3	④	5
5.8 ability to work informally with a teacher.	1	2	3	④	5

relationship was not based on any activity but on association. This implies that this skill was not well-developed.

The pupils' understanding of all the other relationships whose understanding depended on activities that had been undertaken on the field and were also obvious from the tables and graphs drawn, were described by the non-participant observer as good. This highlights the value of self-activity in enhancing understanding.

The pupils' understanding of all the concepts appearing in the observation schedule [except soil horizons, slope profiles and the attitude of people towards environment management] was described as good.

Pupils' development of all skills appearing in the observation schedule was described as good except their ability to draw graphs which was described as weak, the ability to draw and express their conclusions. The non-participant observer emphasised that 'poor language skills hamper students' ability to articulate their findings'.

5.3.3 Evaluation of the whole fieldwork course using a semantic differential

The 26 pupils who completed all three field units evaluated the whole course using a semantic differential (Appendix 16). As shown by the table, the semantic differential attempted to establish the pupils' views in relation to the extent to which

TABLE 5.8 Scores attributed to each item within the three categories of experience, involvement and significance attribution.

(Scores in percentages)

Pupils	EXPERIENCE					INVOLVEMENT					SIGNIFICANCE ATTRIBUTION					INDIVIDUAL AVERAGES		
	Pleasantness	Relaxation	Fulfillment	Achievement	Satisfaction	Interest	Ease	Involvement	Challengement	Identification	Logicalness	Clarity	Intelligibility	Relevance	Reality	Experience	Involvement	Significance
A	5	3	5	4	5	5	4	3	4	5	4	5	5	4	5	4.4	4.2	4.6
B	4	3	5	4	4	5	3	3	5	5	5	3	4	5	4.0	4.0	4.4	
C	4	5	3	5	2	5	4	4	5	3	5	5	5	5	3.8	4.8	4.4	
D	3	4	4	4	4	4	4	4	3	3	2	2	4	4	3.8	3.6	3.0	
E	4	5	4	5	4	4	4	5	5	5	5	5	5	4	4.4	4.4	4.8	
F	5	1	3	5	5	5	4	4	3	4	4	4	4	4	3.8	4.0	4.2	
G	4	2	4	4	4	5	4	4	4	4	5	4	4	5	3.6	4.4	4.4	
H	5	1	5	4	4	4	4	4	4	4	4	4	4	4	3.8	4.4	4.0	
I	4	3	5	4	5	5	5	3	4	4	4	4	4	3	4.2	4.2	4.0	
J	4	3	5	5	5	5	5	5	5	5	5	5	5	5	4.4	5.0	5.0	
K	4	2	4	4	4	4	3	4	4	2	4	4	4	4	3.6	3.8	3.6	
L	5	2	3	5	4	5	4	4	3	4	4	3	4	5	3.8	4.0	4.0	
M	4	5	5	4	5	5	4	4	4	4	5	5	4	5	4.6	4.2	4.6	
N	5	3	5	5	5	5	5	5	5	3	4	5	5	5	4.6	5.0	4.4	
O	5	3	5	5	5	5	5	5	5	3	5	5	5	5	4.6	5.0	4.6	
P	3	3	4	4	3	4	4	4	4	3	3	4	4	3	3.4	4.0	3.4	
Q	5	4	4	5	5	5	4	5	4	3	4	4	3	4	4.6	4.4	3.6	
R	5	4	4	5	5	5	4	4	4	4	4	4	3	5	4.6	4.4	4.0	
S	5	3	4	3	5	5	3	5	4	3	5	5	3	5	4.0	4.0	4.2	
T	5	4	5	5	5	5	4	4	5	4	4	5	5	5	4.8	4.4	4.1	
U	4	2	5	4	5	5	4	4	3	5	3	5	4	5	4.0	4.2	4.8	
V	4	5	5	5	4	5	4	3	4	4	5	4	5	4	4.6	4.0	4.4	
X	5	4	5	4	5	5	3	4	5	4	5	5	5	5	4.6	4.8	4.8	
Y	5	4	4	5	5	5	3	4	4	3	4	4	4	4	4.6	4.0	3.8	
Z	4	2	4	4	4	5	5	3	4	4	5	4	5	4	3.6	4.4	4.4	
	4	3	4	4	4	4	4	4	4	3	4	4	4	4	ITEM AVERAGES			
	.3	.2	.3	.3	.4	.8	.1	.2	.0	.8	.5	.1	.1	.4				
	8	0	8	4	6	4	5	3	7	4	7	5	9	6	CATEGORY AVERAGES			
	4.1					4.3					4.2							

Average Scores on All Attributes

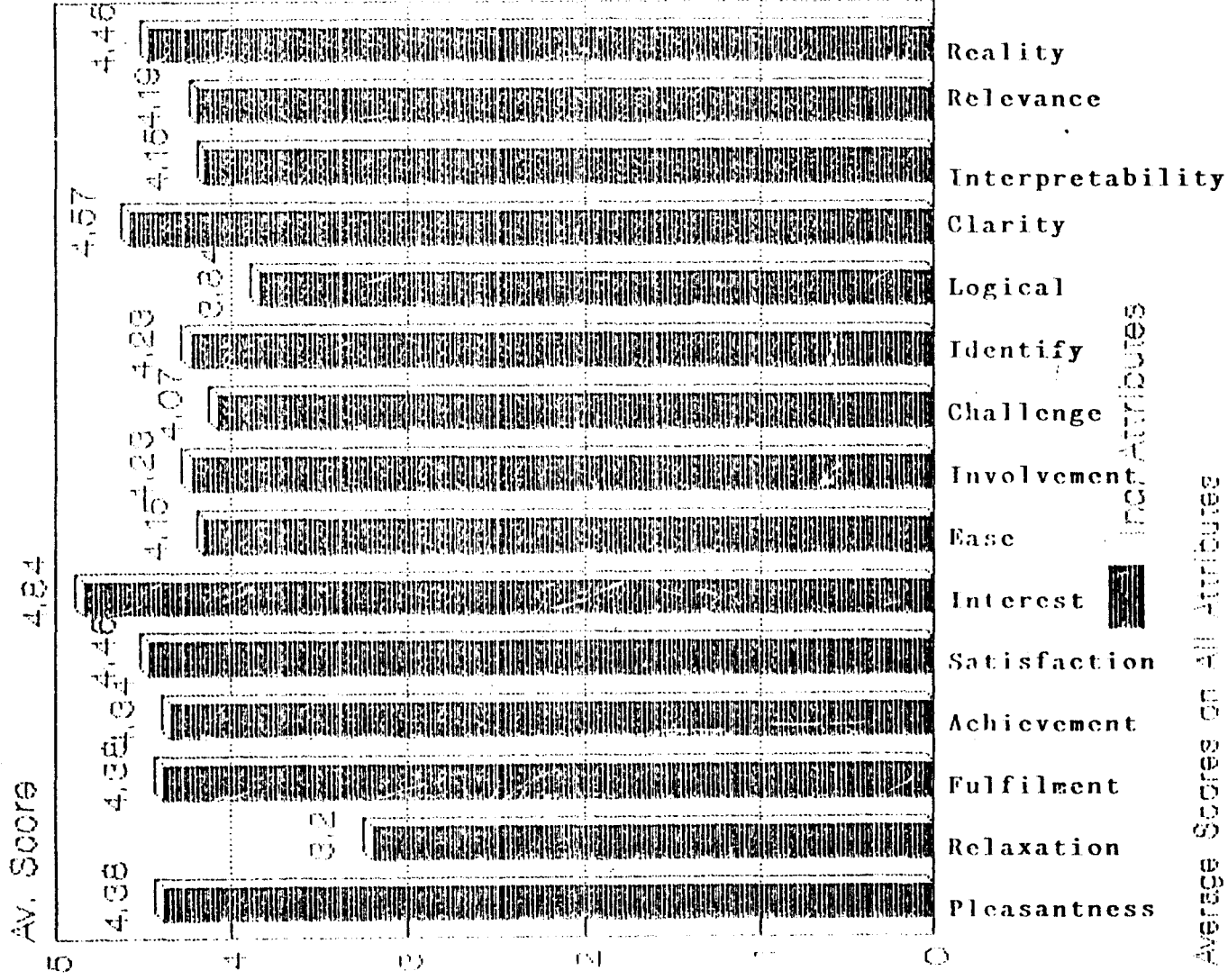


Fig. 8 Average Scores on All Attributes

they felt they had benefited from the course in fieldwork. The results are summarised in Table 5.7 and in Figure 5.1. In analysing the semantic differential the various components were averaged. The analysis was looked at both in terms of experience, involvement and significance attributed to the course in terms of relevance, reality, intelligibility, clarity and logicity.

