THE IMPACT OF EDUCATIONAL RESOURCES ON THE TEACHING AND LEARNING OF GEOGRAPHY IN SECONDARY SCHOOLS

BY

ALTON MCEBO ZONDO

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ABSTRACT

The advancing technology worldwide is a challenge to every creature on planet earth. People are thirsty for knowledge and resources to achieve their goals. Resource as the word implies is anything that a teacher can use to enhance a lesson. Resources then lead to the establishment of resource centres. Resource centres are where information or media materials are accessible. This place can keep resources such as computers, audio-visual resources, books and charts.

Throughout the world researchers agree that for real learning to take place, learning and teaching must be as stimulating as possible, and this can be done through the use of different kinds of resources.

The objective for writing this research report is to investigate the resources available to geography teachers. This project intends to inform all stakeholders in education about the impact of educational resources, in the light of overcrowded classrooms with few or no resources and the recruitment of too few and inadequately qualified teachers as is the norm today in rural areas of Kwa Zulu Natal, South Africa.

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CHAPTER 1

1. INTRODUCTION TO THE STUDY

1.1 Introduction

I have been teaching geography for the past six years. As a teacher I have found that learners need to be challenged, engaged and creative in their work. In order to grasp the critical skills necessary in making geography a lively and relevant subject, there is a strong need for the use of educational resources. However, most schools, particularly African schools have no resources. This is so because of the past and apartheid policy of the previous regime. This separate policy propagated separate development with more attention and resources given to White Schools in South Africa. This can be clearly illustrated by Hendrik Verwoerd (1953) as quoted by Christie (1990 : 12) where he stated that "When I have control over native education, I will reform it so that natives will be taught from childhood that equality with Europeans is not for them." This, then, caused differences in terms of resource supply to schools. The apartheid state managed a centralised curriculum policy system, which was variously described as "racist", "Euro-centric", "sexist", "authoritarian", "prescriptive", "context blind and discriminatory". Today, some schools have limited resources, but educators are not usually able to use these resources. This may be attributed to various factors in so-called African schools. It might be the result of teachers being underqualified in their particular specialisation area; it may be due to inadequate teaching; lack of discipline in schools; and certified teachers who cannot cope with the daily problems of teaching. Alternatively, it might be that teachers themselves were not exposed to such facilities in their training. This is an unfortunate situation, plus there is a severe shortage of creative experiential and South African based resources in the geography field. By this, I mean, that educators could use primitive materials such as sand, water, clay and wood to create various models to enhance their teaching. This can attract learners and evoke concentration and inventiveness. Learners are stimulated by natural or manufactured materials of many shapes, colours and textures. This is particularly true of resources promoting critical and diverse thinking in the South African context.

Geography is a valuable subject offered in our schools. It is valuable in the sense that it

tends to foster habits of observation and perception with regard to the beauty of the world, which in turn awakens the highest impressions of admiration and veneration. The study of geography helps learners to develop skills of numeracy, interpretation and articulate communications. Fien et al in Jennings (1996 : 45) concurs with this view when he states that: "Geographical knowledge is a powerful tool in understanding the location, interaction and problems associated with cultural variability. A teacher is charged with the goal of giving students the knowledge, skills and values to live meaningful lives. Specifically, teachers of geography must instil in students a "personal geography". In other words, a set of abilities that can be used to make decisions about the world around them."

In the classroom the teacher has no opportunity to transport the learners physically to locations with different cultures. The goal of imparting an understanding of cultural diversity must be achieved using strategies. For example, it is here that resources are required to illustrate cultural diversity that will include simulated travel modules. Geography demands that learners should have an ability to translate facts into ideas. In line with this view is Balchin (1970) who warns us that " teachers should be aware that geography demands active work and hard constructive thinking before the student can effectively pass through the gateway it opens. Teachers must also be aware that their job is not only to teach theories like the theory of isostacy, but to have students appreciate the power of great ideas and to share with them their love for geography." This , then, puts pressure on the teaching and learning of geography that it should be changed from traditional methods where an educator used to be a source of knowledge. In traditional methods, rote learning was emphasized with little involvement of the learners' participation. The teacher used to be the only source of knowledge and learners were taken as "tabula rasa" to be informed by the educator. Now, there is a shift from that model to a participative approach. This means that teachers should be facilitators and use various resources to involve learners to participate fully in their learning.

It is, therefore, essential that geography teachers should use various strategies and resources to make their teaching stimulating and interesting. Hurry (1989:69) defines a resource as "anything that a teacher may use to enhance the lesson." Ellington and Race (1993:24) argue further that resources include printed and duplicated materials. In planning classroom instructional strategies, teachers have to decide which of these resources they require to improve the effectiveness of their

lessons. An aspect in the selection of resources is a consideration of the potential active learning benefits to be derived by pupils from the use of such resources. Meyers and Jones (1993:123) state that resources should be "stimulating and help to ignite our students thinking and intellectual curiosity..."

The National Minister of Education, Professor Kader Asmal, is aware of the fact that most schools are without resources. This is clear in his statement that "there is a rampant inequality of access to educational opportunities of satisfactory standard. In particular, poor people in all communities, of whom the overwhelming majority are rural Africans, continue to attend decrepit schools, too often without water or sanitation, electricity or telephone, library, workshop or laboratory. "Obviously, these schools are disadvantaged in a sense that resources facilitate both teaching and learning. Besides providing visual and aural stimulation, resources help educators in communicating with teachers. The effective co-ordination of several resources with teaching and learning ensures maximum benefit for both educators and learners. Simmonds (1990) as quoted by David (1993:3) concurs with this view when he states that "there is increasing recognition that geography, with its integrative emphasis provides the logical vehicle for bringing together the natural and social worlds."

It is an attempt of this study, therefore, to look at the impact of educational resources on the teaching and learning of geography. Resources are very important in the teaching and learning of geography. Meyers and Jones (1993:142) assert that "If well-selected and effectively used, resources could be a valuable partner for teachers and learners." This suggests that teachers and learners should use appropriate resources to make the teaching and learning environment successful. Clark and Starr (1992:240) support this argument when they say that "the quality of discussions depend on the skill of the teacher in initiating and guiding. Progress is assured if the teacher creates a supportive atmosphere in which all pupils feel free to think and interact with the teacher and fellow pupils "without fear of embarrassment." Avalos (1994) in Perspective in Education(1999:38) puts this succinctly when she says "teachers are asked to be supporters of learning, facilitators or whatever word one may wish to use to denote the action of producing learning."

Today learning is viewed differently. This is so because of the new paradigms that have been

included in teacher education. Approaches like cooperative learning and participative learning are new approaches that have been included in education today. It is true that learners still need knowledge, but the role of an educator is to help them use that knowledge in a meaningful context and to develop a range of skills, values and attitudes. This is done in various ways by building on the learners' existing knowledge and skills, through discovery and active involvement in the learning process. In all of this, the effective use of a range of available resources is crucial. It is imperative that teachers evaluate their teaching strategies in the light of current research which emphasizes cooperative group work. Cooperative learning approaches replace independent seatwork with small groups (typically four to six students) that work together on practice or application exercises (Good and Brophy, 1991:409). Task structures may be individual, cooperative or competitive. Individual task structures require students to work on the task alone. Cooperative task structures require students to work cooperatively in order to meet task requirements. Cooperative task structures also differ according to whether or not there is task specialization. Task specialization is in effect when the larger task to be accomplished is divided into several subtasks and different group members work on different subtasks. In preparing a report on a foreign country, for example, task specialization would be operative if one group member was assigned to do the introduction, another to cover geography and climate, another to cover natural resources and economy, etc.

According to the National Ministry of Education our system of education must "open the gates of learning and culture to all, and ensure that our nation's human resources and potential are developed to the full (The White Paper, 1995:79). This is the challenge facing the democratic government to redress the imbalances created by apartheid. African schools are suffering a great deal from the lack of educational resources to facilitate teaching and learning in our schools. The under provision of basic requirements of education for African learners is reflected in the observation made by Pigford and Ngcongo (1995:10) " ..... the people sit on the hard, wooden benches that serve as their desks. Three or four squeeze together to share a single book. Except for a small, pot-bellied, coal burning stove in the middle of the classroom, there are no supplies or equipment." This observation was made about five years ago, pathetic though, that six years down the line of democracy, nothing has changed in rural schools. The following photo clearly demonstrates the real life problem in one of the selected schools in the uBombo district.

Plate 1: A photograph taken from Mabandleni High School

Halloran (1990) as cited by Criticos (1997:4) cautions us that "as the information society develops, it will not be possible to achieve the goals of citizenship or to exercise the appropriate rights in the absence of an information and communication system which provides the information base and the opportunities for access and participation for all citizens." Therefore, there is an urgent need to close the ever widening gap between the information rich and information poor. There is a need to find some equitable means for all learners to have access to educational resources, especially the so called new multimedia technologies that are associated or linked to information technology.

1.2 Motivation for the study

A study of education in the apartheid era reveals a marked degree of inequality with regard to funding, resources and facilities for the different racially-based education department. The dawn of a new era (democratic government) brought about a single department of education nationally. This motivated me to examine the developments of redress and redistribution of resources. The white paper spells out clearly the goals for transformation in education and training : a priority for the national and provincial ministries of education is to create a transformative, democratic mission and ethos in the new departments of education which can completely supersede the separate identities of the apartheid government. It is the joint responsibility of all South Africans who have a stake in the education and training system to help build a just, equitable and with high quality system for all the citizens, a common culture of disciplined commitment to learning and

teaching. This has led to the phasing out of the apartheid curriculum and phasing in a single unified and non racial system of education. Policy for such system was created through Commissions, Green Papers, White papers and finally legislation. Together with the integration of education and training, the white paper in Education and training highlighted the establishment of a system of life long learning, organized in terms of the National Qualification Framework (NQF). The NQF attempts to increase learning opportunities and eradicate potential hindrances to learning for all South African citizens, from school students to out-of-school youth and children to adults, employed and unemployed (Christie, 1996). This, then, motivated me to investigate whether policies change only in papers or in reality!

1.3 Purpose of the study

The study seeks to examine the impact of educational resources on the teaching and learning of geography in secondary schools.

1.4 Critical questions

1.4.1 What are the resources available to teachers of geography?

1.4.2 What resources are used by teachers of geography in the uBombo district?

1.4.3 How are these resources used to promote resource based learning in the teaching of geography?

1.5 Rationale for the study

The motive behind this research was to find out to what effect teachers used the resources at their exposure for the benefit of their learners. Some schools do have resources but these are never used. This might be the lack of knowledge from educators concerned. The success of this study, therefore, may help the department of education to organize refresher courses to update the practicing teachers. This will also help the decision makers, schools of education, subject advisors to be more involved in the in-service training of teachers. There is a great need to change the teaching institutions of South Africa which are more of a lecture style in most of their courses. This lecture style gives little chance to discussion, especially, more direct discussion with academic geographers and more geographic excursions are required than the boring lectures by specialists.

1.6 Delimitation of the study

The study area was delimited spatially to the uBombo district in the province of Kwa Zulu-Natal. UBombo lies in the northern part of Kwa Zulu-Natal, just about 30km North East of the N2 from Mkuze and 86km South West of Sodwana Bay. (The reader is referred to Appendix A1&A2 with the map showing the school districts in Kwa Zulu-Natal). This research area was chosen for both practical and purposive reasons: practical in that I am teaching under this district (UBombo) which makes it easy for me, not only for easy access and economic viability , saving on travelling long distances looking for schools offering geography, but also provides immediate relevance to my school where I am teaching and familiarity with the teachers in the area. This area represents a typical rural South African context which I required to show inequality in terms of resources and infrastructure. This area has small peri-urban centers with a large distribution of rural areas, large discrepancies in educational resources across racial and spatial divides, and generally low standards of performance in the schooling system (Survey of needs, 1996), quoted by Jansen (1998).

The unit of analysis in this study was grade 12 geography teachers. In the impact assessment component of the study, a minimum of six schools were selected within the district, each school distinguished on the basis of a sliding scale of available resources and infrastructure(buildings). In other words, the evaluation made the assumption that there is a relationship between the available resources and the ways in which teachers can teach geography effectively. These schools can be categorized into two sets, viz former ex-DET schools and ex-DEC schools under the defunct Kwa Zulu Government. Most of the schools from ex-DET are well established with stable infrastructure, but with the minimum of resources available for operating the school. The former Kwa Zulu Government schools have little or poor to no infrastructure and little to no resources available for supporting the school. The two photos that follow clearly depicts what I am talking about. Plate 2(a) shows the photograph of an ex-DET school and Plate 2(b) shows the photograph of an ex-DEC school.

PLATE 2 (a): Photograph taken from Isinethezekile

PLATE 2 (b): Lifalethu High School

These are bearing all the characteristics of rural schools, such as large class size, no adequate furniture and far removed from town centers.