The average figures of 4.1 attributed the groups' experience, 4.3 to their involvement and 4.2 to the significance attributed to the course as a whole are all high. This means that most of the pupils experienced a high degree of fulfilment, achievement and satisfaction. However, scrutiny of the average figure for relaxation shows that it is significantly lower than the others. In fact 58% of the individual figures for relaxation are 3 and below. This observation corresponds with the non-participant observer's comment on the school trail that the pupils lacked spontaneity with each other and with the new teacher. The average score for the groups involvement of 4.30 is high. This sentiment was also expressed by the non-participant observer with regard to motivation of the pupils.

The semantic differential indicates a high degree of interest in fieldwork (4.84) which pupils identified. This highlights the role of fieldwork in producing both intrinsic and extrinsic motivation. The high value for clarity (4.57) highlights the fact that the project succeeded in making the role of fieldwork in geography clear to the pupils involved. The value for

identification of fieldwork with subject content (4.23) is high, indicating that the pupils regarded fieldwork as part and parcel of their classroom work.

The fact that the averages are extremely high indicates that fieldwork enhances learning and shows fieldwork as a methodology that relates exceptionally well to current theory. The evaluation has highlighted the relevance of fieldwork in terms of the syllabus demands and theories of learning which emphasize that the pupil's active role in the teaching and learning situation enhances interest, motivation and learning.

5.4 SUMMARY

The researcher's observations and the non-participant observer's comments correspond on many aspects of the fieldwork. The results of the research have highlighted the fact that pupils are interested in fieldwork if the teacher is enthusiastic in his/her organisation and preparation.

The local environment of the Umtata district has been proved to be a rich resource for teaching/learning geography. Aspects of general geographic techniques, geomorphology, climatology, ecosystems and environmental management and economic geography can be taught with the Umtata district being used as the 'laboratory'.

CHAPTER 6

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

This study attempted to demonstrate the effectiveness of the local environment for teaching/learning geography through fieldwork.

Fieldwork approaches have been influenced by recent trends in geographical education. The most recent trends include a shift in emphasis since the 1960s from a product and teacher-centred approach, the observational field teaching, to a process-based approach, which emphasises enquiry and problem-solving using the field research approach. The ecological paradigm of the 1980s has heralded yet another approach to fieldwork, that of framework fieldwork which places emphasis on the way people interact with their environment. The three approaches are not mutually exclusive and successive developments have tended to build on what has gone before.

In this study three main activities were undertaken, namely:

- i) the identification of potential fieldwork sites in the Umtata District;
- ii) the development of a fieldwork programme; and
- iii) the development, implementation and testing of three

fieldwork study units.

Although the development, testing and evaluation of the three units was initially conducted with Std 8 and Std 10 pupils, the main section of the study involved a group of Std 10 pupils.

The primary objective of the study was to prove that the local environment, that is, the actual school premises and the area around every rural and every urban school, can be used effectively for teaching/learning geography through fieldwork. Another objective was to assess the pupils' understanding of relevant concepts and their attitudes towards fieldwork after being exposed to properly planned fieldwork activities. This was considered necessary in view of the conclusions drawn by Ngquba (1992) that student teachers in Colleges of Education in Transkei claimed to dislike fieldwork and regarded fieldwork excursions as leisure time.

This study was done through action research which was identified as one of the methods that could give the researcher an opportunity to develop, implement and monitor the activities and still be in an advantageous position to evaluate the project.

6.2 THE PLACE OF FIELDWORK IN SOUTH AFRICAN EDUCATION

The literature reviewed has highlighted the value of fieldwork and in particular the need to use the local environment.

Fieldwork provides the pupils with the opportunity to learn through direct experience and self-discovery which facilitate their development of concepts, intellectual, practical and affective skills. Exposure to reality results in the internalisation and strengthening of geographic facts and theories. Through fieldwork pupils develop field investigative techniques and an ability to relate theory to reality. Consequently, effective and meaningful learning is achieved.

Despite the long acceptance of fieldwork as the core of geography, recent research (Ballantyne, 1986; Boqwana, 1992; Ngguba, 1992) has revealed that its use as a geography teaching strategy has been significantly limited. The following factors have been identified as militating against the use of fieldwork:

1. Financial constraints have been perceived as the main deterrent to the application of fieldwork. Research has shown that this has persistently been the attitude of teachers for almost half a century. The general emphasis placed on financial constraints reveals the common lack of perception of the role which the local environment can play in the application of fieldwork.
2. The demands of fieldwork with regard to time for travelling to distant well-known sites and for the preparation of activities is yet another frequently quoted problem.
3. A lack of both theoretical and practical expertise by

teachers with regard to fieldwork has been highlighted as being a deterrent to fieldwork (Nightingale, 1977). The result of this is that even where money and time are not a problem teachers and pupils prefer to undertake the 'Cook's Tour' type of fieldwork to pleasure resorts with no properly planned activities to be undertaken. This lack of expertise reduces the teacher's awareness of the wealth of resources in their local environment. This is partially a consequence of teacher training which predated the inclusion of fieldwork in teaching programmes and the resistance some of the older teachers show towards innovations. Recent research has, however, revealed that the present teacher training programmes in Transkei Colleges of Education does not ensure adequate training in fieldwork (Ngguba, 1992).

The fieldwork sites identified by the researcher (Figure 6 showing the potential sites in the rural areas) revealed that approximately 5 km from every senior secondary school there is a suitable site for studying aspects of geomorphology, rural settlements, primary activities and microclimatology.

6.3 SYLLABUS DEMANDS

Although fieldwork has a long tradition in school geography worldwide, it was only included as an explicit part of the South African geography syllabus with the introduction of the 1973 syllabus revision. The current (1985) syllabus in its preamble

as well as in the actual content repeatedly places emphasis on the application of fieldwork. It also suggests that emphasis should be shifted from the traditional to the problem-solving approach.

Scrutiny of the changes occurring in the South African geography syllabus reveals an alignment with the current developments in geographical education which emphasize learner-centred and experience-oriented approaches and the study of man-land relationships. The proposed 1993 syllabus continues to place emphasis on the use of fieldwork.

The current geography syllabus also demands an array of skills such as numeracy, graphicacy, analysis, interpretation, oracy and literacy which enhance the understanding of concepts which dominate the content of geography and which are the main focus of the examination of the senior secondary course. In addition the syllabus emphasizes the need to develop positive attitudes and values such as decision-making, tolerance and a caring attitude towards the environment. Fieldwork is the main vehicle through which all the above can be developed, practised and refined.

6.4 PUPILS' RESPONSES TO FIELDWORK

Pupils' responses in their evaluation of the fieldwork units indicated that local fieldwork provides for the rapid and effective development of concepts such as transects, soil profiles, and the practice of skills such as measuring slope

angles and using clinometers. The study also highlighted the fact that fieldwork enhances understanding of concepts taught in the classroom even when introduced at a very late stage of pupils' school career although it is more beneficial when introduced at an early stage. Through guidance pupils learn to accept and appreciate fieldwork as an inherent part of geography learning. Consequently they develop an interest in and positive attitudes towards geography and learning in general. The interest of the pupils was highest in those aspects of fieldwork that were directly related to their syllabus and indirectly to the examinations. This interest demonstrates the need for the integration of fieldwork activities in the learning programme. The pupils' responses have further highlighted that if fieldwork were to be a direct component of the examinations the pupils would show even more interest. The study also highlighted the pupils' poor performance in field sketching. This can be attributed to lack of training, in graphical skills in particular. These results support Boqwana's (1992) research with Ciskei pupils. The study further highlighted the fact that poor language proficiency inhibited pupils' written responses as evidenced by their responses to the questions requiring description and explanation and in the way they recorded the residents' responses to the interviews. The ease with which the concepts related to urban geography were understood again highlighted the value of using the local environment, not only for fieldwork, but also as a point of reference when teaching in the classroom.

6.5 GENERAL CONCLUSIONS

1. By demonstrating that fieldwork can be undertaken successfully in the local environment the study revealed that time limitations need not be emphasized as a deterrent to fieldwork. Exposure of the pupils to properly planned activities in their local environment within the minimum time available, such as a period, in their local environment is of major importance.
2. The study highlighted the need for progression in planning activities and a programme of fieldwork for different standards. This means that fieldwork activities must be matched to the developmental level of the pupils and integrated into the normal teaching programme.
3. The study has also revealed the value of fieldwork in developing affective skills such as decision-making.
4. The influence of socio-cultural background in geography was highlighted by the fact that, when left alone in a group situation to make decisions about the allocation of duties, pupils tended to share these according to gender.. This has implications for the organisation of groups for fieldwork. It points to the need for teachers to be aware of gender stereotyping and to ensure that groups are organised in such a way that the pupils are exposed to the same activities.

5. The success of the fieldwork activities in the light of problems such as the pupils' inexperience and their lack of spontaneity with the researcher highlights the significant role of the teacher in motivating pupils and sustaining their interest. This means that fieldwork cannot be a success if teachers are not motivated (Mills, 1981).