Conceptually, the study is limited to African schools. The reason being, the area as such is predominantly occupied by Africans. This boils down to the Land Act of 1913 which divided South Africa into various ethnic groups. For instance, the Immigrants Regulation Act of 1913

prohibited the movement of Indians across provincial borders and placed restrictions upon landownership by them outside of Natal. Similarly, Black landownership was confined first to only seven percent of South Africa's land area (the scheduled areas of the Natives Land act 1913) and then to thirteen percent (the reserves) with the addition of the Released Areas (Land "released" from the restricted provision of the 1913 act by the Natives Trust and Land Act 1936). One of the intentions of these acts was to foreclose the option of choice for Blacks living in White rural areas and so force them to seek temporary wage-employment in the white economy (Smith, 1986:18). According to Smith (1986:19) citing Stallard Commission of 1942 non-whites (Blacks) should only be permitted within municipal areas in so far and for so long as their presence is demanded by the wants of the white population. As a result of this act Blacks were regarded as temporary urban residents and as such were to be repatriated to the reserves if not economically active. It is upon this background, that, this area is predominantly African (Black) and worse still, it is infested with mosquitoes which cause malaria fever, hence Whites could not afford to sacrifice their lives as a mosquito feast, only those who had no option can settle in such areas.

1.7 A Brief Description of Schools

1.7.1 Prologue

Rural secondary schools in South Africa, specifically in the former Kwa Zulu as a former homeland, still compare very unfavourably with other levels as far as buildings and facilities are concerned. Most of the schools have dilapidated buildings, crowded classrooms, rudimentary school furniture, broken windows, leaking roofs, a lack of adequate sanitation facilities, proper chalkboards and cupboards. This can be seen in the following photo taken from the selected schools.

PLATE 3: A photograph taken of Mabandleni High

Although vandalism may be cited as a factor in broken windows, but still the buildings themselves are not up to standard. Worse still, teachers do not have staffrooms or administration buildings. When it is windy or rainy, the conditions tends to be unbearable, with the exception of course, of ex-DET schools. The reader is referred to the following picture which shows teachers sitting under a tree as their "staffroom" since there is no administration building in the school.

PLATE 4: A teacher's staffroom: Madandleni High

1.7.2 IGUGULESIZWE SECONDARY SCHOOL

This school is situated in Mjindi farming area about 10km north east of Jozini, adjacent to Makhathini clinic. This school has an enrolment of 396 learners. It has thirteen state paid teachers and one paid by the school governing body. The school is built on state land. It is wired

and has electricity supplied by Eskom. It has piped water and on tap to the school buildings. The school also has a flush system to the main sewer pond. It has 21 seats for male learners and 29 seats for females. In addition to these seats, the school has five urinals for learners and 2 for teaching staff. The school is fenced by 1,8 metres mesh wire. It has a poor gravel or dirt road accessing it.

The school buildings are walled type bricks with a zinc type roof. It has ceiling board, offices and an administrative area: one principal's office and six other offices, one staffroom, two sickrooms, one duplicating room, one strongroom, six store rooms, one tuck shop, thirty five classrooms, one biology laboratory, one science laboratory, one typing room, one library that is not well resourced and four geography teachers. From the description aforementioned, it is clear that this school is a former ex-DET school. The reader is referred to the photograph below.

PLATE 5: IGUGULESIZWE HIGH SCHOOL

1.7.3 LIFALETHU SECONDARY SCHOOL

It is located in Kwa Jobe Tribal area. It is about 34 kilometers south east of Jozini Dam. This school was started in 1995 by the community, who were trying to help their learners who were traveling sixteen kilometers on foot to reach a secondary school in the vicinity. It has twelve poorly built classrooms with dusty floors. There is no administration building, no staffroom, no

strongroom, no cupboards. During examinations for grade 12 papers are kept at nearby schools with strongrooms. The school has 12 teachers and the enrolment of 580 learners. Obviously, the teachers pupil ratio is high. There are two educators responsible for geography teaching. The school has insufficient geography material, no atlases, no practical workbooks or mapwork books. It presented grade 12 for the first time last year (1999) and the results were very poor. Only 7 managed to pass out of 68 learners who wrote the final examinations.

It also has no piped water to the school. It has 14 pit toilets, ie 7 for boys and 7 for girls. Clearly, this is a typical under resourced rural school from the ex-DEC KZ Government. (The reader is referred to Plate 2 (b)).

1.7.4 MABANDLENI SECONDARY SCHOOL

It is also located in the Kwa Jobe Community area. It is about 14 years old, established in 1985 after Mangwazana as the only secondary school in the uBombo district. It accommodates students from grade 8 to 12. The average enrolement is 635 and has 15 educators. It has 13 classrooms and two under construction. The school has no administration building, no library, no laboratories, and no strongroom. The school has no facilities at all, ie. teaching and learning resources. There are three teachers responsible for geography. There are books but not enough for learners. The school is fenced with the help of the local game reserve, called Phinda Game Reserve.

It also has no piped water, no taps, poorly built pit toilets with sixteen seats, ie fourteen for girls and two for boys. Teachers do not have one, except in the teachers' cottage.

The school also has a poor gravel or dirt road accessing it either from lower Mkuze or from Jozini.

The reader is referred to the following plate.

PLATE 6: MABANDLENI HIGH SCHOOL

1.7.5 BIVA PUBLIC SCHOOL

Biva public school is situated in the the Biva settlement, just about 20 kilometres north east of Jozini and about 8 kilometres east of Igugulesizwe secondary school. This school has an enrolment of 1087 learners manned by 25 state paid teachers. The school is wired but with no electricity supply. It has piped water and on tap to the school buildings. It is well fenced by 1,8 m razor wire.

It also has a face brick with zinc type roof. It has a ceiling board. There are 26 classrooms. It is interesting to note that there are 288 learners taking geography and only 2 teachers that are responsible for geography. Obviously, the ratio is very high for individual attention to the learners. In addition to this load, they take other subjects beside geography. The school has an administrative building with six offices, 1 for the Principal, 1 for the Deputy Principal and 4 for H.O.D.'s, two sick rooms, 1 print room, 1 reception area, 1 staffroom, 1 kitchen and 1 technology class. This is one of the ex-DET.

PLATE 7: BIVA PUBLIC SCHOOL

1.7.6. ISINETHEZEKILE COMBINED SCHOOL

This is a combined school stretching from grade R to grade 12. It is about 6 kilometres north east of Jozini. It has an enrolment of 1084 learners with 28 teaching personnel. Out of 28 teaching staff, there are 6 teachers responsible for geography. The ratio stands at 1:40. This is not bad according to African rural standards as compared to 1:144 in the case of Biva public school.

The school is built with face brick with a zinc type roof. It is wired and has electricity supplied by Eskom. It has 6 offices similar to the description given before on Biva or Igugulisizwe. It is well fenced with razor wire of about 2,5m high.

The school has the flush toilet system with 14 seats, namely, 7 for boys and 7 for girls. In addition to these, there are four for teachers, ie. 2 for female teachers and 2 for male teachers. The reader is referred to Plate 2 (a).

1.7.8 EZIBUKWENI SECONDARY SCHOOL

This school is situated at the delta of Jozini dam. It is about 2 kilometres north east of Jozini town. It was established in 1983 to accommodate learners who had passed from Maphaya senior primary school. The school has an enrolment of 1030 pupils with 31 teachers. It is wired with electricity supplied by Eskom. There are 3 teachers responsible for geography stretching from grade 8 to 12. It has no library, instead it is using a classroom as one. It has two offices, 1 for the Principal and the other one for the Deputy principal, and one staffroom. This school was established by parents with the donation from Barlow Rand.

It has a flush system of toilets with 16 seats. Eight for boys and 8 for girls respectively.

The school has a computer donated by Promat, but is never used for teaching. It is used only for administrative purposes.

PLATE 8: EZIBUKWENI HIGH SCHOOL

1.8. Research Strategy

The instrumentation used in this study can be summarized as follows:

- Ø A questionnaire profile of geography teachers assembling data about the aggregate levels of resources available in the schools as a whole.
- Ø A questionnaire profile of the teacher developing a detailed portrait of the educator in terms of formal qualifications, teaching experience and the techniques to use resources.
- Ø Personal conversations with principals and teachers of the schools
- Ø Sampling, data analysis, and interpretation

Questionnaires are widely used as a means of collecting data. This is preferred when responses are needed from large numbers of respondents. An advantage of using questionnaires is that they enable researchers to obtain reliable and valid data in a short space of time. They can be left with respondents and collected later (Huysamen, 1994)

1.8.1. Research Sample

A sample of one geography teacher from each school was drawn. These teachers were provided

with questionnaires for them to respond to. This sample can be regarded as a "convenience sampling". I am saying this because convenience sampling comprises of choosing an unrepresentative sample by selecting respondents because it is convenient for the researcher (Scott and Usher, 1999:70-71). This method is frequently used by the media when they want to take a snapshot of opinion about a particular issue. I used it here to demonstrate the history of neglect and inequality of resources in the South African education system, more especially in rural areas. This history of neglect and inequality has cost South Africa dearly, not only in human terms, but in the frustration and wastage of young lives and in addition to the heritage division in terms of information rich urban areas vis-à-vis information poor rural areas, but also in straight forward economic terms.

1.8.2 Research Design

The research design is the plan or blue print according to which data is to be collected to investigate the research hypothesis or question in the most economical manner (Huysamen, 1994:10). I designed this study in such a way that answers to the questionnaires gave reliable data. Furthermore, is was such that it did not take a lot of time on the part of the respondents so as to avoid inconveniences with teachers' time who tend to be so impatient with research people.

1.9 Research Audience

According to Mouly (1978) "Research is best conceived as the process of arriving at dependable solution problems through the planned and systematic collection, analysis, and interpretation of data." It is an important tool for advancing knowledge, for promoting progress, and for enabling man to relate more effectively to his environment, to accomplish his purposes and to resolve his conflicts. Mouly (1978) as cited by Cohen and Manion (1994:40). This statement suggests that researchers do not work in a vacuum. They have an obligation to study phenomena, record data and communicate their findings to those members of society who have an interest in the investigation. The possible audiences for this study are geography teachers, principals, governing bodies, inspectors, mass media, policy makers, lecturers involved in teacher education at

universities and colleges of education. The findings and recommendations will create an awareness and understanding of the present state of the impact of educational resources and provide a speed – up changes in the future. Teachers play an important role in the successes or failures of classroom teaching. It is for this reason that I believe that this study is particularly relevant to in-service teachers, pre-service teachers and lectures at institutions of higher education.

1.10 Limitations of the Study

The study was limited in a sense that it was not quantitative in nature, but rather a qualitative – naturalistic case study. According to Patton as cited by Merriam (1988:16 – 17) qualitative research attempts to "understand situations in their uniqueness as part of particular content and the interactions there. This understanding is an end in itself, so that it is not attempting to predict what may happen in the future, but to understand the nature of that setting – what it means for participants to be in that setting, what their lives are like, what is going on for them, what their meanings are, what the world looks like in that particular setting – and in the analysis to be able to communicate that faithfully to others who are interested in that setting..... The analysis strives for depth of understanding ....." This research has limitations, like for instance, formulation of the questionnaire may not address the research questions adequately since the researcher is a novice in the field. However, the value of research is not diminished by the fact that there are limitations, but actually enhanced by reporting such limitations. In line with this view is Anderson (1990:110) who aptly states that "in the game of conducting and reporting research, there is no harm in having limitations but it is a bad form not to admit them." The limitations imposed on the generalizability of this study may be derived from this design and the research sample. Furthermore, there are many factors that may be cited as probable causes of the high failure rate in geography. Some of the factors may be caused by under qualified teachers teaching the subject and poor geographic background of learners. It was also limited in that it did not consider these factors but only concentrated on the availability and utilization of resources on the teaching and learning of geography. As far as the quantitative aspect of the research was concerned, there were some limitations in the numerical presentation since only six respondents were selected. The study was also limited by personal subjectivity. This is due to the fact that when I was designing

questions, it was likely to question what seemed to be important to me and not to the reader.

It was also limited in that the research concerned itself with geography only. It was also selected on the basis of easy accessibility and readiness of teachers to cooperate in the research endeavour.

1.11 Validity of the Study

Validity refers to the extent to which the results obtained for a sample of individuals may be generalized to the population to which the research hypothesis applies (Huysamen:1994:37). The validity of this study was strengthened by:

a) Piloting a questionnaire on four geography teachers where I am teaching. However, no changes were made on the final draft of the questionnaire after piloting. The aim of this was to indicate whether educators understood questions and at the same time if it was going to generate the kind of information expected.

b) Submitting the questionnaires to my supervisor for his comments which resulted in changes being made.

c) Triangulating both the research instruments and source of data. In other words, the quantitative data captured from teachers' questionnaires were complemented by qualitative information obtained from the principals' interviews and personal conversation with the teaching personnel in general. The study therefore required more than one method of collecting data, questionnaires and interviews.