6.6 LIMITATIONS OF THE STUDY

The following were perceived as the major limitations of this study:

1. The fact that the non-participant observer could not attend all the phases of each of the three units reduced the validity of the study. In addition the research methodology employed contains a measure of subjectivity.
2. The fact that the researcher used action research with subjects to whom she was a stranger tended to reduce the relaxation of the pupils and of the study as a whole.
3. The small sample used means that the results of the study cannot be generalised too broadly.
4. Time limitations had a great influence on the study. The subjects were Std 10 pupils who were already preparing for examinations when the rural unit was undertaken. This demanded a drastic reduction in the time to be spent

particularly in the follow-up phase, where pupils needed individual attention as they were working individually to produce tables and graphs.

Despite these limitations, this study has shown that no child need be deprived of the opportunity to undertake fieldwork as this can be achieved with minimum or no cost within the immediate environment of even the most disadvantaged school. When pupils are exposed to fieldwork even at a late stage in their school career, their responses towards and perception of fieldwork become positive. The value of fieldwork, therefore, should be seen in terms of the opportunities that it offers pupils to learn through direct experience and through their own efforts. It must, furthermore, be emphasized that the pupils' command and understanding of concepts encountered for the first time were extremely good.

6.7 RECOMMENDATIONS

Recommendations can be divided into long and short term.

6.7.1 General recommendations

Teachers need to be aware of the value of using the local environment for fieldwork. This awareness can be fostered through:

(i) the formation of regional and district geography

associations to function as a forum for geography teachers to share their expertise of fieldwork with their colleagues and constantly to seek the services of experts from the in-service centres;

- (ii) in-service centres at national and local levels concentrating more on teaching strategies, including fieldwork, than on ways of improving examinations;
- (iii) the employment of highly qualified subject advisers who will help teachers who experience problems with regard to the implementation of the current fieldwork approaches;
- (iv) the establishment of strong, official links between in-service centres and the education departments of universities responsible for teacher-training to keep subject advisers and specialists informed about new developments in methods of teaching including fieldwork;
- (v) the inclusion of samples of fieldwork in geography textbooks to provide teachers with readily available guidelines in the use of fieldwork and to convince pupils about the relevance of fieldwork in their geography learning;
- (vi) fieldwork programmes for all class levels being developed and made accessible to all teachers to serve as a guide with respect to the activities relevant to each section,

thereby encouraging the use of the local environment through the integration of classroom and fieldwork activities;

(v) publications related to the development of fieldwork units within a local context which are accessible to all geography teachers and which can be easily and cheaply distributed; and

(vi) in-depth training in fieldwork to develop positive attitudes and confidence in teachers with regard to fieldwork enabling them subsequently to motivate pupils.

6.7.2 Specific recommendations

Short-term recommendations with regard to the use of the local environment for fieldwork include the following:

1. Regular workshops both at the national and the local level should be conducted for primary and secondary school teachers as well as college lecturers on how to organise and conduct fieldwork to ensure that progression takes place from primary through secondary to tertiary level.
2. Primary and secondary school teachers as well as college lecturers should work together to design fieldwork units that are relevant to their various local environments and therefore readily understandable.

3. A compulsory, practical fieldwork project, prepared and conducted during the last two years of the college courses either individually or in groups, should be introduced. This implies a form of evaluation.
4. Consideration should be given to the inclusion of compulsory questions in the senior secondary examination based on knowledge acquired through fieldwork.

6.8 Possible areas of research

This study has revealed that further research is needed with regard to the following:

1. More needs to be known about pupils' and teachers' perceptions of the landscape and their attitudes to their environment in order to understand teacher resistance to fieldwork and pupils' problems with fieldwork.
2. Reasons need to be identified for the ineffectiveness of in-service training centres in implementing the current learner-centred strategies.

6.9 CONCLUSION

The significance of time and financial constraints as deterrents to the application of fieldwork should not be overemphasised as this study has demonstrated that the local environment can be

used effectively in geography.

The acceptance and understanding of the local environment as a readily available resource would imply that a concerted effort can be made to expose pupils constantly to the real world to practise skills that help them to adjust to a changing society.

The negative attitude of teachers towards the learner-centred approaches can be seen as the main deterrent to fieldwork. Teacher training must aim at improving these attitudes. The teachers should be assisted to see fieldwork not as a separate entity, but as a method to be used regularly. The resources of the local environment within easy reach of the school should be exploited to the full.

LIST OF REFERENCES

- Anderson, L. W. (1988). Likert Scales, in Keeves, J. P.(ed.) (1988). Educational Research, Methodology and Measurement : An International Handbook. Great Britain : Pergamon Press.
- Bailey, P. (1974). Teaching Geography. London : David and Charles.
- Bailey, P. (1981). Less Content, Better Process ? Teaching Geography. 6(4).
- Bailey, P. (1987). What are the Geographer's Contributions ? Geography in the Curriculum from 5-19, in Bailey, P. and Binns, T.(eds.) (1987). A case for Geography, Sheffield : The Geographical Association.
- Bailey, P. and Binns, T. (1987). A case for Geography, Sheffield : The Geographical Association.
- Ball, S.J. (1988). Participant observation, in Keeves, J.P. (ed.)(1988). Educational Research, Methodology and Measurement : An International Handbook. Great Britain : Pergamon Press.
- Ballantyne, R. (1986). Change in Secondary school curriculum :

Teacher attitudes and practice. Unpublished Ph.D thesis .

Bartlett, V.L. (1984). Look into my mind : qualitative inquiry in teaching geography, in Fien, J. , Gerber, R. and Wilson, P. (eds.) (1984). The Geography Teacher's Guide to the Classroom. (62-77). Melbourne : Macmillan Australia.

Beddis, R. (1983). Geographical Education since 1960 : A personal view in Huckle, J. (ed) (1983). Geographical Education : Reflection and Action. London : Oxford University Press.

Biddle, D.S. (1968). The purpose of teaching in the secondary school, in Biddle, D.S. (1968). Readings in Geographical Education : Selections from Australian Sources Volume 1 . Sydney : Whitcombe and Tombs.

Biddle, D.S. and Stimson, D.J. (1968). Local area studies in the Secondary School, in Biddle, D.S. (eds.) (1968). Readings in Geographical Education : Selections from Australian Sources Volume 1. Sydney : Whitcombe and Tombs.

Boardman, D. (1986). Handbook for Geography Teachers. Sheffield : The Geographical Association.

- Bogdan, R.C. and Biklen, S.K. (1982). Qualitative Research for Education : An Introduction to Theory and Methods. Boston : Allyn and Bacon, Inc.
- Boorman, B.L. (1972). Geography and Education. Kampala : Central Inspectorate.
- Bogwana, P. (1992). Fieldwork as a Compensatory Teaching strategy for Rural Black Senior Secondary schools. Unpublished Masters Thesis. Grahamstown : Rhodes University.
- Brady, L. (1985). Models and Methods of Teaching. Sydney : Prentice Hall.
- Briault, E.W.H. and Shave, D.W. (1960). Geography in and out of school London : George and Harrap.
- Burt, T. (1989). Science and Fieldwork in Physical Geography. Teaching Geography 14(4).
- Campbell, W.J. and Wood, R.A. (1969). Quantification and the Development of Theory in Human Geography in Cooke, R.U., Johnston J.H. (1969). Trends in Geography - An Introductory Survey. London : Pergamon .
- Clark, E.A.G. (1989). Geography as a school subject in South

- Africa, 1939-1989. South African Geographical Journal. 71, 46-55.
- Cohen, L. and Manion, L. (1987). Research Methods in Education.
Brackenhams : Croom Helm.
- Croll, P. (1986). Systematic Classroom Observation. London :
The Falmer Press.
- Dane, F.C. (1990). Research Methods. California : Brook Cole.
- De Vos, H.J. (1989). Fieldwork. Educamus. 35(4)
- Dunlop, S. (ed.) (1976). Place and people : A guide to modern
Geography Teaching. London : Heinemann
Educational books.
- Everson, J.A. (1973). Fieldwork in School Geography in Walford,
R. (ed.) (1973). New Directions in Geography
Teaching. (107-114) London : Longman.
- Fien, J. (1985). Geography as environmental experience in
Teaching Geography. 10(4).
- Fien, J. and Slater, F. (1983). Behavioural Geography, in Huckle,
J. (ed.) (1983). Geographical Education :
Reflection and Action. London : Oxford
University Press.

Fien, J. (1983). Humanistic Geography, in Huckle, J.(ed.) (1983).
Geographical Education : Reflection and Action.
 London : Oxford University Press.

Geographical Association, (1981). Geography in the school
 Curriculum 5-16, in Interaction. May/June
 1981.

Graves, N. (1980). Geographical Education in Secondary Schools.
 Sheffield : The Geographical Association.

Guba, E.G. and Lincoln, Y.S. (1988). Naturalistic and
 Rationalistic Enquiry, in Keeves, J.P. (1988)
 (ed.). Educational Research, Methodology and
 Measurement : An International Handbook. Great
 Britain : Pergamon Press.

Hall, D. (1984). Knowledge in the Geography classroom, in Fien,
 J., Gerber, R. and Wilson, P. (eds.) (1984).
The Geography Teachers Guide to the classroom.
 (1-12) Melbourne : Macmillan. Australian.