1.12 Conclusion

This chapter has sought to highlight the emergence of those forces underlying unequal development within South African education. It has also attempted to indicate the study area and the motive behind the choice of the area. It has also outlined the motivation for the study, critical questions, limitations and validity of the study. Attention was also given on the historical background and educational reforms that have taken place in South Africa since the post apartheid election. Finally, included was, a brief description of the researched schools in terms of geographical position, teachers and enrolment and also the infrastructure. The next chapter will focus on the research methodology employed in this study.

CHAPTER 2

2. RESEARCH DESIGN AND METHODOLOGY FOR THE STUDY

2.1 Introduction

This chapter tries to outline the research methodology for this project and clarify some concepts in relation to the study.

This will help the reader to get a clearer understanding as to why I have chosen this approach rather than many other approaches that are found in research. This depends on the situation each researcher is faced with, for instance, I am concerned with the availability of resources and their utilization to effect a good understanding for the learners. I therefore found myself bound to choose the qualitative-naturalistic case study of approach that would enquire on the availability and the utilisation of resources. Generalizability will emanate from these findings.

Vithal an Valero (1999:6) assert that the terms "research", "method" and "methodology" may be interpreted in different ways... The systematism refers to the coherence, organization and reflection that characterizes the way of tackling the issue to be investigated, and the discipline also suggests that the process is open to be examined and verified. These issues of systematism and discipline we achieved through research methods which group together the definition of the research problem or section of a research object, the general epistemological approach from which the object is viewed and which determines its nature and the nature of the very same act of studying it and the methodology which states the stages followed to gain knowledge about the issue. This includes activities like formulating theoretical tools to approach a research question, designing a strategy to obtain information about it, selecting specific techniques and instruments analyzing the information, interpreting it, and drawing conclusions and findings in respect to the issue that was the center of the whole process. And finally, the whole method guarantees the quality of both the process and its results. This is aimed at giving the reader an understanding into the conditions to be considered when selecting an appropriate research design. The contrasting features of qualitative and quantitative studies are also explained to enable the reader to gain a

better understanding of the research method used. A further account of case study research is presented. The reader's attention is also drawn to the dual data collection methods used in this study, viz, interviews for the principals and questionnaires for geography teachers.

2.2 Selection of Schools and Gaining Access

In the uBombo district, geography teachers usually used "team teaching". Teachers then used to organize classes and treat different aspects of the syllabus during the Saturdays. I then requested them to participate in my research and finally wrote a letter to their principals requesting them also to participate in my research and this was agreed upon, time and date was also fixed.

2.3 Qualitative versus Quantitative Studies

According to Patton, qualitative research attempts to "understand situations in their uniqueness as part of a particular context and interactions there. This understanding is an end in itself, so that it is not attempting to predict what may happen in the future necessarily, but to understand the nature of that setting – what it means for participants to be in that setting, what their lives are like, what's going on for them, what their meanings are, what the world looks like in that particular setting – and in the analysis to be able to communicate that faithfully to others who are interested in that setting. The analysis strives for depth of understanding.... (Patton in Merriam, 1988:16-17). In describing quantitative research, Skinner (1991:215) states: "relative to qualitative research, the design of quantitative research can be more difficult in the sense that it requires more explicit prior to specification of what data are to be collected, in terms of variable definitions and so forth." A further difference may be based on the fact that quantitative studies are based on a positivist philosophy which assumes the existence of a single, objective reality which is constant and independent of human beliefs and feelings. Research is directed towards measuring the fixed reality. Yet, qualitative approaches are from the subjective method which view social phenomena as human creations. It is concerned with understanding a social phenomenon by recording and analyzing the views of persons involved in the study. In the context of this study I was concerned with the availability of resources and the impact it has on teaching and learning. As it has been mentioned already that the aim of qualitative naturalistic case study is to focus on natural settings

(Sherman and Webb, 1988:5). Hammersely (1992:186) asserts that "the choice of the case study involves buying greater detail and likely accuracy of information about particular cases at the cost of being less able to make effective generalizations to a larger population of cases." In this case, I was therefore concerned with investigating and reporting on real life classroom settings without creating artificial conditions for the purpose of this research. I chose the schools from the ex-DEC KwaZulu as a homeland. As the researcher I was familiar with such schools and believed that this would facilitate the work of data collection. The schools have a learner population composed of Africans, since the study is concerned with the impact of educational resources in African schools

Regarding Quantitative research, Skinner (1991:215) asserts that "relative to qualitative research, the design of quantitative research can be more difficult in the sense that it requires more explicit, prior specification of what data is to be collected, in terms of variable definitions and so forth." On a superficial level the difference between qualitative and quantitative studies concerns the design, data processing procedures, and the presentation of findings. The deep seated differences in philosophical assumptions between the two approaches are explained below.

Quantitative studies are based on a positivist philosophy which assumes the existence of a single, objective reality which is constant and independent of human beliefs and feelings. Research is directed towards observing or measuring this fixed reality. Hammersley (1993) points out that quantitative research is based on artificial situations such as laboratories or construct artificial situations to examine human behaviour whilst qualitative research works in real life settings. Quantitative research concentrates on social behaviours on the other hand, qualitative researcher examines the meanings that social actors give to their activities. Quantitative researcher believes that there is one correct method for understanding both the natural and social world and is constructed in such a way that different methods are appropriate for each. Quantitative research develops nomothetic statements about the world, yet qualitative research acknowledges the uniqueness of social events and occurrences. (Scott and Usher, 1991:91)

Qualitative researchers favour the anti-positivist or subjective approach which views social phenomena as human creations. This type of research is concerned primarily with understanding a social phenomena by recording and analyzing the views of persons involved in the study.

Quantitative studies subscribe to the positive view that the social world is an objective reality which is external to the researcher. Research is directed at analyzing cause and effect relations between selected variables. It is closely associated with statistical methods of data analysis. Researchers using qualitative methods become "immersed" in the phenomena studied and seek more active involvement with their respondents whilst quantitative researchers on the other hand, remain distanced from the phenomenon being studied.

Finally, to a qualitative researcher the context of study is very important. The perceptions of respondents are coloured by the context in which they are found. Allan (1991:178) asserts that the participants' "own frame of reference needs detailed investigation before their actions can be adequately interpreted and explained." Qualitative research therefore builds "context-bound" generalizations whereas quantitative research establishes "universal context-free" generalizations (Millan and Schumaker, 1993:15)

The above highlights will enable the reader to understand the case study design which is explained in detail in the following sections of this chapter.

2.4 The Case Study Method

Yin (1984:23) defines a case study as "an empirical enquiry that investigates a contemporary phenomenon within its real life context when the boundaries between phenomenon and context are not clearly evident, and in which multiple sources of evidence are used. "The reason why I have chosen this definition is because of its emphasis on "investigating contemporary phenomena in their real life context." Since the focus of my research is the impact of educational resources on the teaching and learning of geography in the six selected schools. The units of analyses were the teaching strategies and resources used by individual teachers in their respective schools. Another reason for me to use the case study method, was the flexibility of the approach. For instance, in the beginning of research I was intending to observe teachers using different resources in different contexts But due to the fact, that schools had none I changed to interview the principals of the selected schools on the issue of resources. But Yin (1984:54) cautions us when he states that: "the flexibility of case study design is in selecting cases different from those initially

identified... but not in changing the purpose or objectives of the study to suit the case that was found."

2.5 QUALITATIVE NATURALISTIC CASE STUDY

The aim of the qualitative naturalistic case study is to focus on natural settings (Sherman and Webb, 1988:5). Hammersely (1992:186) puts it in the following way: "the choice of the case study involves buying greater detail and likely accuracy of information about particular cases at the cost of being less able to make effective generalizations to a larger population of cases." In this case, I was therefore concerned with investigating and reporting on real life classroom settings without creating artificial conditions for the purpose of this research. The schools selected were former DEC Kwa Zulu. As the researcher, I was familiar with such schools and believed that this would facilitate the work of data collection. The schools have a learner population composed of Africans, since the study was concerned with the impact of educational resources in African schools.

2.6 DATA COLLECTION INSTRUMENTS FOR THE STUDY

A case study researcher is not bound by a rigid structure and any pre-determined data collection method. Although various methods are commonly used, a researcher is free to make intelligent decisions about the relevance of certain methods to specific situations.

The choice of different and appropriate methods of collecting data and the advantages of using multiple methods are highlighted by Clark and Causer (1991:172).

> "In a case... where multiple research methods are chosen, it is important to make preliminary decisions about the relative importance of the different methods, which ones are primary, which are secondary, and so forth. The crucial point is to choose methods according to how far they enable you to achieve your research objectives and to implement your particular research design. If it is practicable within your resource constraints the use of a number of different methods does

have distinct advantages."

I employed two methods of data collection, namely, questionnaires and interviews. However, the main emphasis of this study was placed on questionnaires from grade 12 geography teachers. As it has been said earlier the questionnaires contained mainly close – ended questions with a few open – ended, questions in the six selected schools offering geography at grade 12 level. The questionnaire required teachers to indicate with a cross (x) in some items, and with "yes" or "no", "bad" or "good" in others. There were also few rating questions with their responses ranging from "agree", "strongly agree", "uncertain or undecided", "disagree" and "strongly disagree". The teachers were then given the opportunity to take questionnaires with them and be returned or collected after four days having answered all the questions. In the study, the research instruments have their strengths and weaknesses. The value of the teachers questionnaires in the study is that it provided a quantified picture of the resources available in the classrooms of the six researched schools. This enabled me to measure the frequency counts of specific resources available to geography teachers. But some questionnaires had their drawbacks. Despite the fact that I explained each questionnaire to teachers, not undermining their intelligence of course, but to my surprise, some educators left some questions unresponded to. Consequently, non-responses to such questions are likely to have an influence on the research findings.

The interviews were meant for the school principals of each of the six schools choosen. Here I opted for the non-directive interviews for the simple reason that some principals were not willing to participate. This may be attributed to the fear of being assessed since there is that uncertainty among teachers owing to "excess and surplus" government terms that are used to re-deploy teachers. I eventually convinced them that the information was needed for research purposes only and that all responses will be treated and kept confidential. I then requested them to provide me with their school establishment in terms of human and physical resources. This enabled me to give a brief description of each school selected.

But before going further with this discussion I felt it proper to explain as to how I tried to answer my critical questions. Therefore the following section tries to explain how I tried to answer my critical questions.

2.6.1. CRITICAL QUESTION 1

What resources are available to teachers of geography?

I looked at this question from the prevailing conditions in most rural schools. In the impact component, I considered the infrastructure which has a great bearing on teaching and learning, more especially if the weather conditions are not favourable. On rainy days, for instance, it calls for grouping together of two streams (ie those doing commercial subject remaining in the class and those taking geography attending under a tree) – hence no effective teaching and learning takes place. If such conditions prevail for the whole week, this would mean no effective teaching for the whole week. This would again have a negative impact on the overall performance of the learners. This was achieved through personal conversation with educators sharing the class in former ex-DEC schools, Kwa Zulu Government.

2.6.2 CRITICAL QUESTION 2

What resources are used by teachers of geography in the uBombo district?

I designed a questionnaire for grade 12 teachers to answer the questions about the type of media they employ most often when teaching. The questions were mainly close-ended and respondents were to indicate with a cross (x) on a four point scale, ranging from "often", "sometimes", "seldom" to "not at all" in an appropriate box next to their choice of answer to questions (appendix B).

2.6.3 CRITICAL QUESTION 3

How are these resources used to promote resource-based learning in the teaching of geography?

With regard to this question, I designed a questionnaire (appendix B) on a list of resources that could be utilized in the classroom on a three point scale ranging from "used often", "used sometimes", to "not used at all".

2.7 DATA ANALYSIS

With regard to data analysis, I analyzed and interpreted the information gathered from the six schools using questionnaires that captured data.

The questionnaire was analysed using the Statistical Package for Social Sciences (SPSS) that is available at the center for Education Research, Evaluation and Policy (CEREP) at the University of Durban – Westville. I entered the questionnaire data for each teacher on to a spreadsheet using the SPSS program and did frequency counts on teachers' responses.

Finally, I did a thorough analysis of categorical data using descriptive statistics and analysis of themes in the narrative data.

2.8 CONCLUSION

In this chapter, I outlined the two research instruments used for data collection and the methods that were involved. I have also highlighted briefly on both quantitative and qualitative approaches used for the analysis of data collected. In the next chapter, I would be considering the conceptual framework and literature review in relation to the teaching and learning of geography. In addition to this, the impact component will be highlighted either explicitly or implicitly.