Hart, C. and Thomas, T. (1986). Framework Fieldwork, in
 Boardman, D.(ed.) (1986). Handbook
 for Geography Teachers(205-218). Sheffield:
 The Geographical Association.

Holt-Jensen, A. (1980). Geography, it's history and concepts :

A student's Guide. London : Harper and Row.

Huckle, J. (1983). The Politics of school geography, in Huckle, J. (ed.) (1983). Geographical Education : Reflection and Action . London : Oxford University Press.

Hurry, L. (1989). Geography Teaching in Southern Africa: An Introductory Guide. Pretoria : Via Africa.

Hustler D., Cassidy, A. and Cuff, E.C. (eds.) (1986). Action Research in classrooms and schools. London : Elyn and Enwin.

Hutchings, G.E. (1962). Geographical Field Teaching in Geography. Geography. Vol 47- Part I.

Jones, P.A. (1968). Fieldwork in Geography. London : Longmans.

Johnston, R.J. (1985). Geography in the 1980's, in Kent, A (ed) (1985). Perspectives on a changing Geography. (9-14). Sheffield : The Geographical Association.

Keeves, J.P. (1988). The Improvement of Measurement for Educational Research, in Keeves, J.P. (ed.) (1988). Educational Research, Methodology and

Measurement : An International Handbook. Great Britain : Pergamon Press.

Kemmis, S. (1983). Action Research, in Keeves, P. (1988) (ed.). Educational Research, Methodology and Measurement : An International Handbook. Great Britain : Pergamon.

Knill, G. (1991). Towards the Green Paradigm, The South African Geographical Journal. 73(2).

Laws, K. (1984). Learning Geography through Fieldwork, in Fien, J., Gerber, R. and Wilson, (eds.) (1984). The Geography Teachers Guide to the Classroom. Melbourne : Macmillan Australia.

Lidstone, J. (1988) - Teaching and learning Geography through Fieldwork, in Gerber, R. and Lidstone, J. (eds.) (1988). Developing skills in Geographical Education. Australia : International Geographical Union with the Jacaranda Press.

Long, M. and Roberson, B.S. (1966). Teaching Geography. London: Heinemann Educational Books.

Marker, M. (1980) School Geography through fieldwork in Nicol, I. (ed) (1980). Geography and the school (89-102). Dennesig : Society for Geography.

- Maye, B. (1984). Developing, Valuing and decision making skills in the Geography classroom, in Fien, J., Gerber, R. and Wilson, P. (eds.) (1984). The Geography Teacher's Guide to the classroom. (29-43). Melbourne : Macmillan Australia.
- Mc Partland, M. and Harvey, P. (1987). A Question of Fieldwork. Teaching Geography. (June 1977).
- Mcniff, J. (1988). Action Research : Principles and Practice. London : Macmillan Education.
- Mills, D. (ed.) (1988). Geographical Work for the Primary and Middle school. Sheffield : The Geographical Association.
- Ngquba, T (1992). Transkei College of Education Students' perceptions of fieldwork in Geographical Education. Unpublished M.Ed. thesis. Grahamstown: Rhodes.
- Nicol, I. (1978). Some ideas for Fieldwork in High School Geography. (June 1978).
- Nightingale, C.S. (1977). An analysis of the educational potential of sites in the Cape Peninsula for Secondary school fieldwork in Environmental Studies. Unpublished M.A. Thesis, University of Cape Town.

- Nightingale, C.S. (1981). Geography Fieldwork Guide for Natal Secondary Schools. An Edgewood Resource Manual. Escourt : H.E.G.C. Hyde.
- Oosthuizen, J.D. (1986). Significance attribution, Experience and Involvement, in Jacobs L.J., Mulder J.C., Oosthuizen J.D. and Olivier A. (eds.). Special Empirical Education (BEd) : Only Study Guide for OSE 402-E. Pretoria : Unisa.
- Osgood, C.E. (1976). Forms of meaning : Explorations in Semantic space. London : Nouton.
- Pattison, W.D. (1973). The Four Traditions of Geography, in Bale, J., Graves, N. and Walford, R.(eds.) (1973). Perspectives in Geographical Education. Great Britain : Oliver Boyd.
- Phillips, J.L. (1988). Semantic Differential, in Keeves, J.P. (ed.) (1988). Educational Research, Methodology and Measurement : An International Handbook. Great Britain : Pergamon.
- Pick, B. (1979). The school itself as a Geographical Resource: Some ideas Teaching Geography. 5(1).
- Preston-Whyte, R. (1982). Environmentalism in Geography : The missing link. The South African Geographical

Journal. 65(1). 1-12.

Provincial Administration of a Cape of Good Hope Department of Education (1985). Senior Secondary Course: Syllabus for Geography Higher Grade.

Rawling, E. (1977). Two approaches to fieldwork with middle school pupils. Teaching Geography. No. 29

Rawling, E. (1986). Approaches to Teaching and learning in, Boardman, D. (ed.) (1986) Handbook for Geography Teachers. Sheffield : The Geographical Association.

Siyongwana, P.Q. (1991). Residential Transformation in Umtata Unpublished Masters Thesis. Port Elizabeth : University of Port Elizabeth.

Slaytor, W.J. (1988). Field Studies in Geography, in Biddle, D.S. and Deer, C.F. (eds.) 1973. Readings In Geographical Education Volume 2. Sydney : Whitcombe and Toombs.

Taft, R. (1988). Ethnographic Research Methods, in Keeves, J.P. (ed.) (1988). Educational Research, Methodology and Measurement : An international Handbook. Great Britain : Pergamon Press.

The Central Statistical Office, 1990. Republic of Transkei
Statistical Bulletin 1990.

Tolley, H. and Reynolds, J. (1977). Geography 14-18: A Handbook
for school-based Curriculum Development.
London: Macmillan Educational.

University working Group- SA Sixth, (1984). The Enduring
Purpose of Fieldwork. Teaching Geography.
Vol 9-No 5.

Walker, R. (1985) (a). Doing Research : A Handbook for Teachers.
London : Methuen.

Walker, R. (ed.) (1985) (b). Applied Qualitative Research.
Great Britain : Gower.

Webster, A.J. (1979). Field Studies in the Teaching of Geography
with special reference to Natal. Unpublished
MED. Thesis, University of Natal.

Weston, B. (1977). The Why and How of Fieldwork. Teaching
Geography. 3(1) 9-11 (July 1977).

Williams, D. (1986). Naturalistic evaluation : potential
conflict between evaluation standards and
criteria for conducting naturalistic inquiry.
Education Evaluation and Policy Analysis.

Spring, 8(1) 87-99.

Wise, M.J. (1985). The Future of Geography in King, R. (1985).
Geographical Futures. Sheffield : The
Geographical Association.

APPENDIX 1ST. JOHNS COLLEGE - SCHOOL TRAIL

The trail covers the following areas:-

1. The Edge of the Parking area - north-east of the school buildings.
2. The "small ridge" area
3. The rocky area directly opposite the school buildings northwards.
4. The fence area north of the school buildings.
5. The graveyard.
6. The tennis court.

Equipment needed

1. Clipboard and paper pencil and rubber
2. Small plastic sample bags with sticky labels
3. 2 metre sticks per group
4. 1 clinometer per group
5. 1 watch per group
6. Soil test kit - litmus paper
7. Apparatus for trampling experiment
8. Small digging tool
9. Maths set
- 10 String knotted at 1 metre interval
- 11 Base map of the school 1:500
- 12 Topographic map of Umtata 1:50 000
- 13 Orthommap 1:10 000

Aims

1. To help you understand that your own immediate environment can be used for teaching and learning geography.
2. To introduce you to:
 - 2.1. an understanding of and appreciation for relationships within the environment.
 - 2.2. the basic skills and techniques used in the field for future fieldwork.
3. To help you learn to apply skills learnt in the classroom to reality.
4. To help you learn to discover information on your own.
5. To help you develop social skills.

Objectives

At the end of the school trail you should be able to:-

1. use a watch and the shadow stick method to find direction
2. orientate maps and to correlate features on the map with those on the ground
3. measure distances in the field
4. observe and record a variety of data in the field
5. utilize a variety of problem solving techniques
6. measure gradients of slopes
7. do a quadrat study
8. explain the relationship between slope and soil depth

9. explain the relationship between soil depth and vegetation cover
- 10 test the pH of the soil
- 11 interact within a group situation
- 12 make reasoned value judgments relating to the environment.

Control Point I

The Edge of the Parking area - North east of the School buildings

The trail starts at the point marked I on the map.

1. Using a watch determine the north. Indicate north on the ground plan of the school and then face north.
2. Indicate the following features on the map below in the correct places.
 - 2.1. The 2 boys hostels
 - 2.2. The girls hostel
 - 2.3. The 3 teaching blocks
 - 2.4. The inner court yard
 - 2.5. The tennis court
 - 2.6. The rugby field
 - 2.7. the graveyard
3. Do a quadrat study and record the following by circling the correct answer:

3.1	Height of plants	1	2	3	4	5
3.2	Density of plants	1	2	3	4	5
3.3	Species variety	1	2	3	4	5

4. Dig aside the vegetation and hums, and take a soil sample and label it.

4.1. Observe the soil sample you have taken and record the following:

Soil Colour	BLACK	DARK BROWN	BROWN	RED	GREY
Soil Texture	STICKY	SANDY	POWDERY	STONY	ROCKY

5. Control Point

The "Ridge Area"

Walk towards the small "ridge" marked 2 and stand at its foot.

1. Draw a diagrammatic sketch of the landscape which lies north east of the school buildings across the river (include the river)
2. What is the direction of the rugby field from the school buildings at point B.
3. What is the bearing of the school buildings from the ridge on which you are standing.
4. In which direction does the land slope from point B.
5. What evidence is there that the "ridge" is man made

6. Name the types of slopes found on
 - (a) the eastern side of the ridge
 - (b) the northern side of the ridge

7. What evidence is there that there are plants, animals and people in this area.
.....

8. What change in vegetation is evident on the north facing slope as you move up the slope of the ridge.
.....

9. Give a possible reason for the change.
.....
.....

- 10 Do a quadrat study as at Control Point I

10.1 Height of plants	1	2	3	4	5
10.2 Density of plants	1	2	3	4	5
10.3 Species variety	1	2	3	4	5

- 11 Take a soil sample and label it.
 - 11.1 Observe the soil sample you have taken and record the following:

Soil Colour	BLACK	DARK BROWN	BROWN	RED	GREY
Soil Texture	STICKY	SANDY	POWDERY	STONY	ROCKY

- 12 Measure the gradient of:-
- (a) the north facing slope
 - (b) the east facing slope
- 13 If you were to practise arable (crop) farming, on which side of the "ridge" would you prefer to do that
- 14 Give reasons explaining your choice for the above.
- 15 Identify and name the main types of trees in this area (where possible).
- 16 Are the trees in this area indigenous or exotic.
- 17 Give reasons for your answer in 16 above
- 18 Are they evergreen or deciduous.
- 19 Give reasons for your answer in 18 above.
- 20 What role do you think the trees play with reference to the school buildings. (Refer to the heavy storm that occurred

in February 1991 in Umtata).

.....

.....

21 Measure the height of the shortest and the tallest trees.

.....

.....

22 Measure the circumference of the trees measured in 21 above

.....

.....

23 Draw a diagrammatic sketch of the "ridge".
Walk northwards for above ____ metres until you reach the
the point marked 3 on the map.

Control Point 3

Rocky Area directly opposite the school building - Northwards

1. Take samples of rocks
2. Take note of any weathering which occurs in this area.
3. Identify the various types of weathering.
.....
.....
4. Name the causes of the weathering types you have observed.
.....
.....

- 5. What evidence is there to suggest that there are poorly drained soils in this area.
.....
.....
- 6. Is there any evidence of soil erosion in these premises.
.....
- 7. Give a possible reason(s) for your answer in above.
.....
.....

Control Point 4

The Fence Area

Walk northwards towards the fence.

- 1. From the footpath near the softball ground take a soil sample. Take two other samples from either side of the path. and label them.
- 2. Do a quadrat study as in Control Point 1

- 2.1 Height of plants
- 2.2 Density of plants
- 2.3 Species variety

1	2	3	4	5
1	2	3	4	5
1	2	3	4	5

- 3. Do a gradient analysis starting from the fence to the first of the teaching blocks. At each point do a quadrat study of vegetation.
.....
.....
.....

.....
.....
.....
.....
.....

From this point walk westwards towards the graveyard.

Control Point 5 The Graveyard

1. State the difference you observe between the vegetation under the trees and that in the exposed area.

.....
.....

Walk eastwards towards the tennis court.

Control Point The Tennis Court

1. Measure and state the length and breadth of the tennis court.

.....
.....

2. Comment on the state of the tennis court fence poles.

.....
.....

WORKSHEETAPPENDIX 2Control Point IThe Edge of the Parking area - North east of the School buildings

The trail starts at the point marked I on the map.

1. Using a watch determine the north. Indicate north on the ground plan of the school and then face north.
2. Do a quadrat study and record the following by circling the correct answer:

2.1 Height of plants : 1 | 2 | 3 | 4 | 5 |

2.2 Density of plants : 1 | 2 | 3 | 4 | 5 |

2.3 Species variety : 1 | 2 | 3 | 4 | 5 |

3. Dig aside the vegetation and humus.
 - 3.1 Take a soil sample and label it.
 - 3.2 Observe the soil sample you have taken and record the following:

Soil Colour : BLACK | DARK BROWN | BROWN | RED | GREY |

Soil Texture : STICKY | SANDY | POWDERY | STONY | ROCKY |

Control Point 2The "Ridge Area"

Walk towards the small "ridge" marked 2 and stand at its foot.

4. Draw a diagrammatic sketch of the landscape which lies north east of the school buildings across the river (include the river)
5. What is the direction of the rugby field from the school buildings at point B.
6. What is the bearing of the school buildings from the ridge on which you are standing.
7. In which direction does the land slope from point B.
8. What evidence is there that the "ridge" is man made
9. Name the types of slopes found on
 - (a) the eastern side of the ridge
 - (b) the northern side of the ridge

10. What evidence is there that there are plants, animals and people in this area.
11. What change in vegetation is evident on the north facing slope as you move up the slope of the ridge
12. 12.1 Take a soil sample and label it.
12.2 Analyse the soil characteristics as in 3.2
13. Measure the gradient of:-
(a) the north facing slope
(b) the east facing slope
14. If you were to practise arable (crop) farming, on which side of the "ridge" would you prefer to do that. Give a reason
15. What role do you think the trees in this area play with reference to the school buildings. (Refer to the heavy storm that occurred in February 1991 in Umtata).
16. Draw a diagrammatic sketch of the "ridge".
Walk northwards for above _____ metres until you reach the point marked 3 on the map. •

Control Point 3

Rocky Area directly opposite the school building - Northwards

17. Take samples of rocks
18. Identify the various types of weathering evident in this area.
19. What evidence is there to suggest that there are poorly drained soils in this area.
20. Is there any evidence of soil erosion in these premises. Give a reason for your answer

Control Point 4

The Fence Area

Walk northwards towards the fence.

21. Do a gradient analysis starting from the fence to the first of the teaching blocks. At each point do a quadrat study of vegetation and take soil samples for later analysis of the texture, colour and pH.

Control Point 5 The Tennis Court

22. Measure and state the length and breadth of the tennis court.
23. Comment on the state of the tennis court fence poles.

APPENDIX 4. (School No. 1) Pupils' evaluation of the school trail

This is a questionnaire not a test. Please be totally innocent in your response. Please indicate your feelings about your fieldwork which you undertook by circling the appropriate rating in the column next to each question. The ratings to be used are :

- | | |
|-----------------|----------------------|
| 1. Very weak | 1. None - Question 6 |
| 2. Weak | 2. Preparation |
| 3. Satisfactory | 3. Field excursion |
| 4. Good | 4. Follow up |
| 5. Excellent | |

To what extent did the field work help you to understand the following concepts :

1.1 Location	1	2	3	4	5
1.2 Vegetation sampling	1	2	3	4	5
1.3 Soil characteristics	1	2	3	4	5
1.4 Bearing	1	2	3	4	5
1.5 Slope types	1	2	3	4	5
1.6 Gradient	1	2	3	4	5
1.7 Slope aspect	1	2	3	4	5
1.8 Rock types	1	2	3	4	5
1.9 Weathering	1	2	3	4	5
1.10 Drainage	1	2	3	4	5
1.11 Soil erosion	1	2	3	4	5
1.12 Slope profile	1	2	3	4	5
2. To what extent did the trail help you to develop the ff skills :	1	2	3	4	5
2.1 Observation	1	2	3	4	5
2.2 Measuring distances	1	2	3	4	5
2.3 Measuring slope angles	1	2	3	4	5
2.4 Orientating maps	1	2	3	4	5
2.5 Drawing sketches	1	2	3	4	5
2.6 Drawing profiles	1	2	3	4	5

2.7 Identification of phenomena	1	2	3	4	5
2.8 Recording of data	1	2	3	4	5
2.9 Classification of rocks	1	2	3	4	5
2.10 Counting	1	2	3	4	5
2.11 Recognition of features	1	2	3	4	5
2.12 Labelling soil samples	1	2	3	4	5
2.13 Annotating sketches	1	2	3	4	5
2.14 Associating	1	2	3	4	5
2.15 Interpreting data and graphs	1	2	3	4	5
2.16 Selecting	1	2	3	4	5
2.17 Sampling vegetation	1	2	3	4	5
2.18 Testing the pH of the soil	1	2	3	4	5
2.19 Finding direction	1	2	3	4	5
2.20 Testing the texture of the soil	1	2	3	4	5
2.21 Finding bearing	1	2	3	4	5
2.22 Calculating area	1	2	3	4	5
2.23 Analysing data	1	2	3	4	5
2.24 Interpretation of data	1	2	3	4	5
2.25 Decision-making	1	2	3	4	5
2.26 Co-operating with others	1	2	3	4	5
2.27 Communicating	1	2	3	4	5
2.28 Questioning	1	2	3	4	5
2.29 Evaluating information	1	2	3	4	5
2.30 Appreciation of the landscape	1	2	3	4	5
3. To what extent did the trail help you understand the role of fieldwork in :	1	2	3	4	5
3.1 Clarifying concepts	1	2	3	4	5
3.2 Developing practical skills	1	2	3	4	5
3.3 Developing affective skills	1	2	3	4	5
3.4 Studying the local environment	1	2	3	4	5