CHAPTER 3

3. THE CONCEPTUAL FRAMEWORK : LITERATURE SURVEY

3.1 INTRODUCTION

The conceptual framework of this study is built from the resources to create a conducive environment for effective teaching and learning, and finally the acquisition of basic skills necessary to cope with the world of technology in the 21st Century. Effective learning does not come about accidentally. It is the result of an effective teaching and learning situation created by the educator. It is important that resources should be considered as a "valuable partner for teachers and learners" and not as a replacement for the classroom teacher (Meyers and Jones, 1993:142). All pupils have a "natural attraction to visual cues and pictorial forms of learning" (Meyers and Jones, 1993:144). Bransford (1979) in Meyers and Jones (1993:144) goes further to say that "pictures are better remembered than words, and words that can be imagined are easier to retain than less imaginable words. Imagery, therefore, seems to have powerful effects in learning and retention tasks." Teachers could make lessons more effective by including more visual learning from resources such as media, pictures, transparencies and biological specimens. I must point out here that the use of visual and aural stimuli does not in itself guarantee learning. But this is crucial for teachers to use resources to engage their learners – hence creating a conducive atmosphere for teaching and learning geography. In short, here, I am suggesting teaching and learning with a special emphasis on understanding. This demands a variety of teaching strategies that will employ a combination of various methods and styles to expose the content to the learner. But before going further to explore the concept resource, I felt it proper to elucidate on the terms teaching strategy, learning and teaching. Strategy can be seen as the overall teaching approach or a plan of action for teaching activities that the teacher wishes to apply in presenting a specific lesson (Trumpelmann, 1997:58). Learning can be defined as a process or action by a person. This process or action can lead to an enduring change and this change may last for a period of time or may even be permanent (Van der Merwe, 1997:76). Teaching style in its broadest meaning, has something to do with the ways in which geography is taught, then it has a great

significance for geographical education because the way the subject is taught affects the way it is learned and this will affect the total educational context of the student (Naish, 1995:11). One may wonder as to why am I explaining all of this, I am explaining them to put the reader in a context which focuses on teaching and learning with resources as the main or major point of departure.

3.2 RESOURCES

Tucker (1987:13) defines a resource as "an object of study or stimulus for the pupil..." A wide variety of items may be described as resources, for example, books, chalkboards, worksheets, pictures, maps, transparencies, slides, models, specimens and films. Nel (1990:76) asserts that resources are often used extensively in educational circles in South Africa, and is somewhat vague and problematic. In most instances, especially within the context of this study, teaching and learning relates to material resources which at classroom level can be interpreted to mean teaching and learning aids. These resources, that assist the teacher and support the learner in the learning process, are often referred to by educators under a wide variety of often confusing terms:

The following have been identified.....

- learning resource
- media
- instructional media
- material
- teaching material
- learning material
- resource material
- curriculum material
- instructional material
- audio – visual aids
- teaching aids.

(Refer to appendix C for the definition of these concepts)

According to Nel (1990:77)all these terms tend to confuse more than enlighten. Added to this is

the fact that concept resource is often associated with the following concepts...

- Resource based learning
- Resource based teaching
- Resource centers

These, too, are variously defined and mean different things to different people. Having considered all these definitions, it is very difficult to come up with an operational one. But in this study, the following would be regarded as an "operational definition" that will guide the reader rather than confusing him or her.

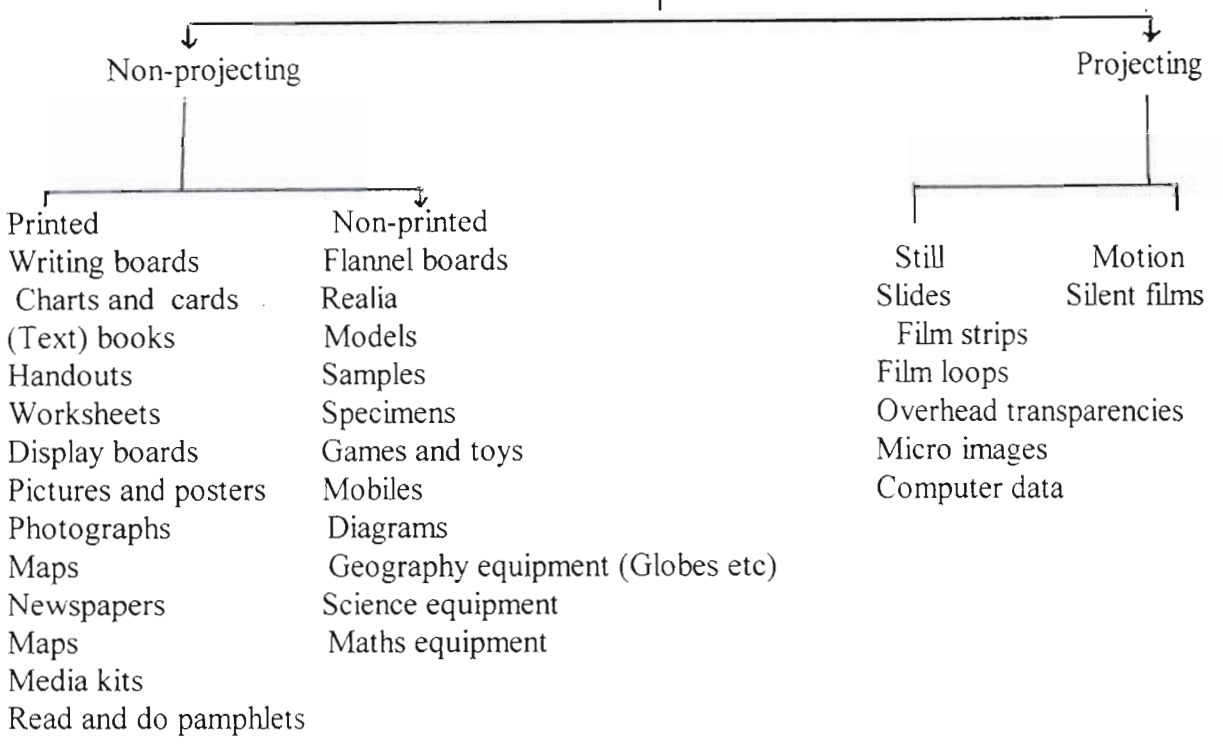
A resource includes anything which may be an object of study or stimulus for the learner, including books, periodicals, newspapers, press cuttings, pictures, diagrams, maps, charts, photocopies and microforms, worksheets, slides, filmstrips, film loops, films, records, audiotapes, radio and television programmes, videotapes, slide tape, and film strip record combinations, multi media kits, programmed materials, models, specimens and realia, as well as individuals and objects in the community. Some people would also include zoological and botanical living items. Many of these will also be accompanying aids for teachers in classrooms (Tucker, 1987:13).

A resource can be taken to be anything that is used either by the teacher or learner in an attempt to improve learning. Resources, therefore, contribute to the teaching learning process by enabling educators to manage instruction more effectively and helping to enhance learning by pupils. This demands that teachers need to incorporate a variety of resources into their programmes to ensure that the classroom is a lively environment which encourages active participation.

According to Nel (1990:78) various attempts have been made to classify resources that can be utilized to facilitate teaching and learning. In the context of this study, resources can be classified as visual, auditive, audio-visual, support and environment. For instance, in my school, geography teachers do use the Game reserve in their teaching and learning. The following classification and examples are offered as a key to understanding the wide range of resources available.

3.2.1 Visual

(carriers of information and imagery by visual means)



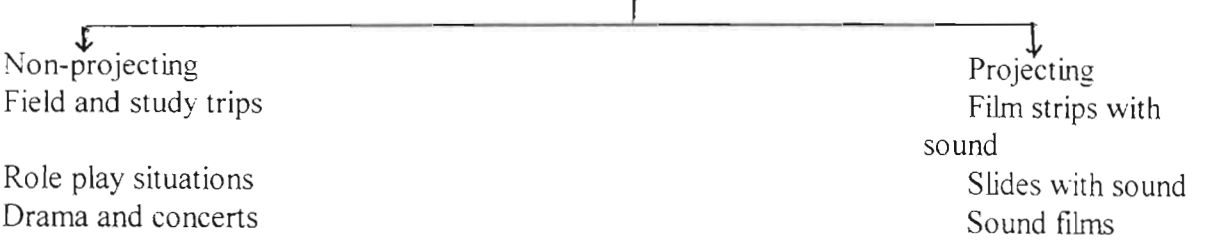
3.2.2 Auditive

(Carries of information and imagery by auditive means)

Records and compact discs
Audiotapes or cassettes
Radio programmes
Musical instruments
Telephonic information

3.2.3 Audio-visual

(Carriers of information and imagery by combination of auditory and visual means)



Puppet shows
Demonstrations

Video cassettes/
television
Video discs
Printed materials
with recorded
sound

3.2.4 Support

(Utilized mainly by the teacher before and during classroom activities)

3.2.4.1 Information resources

Reference books dictionaries
(Teacher) guide and notes
Pamphlets and periodicals
Newspapers and magazines

3.2.4.2 Technology for projection / amplification

Slide projector (with sound)
Film projector
Overhead projector
Micro projector
Episcope/Epidiascope/opaque projector
Computers
Micro image machines
Record player
Compact disc player
Tape recorder
Radio
Language laboratory
Television
Video cassette recorder
Video monitor
Movie box

3.2.4.3. Technology for production

3.2.4.3.1of visual materials

Projecting

Non-projecting

Camera

Slide making kits
Light table

Drawing and writing materials
Construction materials
Type writer
Duplicators
Transparency maker

3.2.4.3.2 of audio materials

Tape recorder / audio –tapes
Reel to reel recorder
Audio-copies

3.2.4.3.3of audio-visual materials

Video camera (cam corder)
Video cassette recorder / video cassettes
Studio lights
Editing studio

3.2.5. Environment

(Usually brought in by the teacher or referred to by the teacher)

Freely available items (sand, pine cones, etc.)

Odds and ends (bottle tops, empty tins, etc.)

Individuals

School grounds/outside surroundings (landforms, soil, sand, rocks, plants and insects)

Public libraries

Museums

Industries/organizations

For instance, the local game reserve, ie Mkuze Game reserve hosts a myriad of data on weather information dating back from 1961 to date. This can help geography teachers to use this information to enhance their lessons. But to my surprise, some teachers in the vicinity had no idea of such information. Pomeroy (1994:53) suggests a number of useful strategies for teaching science. Geography is the case in point in this context. He highlights the localization of the context of science curriculum which Jegede (1995:115) interprets as the linkage of the environment with what learners already know. The point the authors wish to arrive at, is that

learning is influenced positively by relating teaching to the everyday life situations. For instance, the question arises, "will it rain this afternoon?" The learners are expected to collect the information pertaining to the problem which will lead to the solution thereof. Therefore, learners would look to see whether there are clouds in the sky and from which direction the wind is blowing and check the temperature, and so forth.
These examples given are by no means all the resources being utilized. There are countless others. This is just an attempt to put the reader into context of what this study is all about.