4. To what extent did :					
4.1 you enjoy the fieldwork	1	2	3	4	5
4.2 the fieldwork interest you	1	2	3	4	5
4.3 you find the preparation clear	1	2	3	4	5
4.4 you find actual field study clear	1	2	3	4	5
4.5 you find the follow-up clear	1	2	3	4	5
4.6 you find fieldwork as a whole clear	1	2	3	4	5
5. To what extent did you understand the following relationships :					
5.1 between human activities and slope direction	1	2	3	4	5
5.2 between drainage and vegetation	1	2	3	4	5
5.3 between drainage and soil texture	1	2	3	4	5
5.4 between slope & vegetation quality	1	2	3	4	5
6. Which part of the field work did you find : (preparation, actual excursion, and follow-up :					
6.1 most interesting	1	2	3	4	5
6.2 most effective	1	2	3	4	5
6.3 most boring	1	2	3	4	5
6.4 most rewarding	1	2	3	4	5
6.5 most practical	1	2	3	4	5
6.6 easiest to understand	1	2	3	4	5

KEY**Sections 1 to 5**

- 1 - Very weak / very limited
- 2 - Weak / limited
- 3 - Satisfactory / moderate
- 4 - Good / great
- 5 - Excellent / very great

Section 6

- 1 - None
- 2 - Preparation
- 3 - Actual field activity
- 4 - Follow-up

APPENDIX 4Observation Schedule

INSTRUCTIONS:

1. Please indicate your feelings concerning each of the items below by circling the appropriate rating in the column next to each item.

The ratings to be used are:

- 1 = very weak
2 = weak
3 = satisfactory
4 = good
5 = excellent

2. On the right hand side of the ratings column are spaces to record any additional information which you may feel deserves mention concerning each item.
3. Please be frank and as detailed as possible - every piece of information will help to illumine the research area.

A. Aims and Objectives

1. Explanation of aims and the role of fieldwork in geography teaching.

1	2	3	(4)	5	Spent... 1 hour... to explain the
---	---	---	-----	---	-----------------------------------

2. Explanation of objectives of the School Trail.

1	2	3	(4)	5	aims... objectives.....
---	---	---	-----	---	-------------------------

B. Provision of Equipment, Maps and Stationery

1. Maps:-

Topographic Maps 1:50 000						
1	2	3	4	(5)	Went... to... a... lot... of... trouble providing... the... necessary material... well... done!?	
Orthomaps 1:10 000						
1	2	3	4	(5)		
Base map 1:5 000						
1	2	3	(4)	5		

2. Equipment:-

Clinometers

1	2	3	(4)	5
---	---	---	-----	---

Quadrats

1	2	3	4	(5)
---	---	---	---	-----

Watches

1	2	3	4	(5)
---	---	---	---	-----

String

1	2	3	4	(5)
---	---	---	---	-----

3. Stationery

1	2	3	4	(5)
---	---	---	---	-----

Clipboards, very neat:.....

c. Activity Worksheet

1. Clarity of language

1	2	3	(4)	5
---	---	---	-----	---

2. Clarity of instruction

1	2	3	(4)	5
---	---	---	-----	---

3. Appropriateness for the developmental level of pupils

1	2	(3)	4	5
---	---	-----	---	---

4. Logical progression in:-

4.1. Concepts

1	2	3	(4)	5
---	---	---	-----	---

Skills

1	2	3	(4)	5
---	---	---	-----	---

Values

1	2	3	(4)	5
---	---	---	-----	---

Very carefully prepared.. worksheet:.....

Pupils had no previous experience

D. Teacher Input

1. Clarity in explaining concepts

1	2	3	(4)	5
---	---	---	-----	---

2. Clarity in explaining procedure

1	2	3	(4)	5
---	---	---	-----	---

3. Intergration of concepts and maps

1	2	(3)	4	5
---	---	-----	---	---

4. Intergration of concepts and equipment

1	2	(2)	4	5
---	---	-----	---	---

Very enthusiastic teacher

Pupils had limited..

experience.....

5.	Consideration of pupil level of development in explaining	1	2	3	4	5	
6.	Intergration of cognitive, psychomotor and affective skills	1	2	3	4	5	
7.	Logical progression in explaining	1	2	3	4	5	The teacher had very little time to get to know her class, making her task very difficult. Nevertheless an excellent effort....
8.	Organisation of groups	1	2	3	4	5	
9.	Motivation of pupils	1	2	3	4	5	
10.	Explanation of follow up work	1	2	3	4	5	
11.	Explanation of method of recording information	1	2	3	4	5	

E. Pupil Input

1.	Interest	1	2	3	4	5	Although pupils enjoyed the excursion, it was their first experience. They showed keen interest and enthusiasm but lack the spontaneity with the new teacher.
2.	Spontaneity in asking questions	1	2	3	4	5	
3.	Apparent assimilation concepts	1	2	3	4	5	
4.	Participation in making equipment	1	2	3	4	5	
5.	Interaction with each other	1	2	3	4	5	
6.	Interaction with the teacher	1	2	3	4	5	
7.	Motivation	1	2	3	4	5	

F. P. Bether
 F. P. Bether
 HOD Geography.

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APPENDIX 6 A FIELD EXCURSION TO THE CBD OF UMTATA**AIMS**

1. To investigate the clustering of shops, services and professional services within the CBD
2. To discover whether or not there is a correlation/link between building height and pedestrian density in the CBD
3. To discover whether or not there is a correlation/link between accessibility and pedestrian density in the CBD
4. To discover whether or not pedestrian /traffic flow decreases with distance from the CBD
5. To help pupils develop an appreciation of the morphology of a town
6. To give pupils practice in the use of large-scale topographic maps
7. To help pupils develop an awareness of their urban environment
8. To help pupils develop graphicacy skills
9. To help pupils develop their social skills
10. To help pupils develop an interest in geography

OBJECTIVES

At the end of the field excursion, and using the 1:50000 topographic map provided, pupils should be able to:

1. Identify and classify urban functions
2. Observe and record types of functions, height of

buildings in, traffic and pedestrian flows at certain points of the CBD

3. Draw a land-use map of the CBD of Umtata
4. Draw a map showing clustering of certain shops and professional services
5. Draw a correlation graph between building height and pedestrian density
6. Draw a correlation graph between pedestrian density and distance from the city centre
7. Describe and explain briefly the patterns depicted by the diagrams drawn as per instructions above.

ACTIVITIES

1. You are divided into pairs and each pair is all allocated to one side of the street.
 - 1.1 Use the land-use survey-base map of Umtata to locate your street.
 - 1.2 Then, walk along the street and record the ground floor functions of each building on the map using the appropriate code. (See Urban land-use classification key) Indicate any subdivision within the ervens.

Those of you in Madeira, York Road, Owen and Sutherland

- 1.3 Record height of buildings by putting a * and the number of storeys next to it in the appropriate erf,
- 1.4 Theafter, using the Diagram to indicate multiple -use (Figure 4) fill in the code for each function of each office in the building (ignore TDC, Botha Sigcau, K.D.

Matanzima and the banks). Take special notice of furniture, clothing and shoe shops as well as professional services such as doctors, lawyers and advocates.

Also note the position of the Supreme Court.

- 2 After the street work, all pupils should assemble in the Umtata Town hall area. From here, traffic and pedestrian counts will be undertaken. For each of these, you will need 10 minutes. These will be done at the intersections of York Road & Sutherland streets, York Road & Victoria streets, Owen & Sutherland streets and Madeira & Sutherland streets.

APPENDIX 7

LAND USE CLASSIFICATION KEY

if Only the ground level land-use should be recorded. Put a *
 there is a multi-storey building on the site and the number
 of storeys next to the asterisk. Place an 'N' beside a
 of building which has been replaced recently, an example
 of urban renewal.

SHOPS

- SS - Supermarket
- SI - Self-service grocer
- S2 - Self-service green grocer
- S3 - Food shops- Fish & chips
- S4 - Bookshops
- S5 - Shoes
- S6 - Women's clothing
- S7 - Men's clothes
- S8 - Clothing (general - men, women & children)
- S9 - Furniture, carpets
- S10- Leather goods
- S11- Sports goods
- S12- Radio & electrical goods
- S13- Jewellery
- S14- Restaurants
- S15- Cars
- S16- Boutique

PROFESSIONAL SERVICES

These are usually conned out in office-type premises.
 Look at the brass plate at the door or writing on the window.