3.3 PEDAGOGY

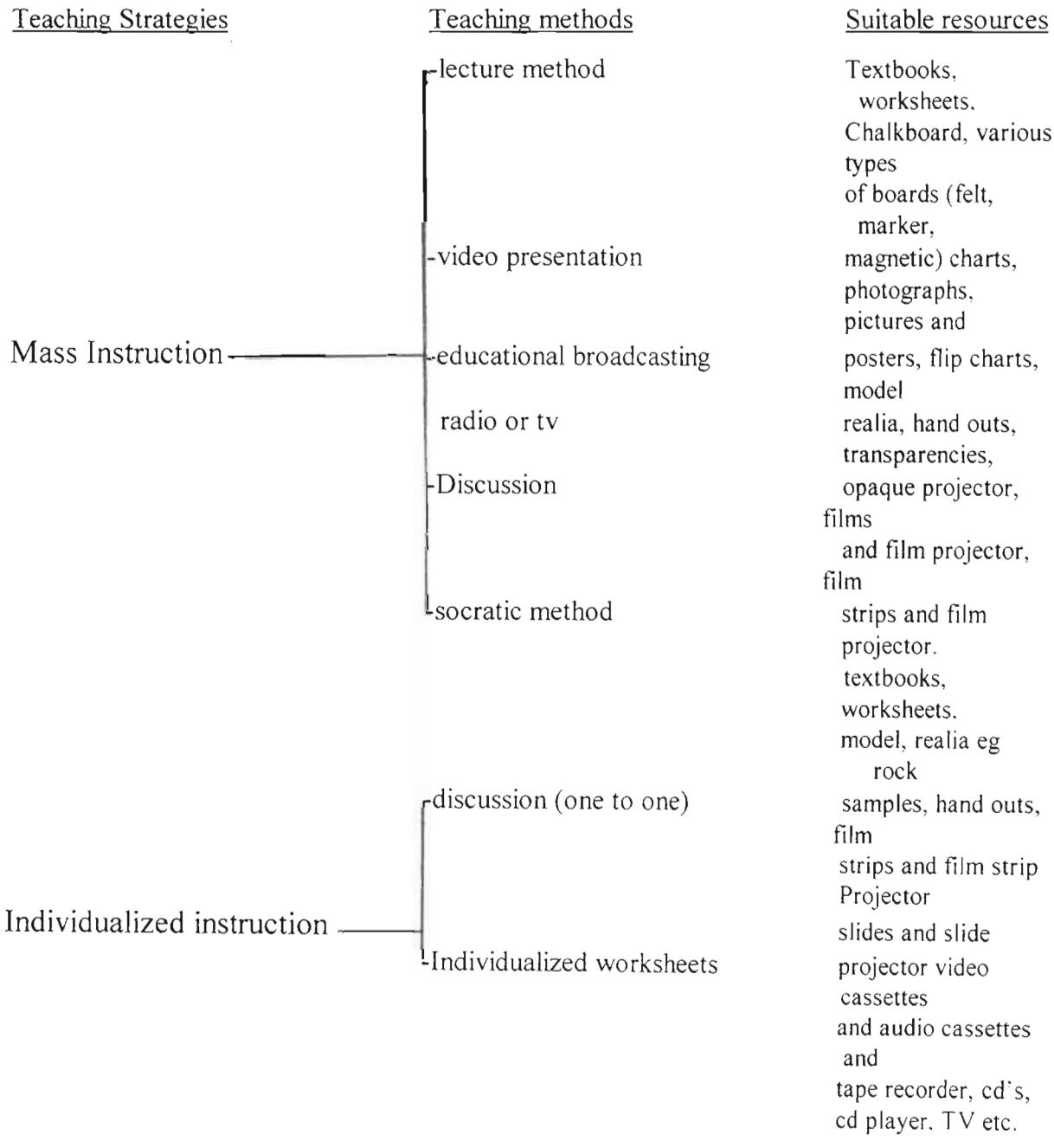
Pedagogy plays a vital role in any teaching and learning situation. The method employed by teachers has a significant influence on pupils' learning. There is no one "best method" of teaching nor is there any one method that will suit every occasion. The study of this research will also focus on methodology since the method adopted by a teacher may promote or hinder learning.

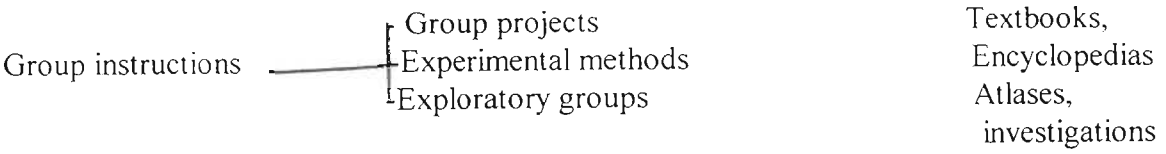
In addition to the methodology adopted, the teacher should also be able to integrate his resources appropriately. This need to be varied to accommodate all learners. ie intelligent, average and slow learners. This implies some degree of planned differentiation in the treatment of students in the same class. It demands that teachers fulfill a different role from that of the conventional teacher who prides himself on what he can teach. Resources encourage the educator to take pride in how well he can get his children to learn. This is not achieved by dispensing knowledge but by stimulating, enthusing and guiding learners.

The idea of children as empty vessels wanting to be filled with knowledge by the teacher is no longer acceptable. In this study, teaching cannot be construed as putting information into students' heads. Rather it must be construed as arranging for students to construct knowledge for themselves (Resnick and Collins, 1996:48).

Teaching methods are special procedures through which the teacher imparts knowledge to the pupils (Mahaye, 1996:208). According to Mahaye (1996) teaching methods may be divided

into two broad categories, namely, participative and expository methods. In this study, therefore, the main aim would be to provide opportunities for the introduction of important skills such as learning from observation and systematic classification, and neat presentation in drawing and written work. For the purpose of this study, I have classified these strategies as mass instruction, individualized instruction and group instruction as depicted in the following sketch: Furthermore, the suitable resources are also indicated to suggest to the reader the resources that can be utilized with the strategy effectively.





I further characterized teaching methods which emphasize active learner participation as "active" and others as "passive". Since resources constitute an integral part of teaching and learning I incorporated various resources, either explicitly or implicitly in the discussion of the teaching and learning geography in secondary schools

Zabel and Zabel (1996:129) assert that for instructional time to be effective, students need to be actively paying attention and participating. It is not simply allocated instructional time, but more important, the amount of time that students are actually engage in learning that determines learning outcomes.

3.3.1 MASS INSTRUCTION

Mass instruction is also known as whole class instruction. This strategy involves imparting subject matter knowledge to a class of learners either directly by the teacher by means of, for example, a lecture or indirectly by means of educational broadcasts (TV or radio) or films. The educator assumes a dominant role in the teaching – learning situation, serving as both the source of information and the controller of the teaching –learning process. Pupils, on the other hand, are restricted to a largely passive role. Little or no attempt is made to cater for individual pupil differences, all pupils being forced to work at a common rate which is determined by the teacher (Ellington and Race, 1993:15). The role of instructional materials in mass instruction is generally supportive since the teacher serves as the main vehicle of instruction. A number of teaching methods are used and the most common ones are the lecture – cum – demonstration method, video presentation, educational broadcasting, discussion and the Socratic method.

3.3.1.1 LECTURE – CUM – DEMONSTRATIONS

Demonstrations serve as a useful purpose in teaching and learning. This method is used in schools when the primary educational objective is to transfer knowledge or information about a topic. The student's keen observation during demonstration enables them in comprehension. A demonstration is not limited to material objects. It involves observation of a skill, a process, functioning of a system or a working model. Vedanayagam (1994:57-58) asserts that observation is enhanced by the explanation provided. A teacher can combine demonstrations with his lectures, so that the students, through observation of the demonstrations and explanations given first, comprehend the lecture more effectively. This may be summed up by Farrant (1980:134) who asserts that "I hear and I forget, I see and I remember, I do and I understand." This method, then, can encourage the learners to be active participants rather than passive recipients of knowledge. Zabel and Zabel (1996:130) support this view when they say "students learn most efficiently when they are engaged in activities that are appropriate to their developmental and achievement levels, the subject matter and the teacher's instructional and management skills. Students tend to be more engaged and achieve more when they are actively instructed or supervised by their teachers than when they are working independently. For example, a teacher who is presenting the concept of cities, states and nations, may refer to specific recognizable examples, ie students' own city state, nation and then have students identify other examples.

3.3.1.2 VIDEO PRESENTATION

Video presentations can be used in schools. It is an unfortunate situation that most of the African schools do not have electricity and as such cannot use this equipment. The most important advantage of video programmes, according to Ellington and Race (1993:67) is that 'they can provide an impression of life outside the classroom which could otherwise be inconvenient or perhaps impossible to achieve. This means that learners gain "first hand" knowledge of an event, for instance, volcanic eruptions can be shown on videos to trigger the concentration of pupils. Basic to the effective use of video presentation as a teaching method

is the necessity of a preview of programmes in order to access their relevance to the subject and pupils taught. This exercise gives the teacher the pre-requisite knowledge necessary to introduce programmes and also prepare learners for viewing. A loophole for video programmes is their misuse "for convenience rather than for sound educational reason" (Ellington and Race, 1993:67-68). A video presentation is a useful teaching method which can produce active learning if worksheets are utilized by the teachers. This study is concerned with the effective use of resources to produce good outcomes. This, then, demands, therefore, that the instruction must be effective. According to Greemers (1996), the term "effective instruction" may refer to those factors and variables in instruction that contribute to the attainment of educational results. In the context of this research, effective instruction would be the means (TV in this case) by which the educator presents the learning materials which will lead to understanding of the learners. In this process, the educator is expected to present the material for the class in a sequential order. The method that a teacher can use here is the telling method. This method is used in schools when the primary objective is to transfer knowledge or information about a topic. It is commonly used to explain a problem, describe a process or introduce a topic to a group of pupils.

The use of this media can increase pupils' motivation by introducing visually attractive, interesting and challenging material. Van der Merwe and Rooyen (1996:239) put this clearly when they state that "Resources together with the concreteness of the experience stimulate the pupil's senses, focus their attention and arouse their curiosity and interest. " This helps to overcome the limitations of word only communication, as it helps to present a meaningful interpretation of an abstract situation or phenomenon. It supplements description and assists in explaining words and illustrating relationships, thereby giving a more accurate impressions of the subject.

3.3.1.3 EDUCATIONAL BROADCASTING (RADIO)

Radio can be used when introducing a new topic, e.g. weather forecasts or telecommunications. If broadcasts are not at a time which is convenient for the teacher, they can be recorded on audiotape and played back when needed. But in rural areas, teachers are

experiencing problems of not having such equipment. This again is hindering the progress of rural areas because these programs present very valuable information. It can be a very useful source of information for news geography.

Television and radio programmes can be used to teach individual learners and also large numbers of learners simultaneously. This method of teaching can therefore be classified as belonging to both individualized instruction and mass instruction. Educational broadcasts, like video presentations, can be used in conjuction with other methods to add variety to classroom teaching practices. Radio and television programmes can be used as a supplement to other methods of instruction such as lectures and debates (Ellington, Race and Percival, 1993:69). In the context of this study, these resources have major disadvantages in that their timing is fixed, thus making their incorporation into the class time table difficult or impossible. Futhermore, teachers are not afforded the opportunity to view programmes before-hand. However, these problems may be overcome by recording programmes and using video presentations when appropriate. Another problem is that the SABC is putting emphasis on Mathematics, Physical Science and English. Other subjects like History, Geography, Biology etc are neglected! This again has a negative impact on these subjects because learners themselves tend to concentrate only to those subjects that are given first priority. It seems reasonable to recommend or suggest, therefore, that the SABC should not ignore other subjects. Donald Vandeburg (1971) sums this aptly when he states that "to ignore geography is to court a disorganized and chaotic conscious life." These programmes can be classified as both active and passive. For instance, during phone – in programmes, learners participate actively. Unfortunately, this cannot accommodate all learners since not all learners have telephones. It can also be passive when the learners are only listening to the program.

3.3.2 INDIVIDUALIZED INSTRUCTION

The characteristic feature of this strategy is the learner-centred nature of this approach in which pupils work at their own rates. The instructional methods utilized are designed to cope with the needs of individual pupils, their learning styles and pace of learning. The traditional role of the teacher as the presenter of information and controller of the learning process is

decreased. In the context of this study, teachers assume the role of provider of learning resources and a guide to the learners. Learners, on the other hand, have to accept greater responsibility for their own learning. The instructional materials constitute the vehicle of instruction. The individualization involves formulating precise objectives, assigning appropriate learning tasks, developing specific learning materials and deciding on expected levels of performance for each pupil in a class. Classroom instruction is sometimes erroneously considered as being individualized when pupils work individually but complete a common task set for the whole class. It is therefore possible for pupils to work individually but not function in an individualized mode.

All methods of individualized instruction may be described as "active". A few of the teaching methods utilized by teachers are presented below.

3.3.2.1 The Project Method

Project work can be loosely defined as consisting of a substantial piece of work on an original problem, undertaken with minimal supervision (Gold et al, 1991). The advantages of project work had been outlined in Adderly et al (1975), Silk and Bowlby (1981), Gold et al (1991) and in Jacobs et al (1996). Some of these advantages include: training students to understand, define and solve problems and to think critically. It also encourages students to be practical, creative and communicative. For this study, this will help the learners to be relevant to real problems and to their needs in life. Project work allows students to learn through concrete experience and active experimentation rather than solely through reflective observation or abstract conceptualization. Good(1973) in Vedanayagam (1994:66) asserts that a project has been defined as "a significant, practical unit of activity having educational value and aimed at one or more definite goals of understanding, involves investigation and solution of problems and frequently the use and manipulation of physical materials, planned and carried to completion by pupils and teachers in a natural real life manner".

3.3.2.2 INDIVIDUALIZED WORKSHEETS

The use of individualized worksheets can be very effective in catering for individual pupil differences, but the disadvantage is that it requires much time and effort on the part of teachers. Especially rural teachers who are faced with large size classes. A worksheet may be described as "a sheet carrying instructions, information, etc relating to part of the work of an exercise, such sheets often incorporate spaces where information, answers, results, etc have to be filled in" (Ellington, Percival and Race, 1993:251). Worksheets, like handouts, can be used in a wide range of teaching methods. They constitute an important element in directing pupils' classroom activities. Basically, there are two types of worksheets, viz, structured and open-ended. The former type structures the learning process in a systematic way. Pupil responses are pre-determined by the teachers. The latter type is more pupil controlled and flexible, and allows for divergent thinking. Individualized worksheets are worksheets which are adapted to individual needs. Highly structured worksheets are more appropriate for the academically less-able pupils. Open-ended worksheets are suitable for academically talented pupils.