Please ensure that the service is provided on the ground
 floor.

- 01 - Bank & Building Society
- 02 - Attorneys
- 03 - Surveyor
- 04 - Estate agent
- 05 - Insurance company
- 06 - Local Government office (Municipality)
- 07 - Engineers
- 08 - Bank
- 09 - Accountants
- 010- Architects

PUBLIC BUILDINGS

- P1 - Government offices of all types
- P2 - Places of worship
- P3 - School or college
- P4 - Hospital
- P5 - Library
- P6 - Police Station

PO - Post Office
RS - Railway Station
BS - Bus Station
PIO - Public car Park

ENTERTAINMENT

E1 Cinema/Theatre	<u>Recreation</u>
E2 Sports field	R1 Swimming pool
E3 Town hall	R2 Park

Industry

I- Motor Vehicle Service Stations.

APPENDIX 7

ST JOHN'S COLLEGE

UMTATA TOWN TRAIL

TRAFFIC COUNT SHEET

NAME OF RESEARCHER:.....

SPECIFIC LOCATION:.....

DATE:..... TIME: FROM..... TO..... TOTAL TIME:.....

Record one stroke for each unit and group the strokes in fives for easy counting
 e.g. 7444.11 = 7. In the case of motor vehicles, male or female refers to the sex of
 the driver.

UNIT	ENTERING CITY CENTRE		LEAVING CITY CENTRE	
	MALE	FEMALE	MALE	FEMALE
Pedestrians				
Bicycles				
Private Motor Vehicles				
Motor Cycles Private Commercial				
Light Commercial Vehicles				
Heavy Commercial Vehicles				
Buses				
Horse drawn vehicles				
Parked vehicles				
Other				

DATE: RESEARCHER'S NAME: GROUP NO:

INTERSECTION: STREET: SIDE: (N, S, W or S).....

TIME OF CENSUS: From: to: TOTAL TIME:.....

Record one stroke for each person, and group strokes in fives for easy counting
 e.g. 11111 = 6

	<u>ENTERING INTERSECTION</u>		<u>LEAVING INTERSECTION</u>
	<u>SUB TOTAL:</u>		<u>SUB TOTAL:</u>
	<u>ENTERING INTERSECTION</u>		<u>LEAVING INTERSECTION</u>
	<u>SUB TOTAL:</u>		<u>SUB TOTAL:</u>
	<u>TOTAL:</u>		<u>TOTAL:</u>

APPENDIX 10 FIELDWORK EXCURSION TO THE ROSS MISSION AREA

OBSERVATIONS

1. What evidence is there to show that the area is dry? -----
2. Identify and state any farming practices that may have increased the risk of soil erosion-----
3. Identify and state any evidence of environmental management found in this area-----
4. What evidence is there that environmental management in this area is having a positive effect? -----
5. The 1983 1:50000 topographic map shows evidence of cultivation in this area. Find out why this is no longer the case.-----
6. What has been the influence of slope on the distribution of farming units-----
7. What evidence suggests that land-use is related to aspect in this area? -----
8. What evidence suggests that land-use is related to slope gradient (steepness)? -----
9. What evidence is there to suggest that land-use is influenced by government policy? (interview people where possible) -----
10. What is the relationship between type of vegetation and slope (steepness) in this area-----
11. Establish the type of soil and relate it to the sensitivity of the soil to soil erosion-----
12. Man's activities are influenced by nature. How far true is this in this area? -----
13. Near the Gqabati shop, the road bends westwards. Why? -----
14. Of what value has the Tabase Nek been to man? Refer to any observable advantage of this feature -----
15. Name the type of slope found on the northern side from the bridge to the top of the hill-----
16. How is man trying to cope with the poor climate in this area? -----
17. What type of drainage pattern is evident from the bridge towards the top of the hill? -----
18. Relate the drainage pattern to the parent material evident from the soil profile-----
19. For what is the water from the Gqabati River used? (recreation, power generation or domestic purposes)-----
20. What is the observable influence of the river system on the location and subsequent development of the Ross Mission area -----
21. Comment about anything that you think is of geographic significance -----

APPENDIX 11 INTERVIEW SCHEDULE FOR THE LOCAL RESIDENCE OF THE ROSS MISSION AREA

AIMS OF THE INTERVIEWS

- 1. To determine the extent to which local residents perceive the hazard of erosion.
2. To assess the extent to which environmental management problems could be attributed to human activity.
3. To assess the desirability of environmental management strategies to inhabitants in terms of financial cost and appearance.
4. To determine the origin of this residential area
5. To determine the cause and origin of the dissected landscape.

QUESTIONS FOR INTERVIEWS

- 1. Were you living in this area before resettlement took place? YES/NO -----
2. Were you consulted before you were moved? YES/NO-----
3. Were you compensated for your homes that you had to leave? YES/NO-----
4. Were you satisfied with the compensation? YES/NO -----
5. Were you happy about the new sites? YES/NO -----
6. Were you all given new fields? YES/NO -----
7. Were you happy about the new fields? YES/NO -----
8. Name any advantages of resettlement that you have experienced (better farming land, better grazing land, better location of houses) -----

9. Name any disadvantages of rehabilitation that you have experienced -----
10. Did the dongas start before or after resettlement? -----
11. Who do you think is responsible for the dongas? (the government or the inhabitants- you) -----
12. What do you think is the cause of the dongas? -----
13. Are the dongas beautiful-----
14. Of what use are the the dongas to you-----
15. Are you happy that the dongas are being filled-----
16. Would you be ready to pay money to reduce soil erosion or to fill in the dongas-----
17. There is evidence that the fence is falling. Who do you think is responsible for the falling fence -----
18. Would you be prepared to pay for repairing the fence-----
19. If you see somebody destroying the fence, do you:
ask him to stop/say nothing/report him to the chief-----
20. Do you appreciate/like what the government is doing in this area? (i.e filling in the dongas and constructing anti-erosion walls) -----
21. What is the observable effect of the anti-erosion walls? -----
22. Do you think you (your community) is supporting the government by caring for what has been provided? -----

APPENDIX 12 TRANSECT THROUGH THE ROSS MISSION AREA

Aims

1. To help pupils understand that their local environment can be used for teaching /learning geography through fieldwork
2. To help pupils understand and appreciate relationships within the environment
3. To make pupils aware of the significance of a river and the area through which it flows
4. To develop group co-operation in working and living
5. To develop a concern for the wise management of the resources like soil and rivers
6. To develop a positive attitude towards conservation and care for the environment
7. To help pupils match theory as given in the textbook with reality in order to critically assess the validity of the statements
8. To help pupils develop understanding of concepts related to soils, rivers, slopes and rural settlement
9. To help pupils develop understanding of relationships which occur in the environment
10. To help pupils develop techniques and analytical skills
11. To help pupils develop graphicacy, numeracy, map reading and interpretation skills
12. To develop ability to describe and sketch soil profiles
13. To help pupils develop affective skills such as accepting

responsibility, and in some cases leadership ,handling group situations and exercising tolerance and understanding of others

Objectives

At the end of the field excursion, pupils should be able to:

1. Measure the depth of soils and soil profiles
2. Measure the gradient of the slope
3. Find height using an altimeter
4. Determine the colour of the soil and suggest possible reasons for the colours
5. Determine the pH of the soil
6. Draw a correlation graph
7. Interpret graphs
8. Draw a bar graph to compare sets of data
9. Use an auger to record soil depth
10. Orientate a map
11. Find direction using a watch
12. Conduct interviews
13. Formulate hypotheses
14. Make decisions about the information to be collected to prove the hypotheses
15. Measure bearings in the field
16. Work in groups

APPENDIX 12 (Cont)

FIELD EXCURSION TO THROUGH THE ROSS MISSION AREA.

Record the data collected along the transect as required

below:

Information Recording Sheet:- Section _____

Group _____

1. Quadrat Sampling using the keys provided at the bottom of this page.

Height of plants

1	2	3	4	5
1	2	3	4	5

Density of plants

2. Soil Characteristics:-

Soil Colour	Black	Dark Brown	Brown	Red	Grey
Soil Texture	Sticky	Sandy	Powdery	Stony	Rocky

3. pH Value _____

4. Plant growing in the soil _____

5. Parent material (if possible) _____

6. Land use _____

7. Height above sea level _____

8. Angle of slope _____ Downhill _____ Uphill

9. Aspect _____

Key for question 1

Density 1 - No plants

2 - Few plants

3 - Half-covered half bare

4 - More plants than bare soil

5 - Fully covered

Height of Plants

1 - most vegetation low growing

2 - 30 cm +

3 - waist-high

4 - higher than head (shrubs & tall grass)

5 - trees

APPENDIX 13

POPUL EVALUATION OF RURAL UNIT

STANDARD

This is a questionnaire and not a test - there are no correct or incorrect answers. Please be totally honest in your response.