This has a limitation in the context of this study in that these worksheets are not available. Even photocopy machines are not available in most of the schools selected. Yet, the department of education regards adequate supply of learning support materials as essential to the effective running of an education system and asserts that these materials should form "an integral part of curriculum development and as means of promoting both good teaching and learning (Department of education, 1998:1). Although the Department of Education calls for the use of learning support material, schools are not receiving the materials needed. (Taylor and Vinjevold, 1999).

3.3.2.3 DISCUSSION (ONE TO ONE)

A discussion is a discourse among members of a class with a definite purpose in mind. The main aim of a class discussion is to seek a solution to a problem by considering various points of view. Duminy and Söhnge (1989:64) point out that in a discussion one must be willing to

listen to and take seriously the ideas of others. They argue further that one must be willing to share ones' ideas with others, and also be willing to expose those ideas to criticism and even rejection. A discussion can only be productive if the pupils are familiar with and interested in the topic. A discussion is only possible if there is a good relationship in the classroom between learners and the teacher and between pupils themselves. The main advantage of discussion method is that pupils becomes fully involved and therefore, they remember what they have discussed. There are certain conditions under which discussion can be conducted properly (Duminy and Söhnge, 1989:65) . There should first of all be an atmosphere of mutual trust and understanding among the participants in a classroom which form the basic on which healthy discussion can be built. A discussion is useful since it promotes understanding, independent thinking and an assimilation and retention of material. Clark and Starr (1991:239) succinctly state that "the most important contribution is, the opportunity they give students to practise thinking, to look at their own ideas, to formulate and to apply principles and to face up to immediate feedback from their peers".

In the context of this research, this is a good strategy which teachers can use, but the limitations of this strategy would be the fact that rural teachers are confronted with large classes. Like for instance, the case of Lifalethu secondary where there are only twelve teachers dealing with 586 learners. Obviously, the ratio is 1:50, yet the very teachers are also expected to do administrative work. This would, then affect teaching and learning adversely. A similar case in my school is where I am teaching, there are 640 learners with 15 teaching staff, administrative included. The issue of redress is not yet up to standard. Maybe Jansen (1998:8) can be quoted right here when he says :Curriculum change does not happen overnight and at the rate we are going in South Africa the real danger is that we will be weighed down with the burden of reformed Christian National Education for a long time ... The bureaucrats are quite happy to pass off subject revision as curriculum change because it does not even begin to rock their boat. In fact they are enthused by it all as they now have an opportunity to gain legitimacy in schools as being part of the new which is really old." With the dawn of democracy, African teachers are still carrying the burden of teaching large classes and yet the results are expected to be comparable to those of small classes. This has a negative impact on the teaching and learning generally, and more seriously on the individual

learners who need assistance of educators.

3.3.3 GROUP INSTRUCTION

The term group instruction as applied to classroom practice refers to the use of pupil groupings for pedagogical purposes. The characteristic feature of this teaching strategy is that pupils not only sit in groups but also work as groups. This leads to interactions and interdependence among pupils and provides opportunities for co-operation. As in the case of individualized instruction, instructional materials serve as the vehicle of instruction.

Group instruction has many educational advantages. This strategy promotes active learning by allowing pupils to engage in activities like talking, listening, reading and writing. Since the teacher is removed from the "teaching spotlight" pupils assume greater responsibility for their learning (Meyers and Jones, 1993:59). Interactions among pupils provide "alternative perspectives that challenge and shape .... (their) understanding (Kutnick and Rogers, 1994:5). Pupils also gain social and interpersonal skills through interactions with others. Teachers have more time available to assist individual pupils with problems.

3.3.3.1 INFORMAL SMALL GROUPS

For the effective use of informal small groups, teachers need to divide learners into small groups of four or eight depending on the number of learners in a class. This will benefit these schools which are under- resourced, in that learners would share the little resources they have.

Furthermore, the success of this strategy depends to a large extent on the teacher's ability to "design realistic goals, guide students' behaviour, and create a positive atmosphere in which students ... share their ideas and learn from each other" (Meyers and Jones, 1993:59). However, this has a limitation in that some classes are overcrowded and space becomes a serious problem.

3.3.3.2 COOPERATIVE LEARNING GROUPS

Slavin (1995:2), a renowned expert on co-operative learning, states that "cooperative learning refers to a variety of teaching methods in which students work in small groups to help one another learn academic content. In co-operative classrooms, students are expected to help each other, to discuss and argue with each other, to assess each other's current knowledge and fill in gaps in each other's understanding."

The details of this approach had been discussed in chapter 1.

The teaching methods applicable to both informal small groups and co-operative learning groups are "active" methods. A selection of these methods is presented below.

3.3.3.2.1 Experimental Methods

The experimental method, according to Fraser, Loubser and Van Rooy (1993:160), "is about the discovery of reality by means of examples and the making of generalized statements based on the findings thereof." This method of instruction is not confined to the teaching of science subjects as is generally believed. The characteristic feature of the experimental method is the emphasis on active pupil participation and the gaining of insight through direct observation of live specimens, maps, models and real objects, and also conducting investigations.
The following is the example of the experimental method of instruction that can be used to inform the reader.

3.3.3.2.1.1 Exploratory Groups (Self Discovery)

This method is characterized as being pupil centered and demanding the active participation of pupils in the teaching – learning situation. The principal element of the discovery method is the direct involvement of pupils in seeking out in information themselves, evaluating information, discussing, and drawing conclusions and generalizations. This means that

teachers have to make a variety of appropriate materials, for example, books, atlases and documents available and ensure that learners have easy access to them. (Rogers, 1990:3). This must be well planned and effectively managed so that pupils are not confused or frustrated. Petty (1993:222-224) identifies the following considerations as important when using the self-discovery method:

- Pupils ought to have certain essential background knowledge and skills to pursue the necessary activities.
- Pupils must have a clear understanding of the objectives of the discovery activity and the role they are expected to play.
- The majority of the pupils must have the ability to cope with the activities envisaged
- Pupils' work must be continually monitored to provide guidance, to ensure that essential data is collected and that time is not wasted on frivolous activities.
- The topic chosen, even though familiar to some pupils, must not be of such a nature that pupils know the answer before investigation.
- Sufficient time must be allowed for the pupils to complete the activity
- A summary of the main points of the activity must be drawn up at the end of the lesson. This summary forms the basis of a class discussion.

The role of the teacher in discovery learning is to encourage and guide pupils as they collect information. Teachers may also assist pupils to "clarify their problems, map out their procedures, order their thinking, come to logical conclusions, and, finally, test and apply their conclusions." (Callahan and Clark, 1988:239). It is essential that teachers maintain a supportive classroom climate, encourage pupils to find their own answers and provide prompt and accurate feedback.

The discovery method promotes active learning. Pupils gain a deep understanding of the subject matter since knowledge is gained through personal experience. This method also helps to develop high-order thinking by "developing cognitive skills such as the ability to reflect critically, to evaluate, analyse, to think creatively and to solve problems." (Petty, 1993:228). Despite the merits mentioned above, the discovery method has several limitations. It is time consuming and requires great skill to implement. Furthermore, it "is criticized for

not providing enough guidance, and seen by the critics as confusing for learners." (Petty, 1993:226).

3.4 THE GEOGRAPHY CLASSROOM

Geography classrooms should be conducive to teaching and learning. In other words, geography classrooms should be stimulating and invite learning. This can be achieved by displaying various learning materials in the classroom. It should have work tables instead of conventional desks. These tables should have four sheets of glass inlaid in their leaves with lighting below so that the pupils can use it for tracing. Alternatively, the classroom should be equipped with tables instead of desks because a small surface of the desks make it comparatively difficult to cope with map sheets, a textbook, a notebook, and an atlas simultaneously.

Badenhorst (1991) has suggested that each classroom has a distinct climate that may be relaxed, friendly, cooperative, indecisive tense or hostile. This climate may either stimulate or hinder effective teaching and are likely to influence the manner in which the classroom teacher manages the specific classroom situation. Researchers like Barr and Drebeen (1981) also argue that classroom environmental factors influence students' learning.

Learners should be given some opportunity to learn in order to acquire skills and knowledge. Opportunity for students to learn, therefore, calls for display or availability of the following resources in the geography classroom: atlases, globes, wall maps and bulletin or notice boards.

3.4.1 Atlases

An atlas is an invaluable resource in geography teaching and it would be ideal if every learner could have one on his / her desk. An atlas teaches pupils to work independently and can also be used very successfully as a source of reference. In the context of this research, this tool was found to be lacking in most schools interviewed. This makes it difficult for the teachers to teach effectively the section on the topographical maps, scales and bearings. In turn, it

affects the young people in that it inables them to participate in various social and life situations within the spatial relationships of which they are a part. Furthermore, the teaching and interpretation of topographical maps constitute a compulsory question in the school senior certificate geography in Kwa Zulu-Natal. This section demands that students demonstrates an ability to identify topographical features and heights, perform calculations related to scale, distance, gradient and cross section. Write of physical features, communication, population and settlement, and the relationship between these phenomena (Okpala, 1995:31). If these are lacking then, they present difficulties in the teaching and learning of geography. When teaching topographical maps pupils should start with the map of their home. The reason for recommending that pupils should start with the map of their home area is related to reliance on the principle of symbiotic ordering which is a meaningful departure for the study of maps. Pupils are offered the opportunity to become acquainted with the universally accepted map symbols in the security of their own familiar area. This allows for measure of the inductive method, ie, progress from the familiar to tangible concrete objects being rendered in abstract terms on the map. When the learners' conversion from abstract to concrete reality is facilitated. The study of maps involves constant interaction between abstracting and concretizing (Möller, 1983:133). The lack of this resource has serious repercussions on the skills development. This impacts negatively on teaching and learning.

3.4.2 The Bulletin or Notice Board

The purpose of this board is to put on display different types of visual material such as pictures, newspaper cuttings and so forth. The notice board usually consists of a wooden frame with soft board inside to enable learners' work, notices etc to be pinned onto it. This board can make the classroom colourful, attractive and interesting. This will motivate the learners to read and to realize that textbooks are not the only source of information, but there are many other sources that can be useful to them. In the schools selected most did not have these boards, only those from ex-DET schools had some but without newspaper cuttings on them. These cuttings are very useful, the reader is referred to appendix D to consider some important aspects that news geography can cover. It is, therefore, essential that geography teachers use these resources to make their teaching stimulating and interesting.

3.4.3 The Globe and Wall Maps

Map analysis and interpretation are important aspects of geography teaching in secondary schools. At senior secondary phase pupils should have the ability to determine position, calculate distance, find direction, and distinguish natural and cultural objects on a map. These media serve to reduce geographical reality to manageable dimensions. Möller (1983:149) has this to say "it is impossible to teach or learn geography without the support of cartographical aids. The globe is indispensable for illucidating much of the content taught in schools, such themes include light circle, the seasons, the concept of correct shape and surface." Wall maps are very useful for indicating certain features and help the teacher to teach more explicitly. Saunders (1985:15) puts it aptly when he states that "an introduction to map skills is an essential part of any geography course - and of a general education. Within geography, children are taught to understand, interpret and construct a wide variety of thematic and topographic maps at differing scales."

In the context of this study, these valuable resources were found to be lacking in most schools, except Biva public, where it was obtained from school funds. This impacts on teaching and learning. Over the years the authorities have not been able to maintain, let alone increase the supplies of materials to schools in the uBombo district. The unavailability of materials for practical work causes the majority of teachers to depend only on the theoretical teaching, that is, to the exclusion of practical work. I must point out here that teaching practices lacking in specific means or resources jeopardize effective teaching. Furthermore, deficiencies in the use of maps, globes, atlases and other resources in the teaching of geography, and absence of practical learning activities lead to low commitment by students. Verma and Venadanayagam (1991:57) assert that "these devices make learning of geography interesting and attractive and their absence makes the lesson dry and ineffective."

3.5 CONCLUSION

This chapter has tried to outline the concept "resources" and its use in this study, especially in the teaching and learning of geography at school. Furthermore, I have tried to explain the

inclusion of teaching methods and various resources. The geography classroom was also discussed to give the reader a better understanding of the context of this study. The following chapter will focus on data analysis and the implications of this study. Finally, the recommendations will be made in the final chapter.

CHAPTER 4

4. ANALYSIS AND INTERPRETATION OF DATA

4.1 INTRODUCTION

To have a clear understanding of the impact of educational resources on the teaching and learning of geography, data analysis and interpretation has to be undertaken. This has been undertaken by using frequency distribution tables. According to Scott and Usher (1999:71) frequency tables are simple counts of instances of a variable and these may be expressed usually as a number and as a percentage, bar charts, pie charts, histograms, frequency polygons and scatter plots. For this study, only the tables will be used for the simple reason that the population was a convenient sample. Further, analysis was approached on four levels based on the questionnaire, that is, demographic variables, educational resources, teaching methods and strategies together with the utilization of resources.

4.2 ANALYSIS AND INTERPRETATION

In this project, analysis and interpretation of data is carried out simultaneously under the headings already mentioned.

4.2.1 Demographic Variables

Analysis of the personal background of the respondents interviewed, showed that 100% of them were over 26 years of age. This suggests that, the views expressed were of the adults who had achieved a degree of maturity. The study revealed that 67% of the respondents are located in the rural areas and only 33% in urban areas. The reader is referred to table 1 below.

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Urban	2	33.3	33.3	33.3
Rural	4	66.7	66.7	100.0
Total	6	100.0	100.0	

Table 1: Residence for respondents.

This trend may be attributed to the fact that the study area is deeply rural. Furthermore, there is that resistance towards alien teachers in favour of the local born teachers. By alien teachers I mean teachers who come from other areas or part of the country. For instance, if a teacher is from Empangeni or Nelspruit, that teacher will not be accepted by most people in the area. Their assumption is that, "that teacher" holds the post which is supposed to be taken by their children, yet they are not qualified for the post! Only 33% might be there due to the government's process of rationalisation and redeployment of teachers. The table below shows the nature of appointment of the respondents.

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Permanent	3	50.0	50.0	50.0
Temporary	3	50.0	50.0	100.0
Total	6	100.0	100.0	

Table 2: Appointment of the respondents.

The data showed that 50% of the respondents were employed on a permanent basis and 50% on temporary basis. This temporary and permanence issue might be attributed to the interim arrangement by the Department of Education whilst the process of redeployment and rationalization was still on process. To put the reader in context with issues of rationalization and redeployment: the dawn of democracy meant changes of so many things, for instance, there were schools which were adequately staffed e.g. former white schools and Indian schools. This meant that these teachers had to be redistributed according to school needs. This demanded that those schools with high teacher pupil ratios be given some additional

teachers taken from those schools with low teacher pupil ratio – hence rationalization and redeployment.

Coincidentally, the study revealed that 50% of the respondents were females and 50% males. This was coincidental because the study was not based on gender, rather on the teacher, teaching geography in each of the six schools interviewed. This also dispels the myth that geography is the masculine pursuit.

When respondents were asked on their institutions of higher learning, 83% revealed that educators received their teaching qualifications from universities and only 17% from colleges of education. (Refer to table : 3 below).

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
3 yrs or more University	5	83.3	83.3	83.3
col. Of educ. specialisation	1	16.7	16.7	100.0
Total	6	100.0	100.0	

Table 3 : Qualification of respondents

4.2.2 EDUCATIONAL RESOURCES

A close analysis of educational resources revealed that the availability of teaching resources in schools was appaling. 67% of the schools selected did not have electricity. The absence of electricity makes teaching very difficult. Only 33% of the schools had computers in a good condition and 67% did not have computers. (Refer to table 4 below).

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	2	33.3	33.3	83.3
No	4	66.7	66.7	100.0
Total	6	100.0	100.0	

Table 4: Availability of computers in selected sites.

This has a negative impact in the teaching and learning of geography because computers can

provide dynamic, interactive models in the classroom which would be very difficult to provide without computer technology , for example, an interactive model of the coriolis effect, with animated diagrams and video chips, has been developed to teach this infamously difficult concept. The instructor or a student can iteractively examine the effect the rotation of the earth has on circulation patterns in different hemispheres. Worse still, 83% of the schools disclosed that they did not have the following resources : overhead projectors, transparencies, television, videos, film projectors and slide projectors.

This boils down to what Kader Asmal (Minister of Education) (1999:4) referred to as "...a major weaknesses and carries deadly baggage from our past." He went on to say "I will select the worst and most troubling features of our education and training system for special mention : the massive inequalities in access and facilities, the serious state of morale of the teaching force, failures in governance and management, and poor quality of learning in much of the system." Obviously , if teaching resources are so scarce in rural areas, this calls for a speedy process of delivery to close the gap between the information rich and information poor. This is appaling, because in technologically developed countries, resources like overhead projectors, slide projectors, film projectors are outdated, but funny enough, there are some schools who did not have such outdated resources.

It is a true fact that computer multimedia is receiving tremendous attention in both academic and popular discussions. South African schools, however, are divided into information rich and information poor. This makes it difficult for rural schools to keep abreast with the latest educational resources available. Rider(1994:251) defines multimedia as "integrated instructional systems that deliver a wide range of visual and verbal stimuli, usually through or in tandem with computer-based technologies. Visual and verbal stimuli include text, image, map, diagram, sound, video etc. The links between different visual and verbal stimuli: are, of, fundamental importance. If, therefore, this gap is not closed speedily, it means rural schools still have a long way to go to cope with the modern world. For this study it is essential that schools should have these resources because nowadays the world is technology-driven. Hancock (1997:60) can sum up this when he states "most school age children in the US interact everyday with a variety of information media – television, video games, multimedia

computer systems, audio and video tape, compact discs and print. Our youth have so much exposure to technological gadgets and information resources that one thinks the transition from school to work place would be second nature." The issue is : "What about South Africa, more specifically rural South Africa?"

4.2.3 Resources Found in Geography Classrooms

When respondents were asked on the resources found in geography classrooms, 50% of the respondents revealed that they had usable chalkboards, of which 33% showed that some did have and 17% indicated that most of the classes had usable ones. Through my observations, I noticed that some schools still lack proper chalkboards. The picture below clearly depicts that some rural schools still have no proper usable chalkboards, not to mention ceiling boards.

PLATE : CHALKBOARD FROM LIFALETHU HIGH SCHOOL

Considering the worktables that are required for geography classrooms, 83% showed that they had no worktables and 17% had some. This has a serious impact on teaching and learning because learners need to have worktables to work properly with topographical and orthophoto maps which require wide spaces. It is inconvenient to work on a conventional

student desk with these resources. Möller (1983:148) asserts that the classroom should be equipped with tables instead of desks because the small surface of desks makes it comparatively difficult to cope with map sheets, a textbook and notebook, and an atlas simultaneously. The reader is referred to the table below to understand what is found in rural classrooms.

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Some	1	16.7	16.7	16.7
None	5	83.3	83.3	100.0
Total	6	100.0	100.0	

Table 5: Work Tables found in geography classrooms

Pigford and Ngcongo (1995:10) had this to say in this regard, "...the pupils sit on the hard wooden benches that serve as their desks. Three or four squeeze together to share a single book. Except for a small, pot-bellied, coal burning stove in the middle of the classroom, there are no supplies or equipment." A similar case was found in one of the selected schools. Students used building blocks and planks as their seats, since there was no adequate furniture supplied. When the principal was asked about the issue, he said they did requisite the furniture and it was never delivered. They were subsequently told old schools were not supposed to order furniture only new schools. The picture below tells the story!

PLATE10 : CLASSROOM AT MABANDLENI HIGH SCHOOL WITH INADEQUATE FURNITURE

This situation complicates the teaching and learning in schools. It needs to be addressed with immediate effect to make the learning institutions conducive to teaching and learning. In the context of this study, this would have a negative impact on the teaching and learning of geography in African schools. Consequently, the products of such schools are not marketable. I might be tempted to correlate the multitudes of Black matriculants who are without jobs to the type of education they received – under resourced, hence cannot survival in a technology driven world.

When asked on the availability of geography laboratories, 100% of the respondents revealed that they did not have such and therefore never used any at all. This clearly illustrates another weakness which impacts negatively on teaching and learning. Laboratories are very important because it can help teachers and learners to carry out experiments like soil profile where students can take an excursion and dig soil to show the various profiles of the soil. The horizon samples can be kept in a bottle and stored in geography laboratories. The lack of resources has serious impact in the teaching and learning because teaching tends to be a one way process, that is, from the teacher to the learners. Taylor and Vinjevold (1991) described that as "teacher-centredness. pupil passivity and rote learning." Such a didactic approach has long been phased out where the teacher was regarded as the "master of all." Learners should participate actively in their learning. Allsop (1993:33) endorses this situation when he says that in most rural school practical science does not happen. He comments that most teachers have a personally limited background in practical science and only a slight confidence in teaching methods. This again may be the result of unequal distribution of educational facilities created by the apartheid system of South Africa. Partly, it might be the lack of motivation on the side of geography teachers to improve. For instance news geography can be of great help to geography teachers. but this is never used.

This may be attributed to the fact that rural areas do lack the supply of newspapers in local stores. A teacher needs to travel for about 80 kilometers to get the newspaper from the nearest town. This then crippled the love and motive to read newspapers.

Beeby (1986:37) asserts that teachers are the frontline troops of change, and progress

depends on their own education, motivation, freedom to innovate ... Massive reforms that one mandated from a national department of education cannot be expected to occur overnight." Such a condition is in sharp contrast with what Ledger (1977) suggests. He points out that teachers should employ teaching resources to a greater extent. These resources are indispensable in making their teaching to be meaningful, topical, pleasant and lively. They must also maintain the child's love for an interest in the subject. This is in line with Taylor (1997:231) who states that information is available on a massive range of geographical topics on the world wide web, with subjects such as hazards, weather, ecosystems and places. In the context of this study, I would suggest that each school, at least, should have a computer so to allow the learners' access to information. Further, a personalized learning environment can be created with hypertextual organization allowing students to create individually tailored paths to master desired goals (Polyson et al, 1996:285). Markonen (1988:335) asserts that hypetext reflects a human's way of thinking and provides an opportunity, to process information and interrelations between information areas.

It thus supports an alternative view of conventional lectures or textbooks and enhance individual learning by enabling user control of information (Starr, 1997). But unfortunately, the study revealed that 83% (5 out of 6) of the respondents never used a computer at all in their teaching.

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Often	1	16.7	16.7	16.7
Not	5	83.3	83.3	100.0
Total	6	100.0	100.0	

Table 7: Computer usage in teaching and learning of geography

4.2.4 The General Availability of Textbooks

The general availability of books was found to be skewed, that is 50% of the respondents showed that they had books in grade ten, 33% of the respondents had about 40% of the books

and 17% of the respondents had approximately 70% of the textbooks. But as one goes up the grades, it becomes clear that grade eleven and twelve do lack books. Only 17% revealed that they had about 70% of the textbooks that are required. Maybe Hartshorne (1992 :22) summarizes this problem clearly when he states that "In South Africa, the primary education of Black South Africans has neither been done first, in the sense of it having a clear priority, nor has it been done properly in terms of delivery, access, relevance and quality. Schooling for Blacks has always been neglected in relation to other levels of education, starved of resources, and generally accepted as a route march from which most would drop out by the roadside." This proves beyond doubt that even in the democratic government, nothing has changed for poor Black rural learners.

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
About 70 – 80%	1	16.7	16.7	33.4
About 50 – 60%	1	16.7	16.7	66.4
About 30 – 40%	2	33.3	33.3	100.0
About 0 – 20%	2	33.3	33.3	
Total	6	100.0	100.0	

Table 8: Availability of textbooks

This has a negative impact on the teaching and learning of geography because books are a major resource in rural schools, since there are neither libraries nor resource centers. Osborn et al (1985:12) asserts that good geography textbooks are essential if students have to learn effectively and efficiently well. He argues further that "the more organized and readable a text, the more students will learn from it." He goes on to describe such books as "considerate" to its audience. This demands that books be supplied to schools to make the conditions conducive to teaching and learning. Stuart (1999:138) asserts that "so what makes for conducive environment?" Clearly there are resource constraints operating both directly to limit funding and technology, and indirectly to limit the number of qualified people. I have already pointed out that this type of education really makes Black matriculants certificated with no practical knowledge what-so-ever and consequently social outcasts!

4.2.5 Age and Choice of Media

Educators with long experience were found to be more versatile in their use of resources than those with less experience. But on the contrary, the less experienced educators prefer to use modern resources like the television and computers. The more experienced ones preferred charts rather than computers and radios. The reason for this trend might be that the newly qualified teachers might have received training in these resources, yet those educated long ago were not exposed to such learning aids. I think, here, it is the matter of exposure and courage to make things work.

4.2.6 Media Employed Most Often

100% of the respondents agreed that they used textbooks most often. This is a discrepancy because the study revealed that 67% of the schools did not have adequate books for grade twelve. Furthermore, this reliance on textbooks promote rote learning. 50% showed that they used the atlas sometimes, 33% showed that they did not use them at all, and 17% used it often.