PART ONE

1. Please indicate your feelings about the fieldwork trip you undertook by circling the appropriate rating in the column next to each question.
2. The ratings to be used are:

1	very weak
2	weak
3	satisfactory
4	good
5	excellent

QUESTIONS

1. To what extent did the fieldwork help you understand the following:-

- soil profiles
- soil horizons
- soil colour
- parent material
- rocks types

1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5

- relationship between soil depth and slope
- relationship between slope and quality of vegetation
- relationship between land use and aspect
- relationship between slope and land use
- relationship between land use and government policy
- environmental management
- attitude of people to environmental management
- effect of environmental management (e.g. anti-erosion walls).
- how physical factors (the Tabase Nek) influence human activities

1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5

2. To what extent:

- did you understand the role of fieldwork (preparation work in the field and following) as a whole?
- did the fieldwork interest you?
- did you enjoy the fieldtrip?
- did you find the fieldwork as a whole clear

1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5

3. To what extent can you:

- formulate hypothesis

- decide on the information to collect to prove the hypothesis
- decide on how to record information in the field
- can you draw graphs
- analyse the information collected in the field
- interpret graphs
- make conclusions based on graphs
- relate maps to reality
- relate what you see in the field to what is in the textbook
- lead a group
- work within a group
- work informally with a teacher
- share duties with four classmates

1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5

4. To what extent have you learnt to:

- orientate a map
- measure distances
- measure slopes using a clinometer
- use an auger
- take soil samples

1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5

- measure pH of the soil
- record information
- find direction using watch
- find the texture of the soil
- observe

1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5

PART TWO

1. Which part of the lesson did you find (preparation, actual fieldwork & follow up):

1.1 most interesting? _____

1.2 most effective? _____

1.3 Most boring? _____

1.4 most rewarding? _____

1.5 easiest to understand? _____

1.6 most practical? _____

1.7 hardest to understand? _____

1.8 most difficult _____

2. Is there anything else that you wish to comment about concerning any aspect of the lesson?

APPENDIX 14

OBSERVATION SCHEDULE FOR RURAL FIELDWORK-FOLLOW-UP

1. Please indicate your observations concerning each of the items below by circling the appropriate rating in the column not to each item. The ratings used are:-

- 1 Very weak
- 2 Weak
- 3 Satisfactory
- 4 Good
- 5 Excellent

2. Please be frank and as detailed as possible-every piece of information will help illumine the research area.

1. Nature of Follow-up activities.

1.1 The pupils' activities are sufficiently varied.	1	2	3	4	5
1.2 The pupils' activities have a logical progression.	1	2	3	4	5
1.3 The instructions are simple and clear to be followed by the pupils.	1	2	3	4	5
1.4 The material proposed for pupils' use is appropriate (graph paper and Ph indicators).	1	2	3	4	5
1.5 The pupils can use the material.	1	2	3	4	5
2. Group Dynamics.	1	2	3	4	5
2.1 Every pupil is doing meaningful work.	1	2	3	4	5
2.2 The pupils are following the logical sequence suggested group interaction and discussion.	1	2	3	4	5
2.3 There is evidence of effective group interaction and discussion.	1	2	3	4	5
2.4 The pupils are using the data collected in the field effectively.	1	2	3	4	5

5. Pupils' development of the following skills :-

5.1 ability to process data collected in the field (e.g tables).

1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5

5.2 ability to analyze and the data.

5.3 ability to draw graphs.

5.4 ability to interpret graphs.

5.5 ability to draw conclusions from the graphs related to hypotheses.

5.6 ability to work with a group

5.7 ability to share solutions with clasmates.

5.8 ability to work informally with a teacher.

APPENDIX 15

PUPILS' ATTITUDES TOWARDS THE SCHOOL TRAIL

STANDARD-----

INSTRUCTIONS

1. Please indicate the intensity of your feelings towards fieldwork by drawing a circle around the number that expresses those feelings best.

For example:

I associate the fieldwork excursion with the following

Boring	1	2	3	4	5	Interesting
Illogical	1	2	3	4	5	Logical
Difficult	1	2	3	4	5	Easy

Indicates that excursion was boring, logical, and neither too difficult nor too easy.

2. Please be totally honest - This is not a test, there are no right or wrong answers.
3. Your name is not required.

I associate the fieldwork excursion with the following:

Unpleasantness	1	2	3	4	5	Pleasantness
Tension	1	2	3	4	5	Relaxation
Frustration	1	2	3	4	5	Fulfilment
Failure	1	2	3	4	5	Achievement
Dissatisfaction	1	2	3	4	5	Satisfaction
Boredom	1	2	3	4	5	Interest
Difficult	1	2	3	4	5	Easy
Passive involvement	1	2	3	4	5	Active involvement
Undemanding	1	2	3	4	5	Challenging
Rejection of content	1	2	3	4	5	Identification with content

Illogical	1	2	3	4	5	Logical
Vague	1	2	3	4	5	Clear
Unintelligible	1	2	3	4	5	Intelligible
Irrelevant	1	2	3	4	5	Relevant
Unrealistic	1	2	3	4	5	Realistic

Thank you for your co-operation and valuable contribution.



Transkei Teachers' In-Service College

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20 November 1991

To whom it may concern

MS Adonis asked me to evaluate her on three occasions on her field course project. Once with her preparation, once with one of the three field courses and once with the follow-up session.

MS Adonis had to do her project under difficult circumstances. The school she chose, was very uncooperative and she was only allowed to use the pupils after normal school hours. She had great difficulty in getting a group together after hours. She also had very little time to get to know the group she was going to work with and it was obvious that the pupils had never been on a field excursion before and did not know what to expect.

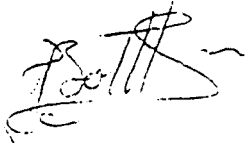
MS Adonis managed to overcome most of these difficulties. She spent enough time explaining the basic aims and objectives of field work in general and the planned field excursion in particular. The pupils at first were a bit shy, but through the enthusiasm of the teacher they actively participated in discussions and in the preparation of materials for the excursion. The pupils received detailed instructions in the form of a worksheet on what to do. Each group was issued with 1:50 000 topographical maps, orthomaps, base maps, clinometers, quadrants and string with clear instructions on how to use them. The worksheet and foolscap paper were presented on clipboards.

The trail MS Adonis chose, was well planned and enabled her to illustrate geographical concepts impossible to explain in the classroom. The pupils at first were hesitant to ask questions, but their involvement improved as the trail progressed. The worksheet, logically led the pupils to understand the relationship between slopes and drainage and the relationship between slopes and cultivation. The pupils also had the opportunity to test the soil acidity with litmus paper.

The follow-up was used to revise the aims and objectives, as well as the concepts explained on the trail. Although the pupils did not fully understand some of the concepts, they certainly enjoyed the excursions.

There were some minor mistakes that were pointed out to her, but as a whole MS Adonis' enthusiastic and the time she spent with her preparation, accounted for the success she had with her field courses. I wish her all the best with her future studies.

Yours sincerely

A handwritten signature in black ink, appearing to read 'JP Botha', with a stylized flourish at the end.

JP Botha
HOD Geography

COMMENTS ABOUT FIELDWORK

I have enjoyed field work because it has given me more information about what we have done. It has been good because some of the things done there are important like testing the pH of the soil, soil texture and so on. It makes me to know more about Geography and if it was started by the time I was doing standard seven I would have liked Geography more than now. Teachers in junior secondary schools should do fieldwork so as to make their children know geography. If fieldwork could be done in all the chapters of geography it would be more easier that it is. I thank the teacher for what she has done because we have seen the recreation of some things to stop soil erosion and there is more deposition taking place where there are anti-erosion walls. Urban field work is also important because we had seen that where there are more shops there are more people and traffic congestion.

COMMENTS ABOUT FIELDWORK

Geography

I have enjoyed fieldwork because it makes me to know more about it. The fieldwork in Town and the field work in Tabese were very interesting to me. As I was in the group of interviewing the people in Tabese I got more information about the location and what was happened before and now. I now know how to test the pH value of soil, the slope and so on. It seems as if to me if I was started fieldwork during standard seven, I should have know better know and I think there will be no more problems. Field research made me to prove that the things that we read in the book are true. Field work is very important and it is not difficult to know it so I encourage this to be continue.

Comments about field work

1. I enjoy to be in field work because it developed me to know how to do things practically like measuring the slope, testing the P.H. of the soil and how important to work in groups. It makes me to understand the things that I did not understand when I told them theoretically - like anti-erosion walls, river capture e.t.c.

Field work is very important because we went out to see all the things that we learn about. I am very interested in it

because I gained a lot, I see the slopes and valleys. We also test pH of the soil and measure the distance. We also see the types of soil at every area. That area was dry because there were many shrubs in grazing land and near the dorge. There were also anti-erosion walls for controlling soil erosion.

It is good to go out on a field excursion because you relate what you read on the book. One good advantage of it is that what you have grasped cannot easily go out. I think geography would be very easy if it was studied by field work only.