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Often	1	16.7	16.7	16.7
Sometimes	3	50.0	50.0	66.7
Not	2	33.3	33.3	100.0
Total	6	100.0	100.0	

Table 9: Atlas Usage in Schools

This may be the reason as to why most learners failed paper one geography questions because this paper is based on geographical skills and techniques of using and analyzing maps. Saunders (1985:15) asserts that "an introduction to map skills is an essential part of any geography, children are taught to understand, interpret and construct a wide variety of thematic and topographic maps at differing scales." 83% disclosed that they did not use a computer at all and 17% did use a computer. This again reveals the disadvantage of the lack

of resources to make teaching and learning more effective. Such an idea can be summarized by Graves(1982:3) where he argues that direct experience of the world is also made unequal by income differences, whether these be on a national scale or at an individual scale. Geographical education must be seen, therefore, as an integral part of the process of education, since such education must make the student better able to understand life on earth by making evident spatial relations and the organization of space by man. So, if schools do not have these resources, teaching becomes very difficult for educators.

4.2.7 Teaching Methods and Strategies

The study revealed that 33% of the respondents used discussion and 17% the Socratic method. 50% revealed that they used the lecture method. This may be attributed to the fact that rural schools have large classes. This makes it difficult for the teacher to attend to individual learners. This might have a negative impact on passive learners who do not participate actively in class discussions. (Refer to the table 10 below)

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Lecture method	3	50.0	50.0	50.0
Educational broadcast	1	16.7	16.7	50.0
Discussion	1	16.7	16.7	100.0
Lecture and socratic method	1	16.7	16.7	
Total	6	100.0	100.0	

Table 10: Strategies used in Classrooms

83% revealed that they used group projects. This again may be attributed to the large classes for the same afore-mentioned reasons, that it is easy to group pupils when their number in class is big. This facilitates marking and interactions with the learners as a group rather than the individuals. This is taxing in the sense that teachers are overloaded and as a result no longer have a time to do quality work. For instance, at Biva public school, there were 288 learners taking geography from grade 8 to 12. Yet, there are only two teachers responsible for teaching the subject. In addition to this load, they are also expected to teach other subjects beside geography.

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Discussion one to one	0	00.0	00.0	16.7
Individual worksheet	1	16.7	16.7	83.3
Group projects	5	83.3	83.3	100.0
Total	6	100.0	100.0	

Table 11: Methods Employed by Teachers in Classrooms.

4.2.8 Use of Resources

67% disclosed that they did have all the necessary expertise to use resources if available. Only 33% did not have. Therefore, this proves beyond reasonable doubt that the lack of resources has a great impact on the teaching and learning of geography. 67% of the respondents showed that they do enjoy the use of resources. But, unfortunately, 67% or the respondents showed that learners did not have the prerequisite knowledge and skills to use or learn from the resources. This might be attributed to the lack of a critical background from primary schools. In my conversation with teachers, I found that teachers are now reluctant to improvise for learners. May-be this can be attributed to the low morale and uncertainty that characterizes teaching today. Another teacher pointed out the issue of space as learners are sharing classes yet doing different subjects. For instance, pinning on the display board information related to geography is torn away by those not taking it. Consequently, newspaper cuttings tend to be a "waste of time and energy!"

4.3 Conclusion

To conclude this chapter, I must mention that the findings from this study are showing that there is still a long way to go on the issue of redress and affirmative action. Rural schools are in dire need of resources. The school governing bodies, including teachers and parents, should come up with immediate solutions and forget about the empty promises made by politicians. In conclusion, I would say that the concept of equality of opportunity, whether at the level of tertiary level education or of employment in a technologically driven world, becomes an empty piece of rhetoric in the face of hard realities discussed above. The next chapter would look at a summary; implications and recommendations.

CHAPTER 5

5. IMPLICATIONS. RECOMMENDATIONS AND CONCLUSIONS

5.1 Introduction

The short time available for this research precluded me from being able to conduct an observation of the resources being used in the classrooms. Nevertheless, during the visits, I was able to develop a snapshot of the range of resources not available in classrooms. Although, the list is not exhaustive and does not provide any indication of the scope or nature of use, nor is it the full range of resources necessarily presented in every school. But, it can be safely concluded that most of the schools lack resources. A small percentage revealed that some schools have resources which had never been used. There are many factors which can be cited as a probable causes of this, but the most important is the low morale caused by Departmental rationalization and redeployment. This has caused a degree of uncertainty. Consequently, educators have developed a negative attitude towards teaching. This has a negative impact on the learners and also to their overall performance. Having presented this argument, I feel it proper to highlight the implications and finally the recommendation for the study.

5.2 IMPLICATIONS FOR THE STUDY

The nature of society and work is rapidly changing, and virtually every citizen in the near future will have to possess computing skills if they are to succeed at all. This is partly a result of the proliferation of information technology and the fact that increasing numbers of people encounter technology in their day – to – day lives. For example, at work, in banks and stores, and at places of entertainment and so on.

This implies that every citizen should be familiar with the real life. But, the problem is that rural schools are neglected and sidelined. This implies that these learners would not be able to function in the near future. The implication provided here is that there is a need to

integrate modern technology, including communication technology into the learning environment. But, the integration of modern communications technology is wholly dependent on adequate infrastructural provision, particularly in relation to electricity and telecommunication facilities. Since the study revealed that 67% of the researched schools did not have electricity. This implies that electricity and infrastructure (buildings) should be given first preference or priority. I am saying this because electricity is needed for many of the technologies which can be used to enhance teaching and learning. This means that almost every teaching and learning environment would be able to enhance its activities with the advantage made possible by electricity. In connection with infrastructure (buildings), it is apparent that there is an urgent need to develop the physical infrastructure. This element is needed to provide an educational infrastructure in which resources can be housed and used effectively. Consider Lifalethu secondary school as the case in point (Plate 2(b)). Such a school can keep its resources in dilapidated buildings with broken windows, dusty floors, and without doors! This implies, therefore, that the first priority is to begin to meet the basic infrastructure needs before considering the issue of resources.

Resources and facilities for basic education to all citizen within schools need to be made available and accessible. By this, I do not imply that the performance or understanding of the learners would improve because that alone needs a basic understanding of how students learn and what makes learning possible. Obviously, that is of great importance for educators and has implications for media. However, as Laurillard (1993:70) points out, "it is clearly important to base a teaching strategy on an understanding of learning, but the relationship is fuzzy. The character of student learning is elusive, dependent on former experiences of the world and of education, and on the nature of the current teaching situation." Bailey in Boardman (1986:86) stretches this point further when he asserts that "the resources appropriate to pupils in one school may not be at all appropriate to those of a similar age in another because of variations in their home life, the environment in which they live, their different experiences in feeder schools and other variables." But, these, will improve access to higher levels of learning, facilitate job creation and relevance to media and eventually will ensure that larger numbers of learners are skilled in relation to the development of economy.

In trying to recapitulate this philogeny, this implies that linking theory with practice should be one of the central purposes of teaching and learning. This will help the student to learn from his own direct confrontation, individually or in groups, with a learning resource or set of resources and activities connected with them, rather than from conventional exposition by the teacher. He may work in a geography classroom, in a laboratory, in a library, in a separate resource area or outside the school altogether, exploring the environment with some particular task in mind. In all these, the learner will be active, whether proceeding through a series of planned steps or making his own decision in a problem-solving predicament.

5.3 RECOMMENDATIONS

Considering the fact that there is a unanimous outcry from geography teachers that the resources for teaching geography effectively are lacking. Above all, schools with some are never used. It is recommended that subject advisors arrange refresher courses to help the practicing teachers to keep abreast with the times. I may safely say that there are several problems with the present system of education in as far as inservice training of teachers is concerned. Yes, departmentally, there are subject advisors, but these officials never come to the field to help the practicing teachers. If they do, only once a year. The only remarks we get from these people is that "we do not have transport to use to visit your schools!" Eventually, the department of education support services ends up paying a lot of money to disservice people. I, therefore, strongly recommend that our subject advisors should come to schools and help teachers, not just to exist in the persal system of the department without rendering service to the community. Geography departments at universities and geographic associations must be more involved in the inservice of teachers. They should skill the preservice and inservice teachers with methods and techniques required to survive in a technology-driven environment. School governing bodies and parents should be prepared to lend a hand in the buying of resources that will equip their children to be acceptable members of society, not a social misfit or outcast!

This will help to reduce the burden in the everyday complaint of "insufficient state money" to

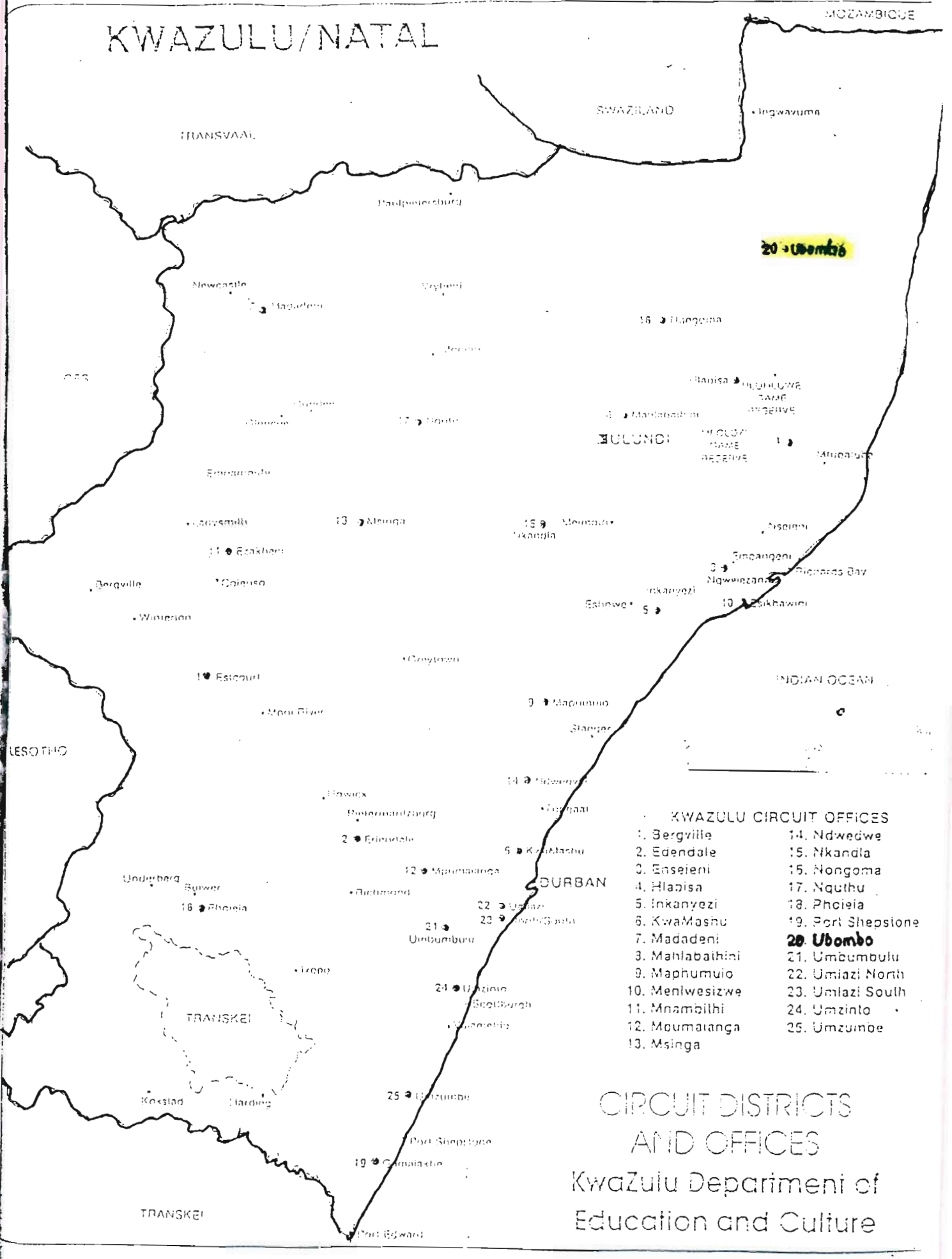
find education. This is in sharp contrast with the constitution that claims that education is "free and compulsory".

Furthermore, it is recommended that there is a need to redress the inadequate financial resources for inservice professional and academic development. This would improve both the quality of teaching and learning activities offered to learners. This would create an enabling supportive environment. In all this, the balance between theory and practice will be ensured!

5.4 CONCLUSION

The main form of this research was to find out what resources were available to geography teachers. It was also concerned about the utilization of resources to affect teaching and learning. But, it is interesting to note that there were many factors that could contribute to the poor teaching and learning in schools. For instance, the study has found that almost all schools researched have no electricity, which can make the utilisation of resources easy and effective. However, it is fascinating to know that despite the unfavourable conditions of teaching and learning geography in African schools, some teachers are still determined to teach dedicatedly. The subjects may be biased because of the fact that only geography teachers were interviewed, but it may be concluded that schools did lack resources. This demands that the redress programme must be implemented immediately. This will improve the existing conditions. It is then that teachers will be able to boast about resource-based learning!

A MAP SHOWING THE STUDY AREA



KWAZULU CIRCUIT OFFICES

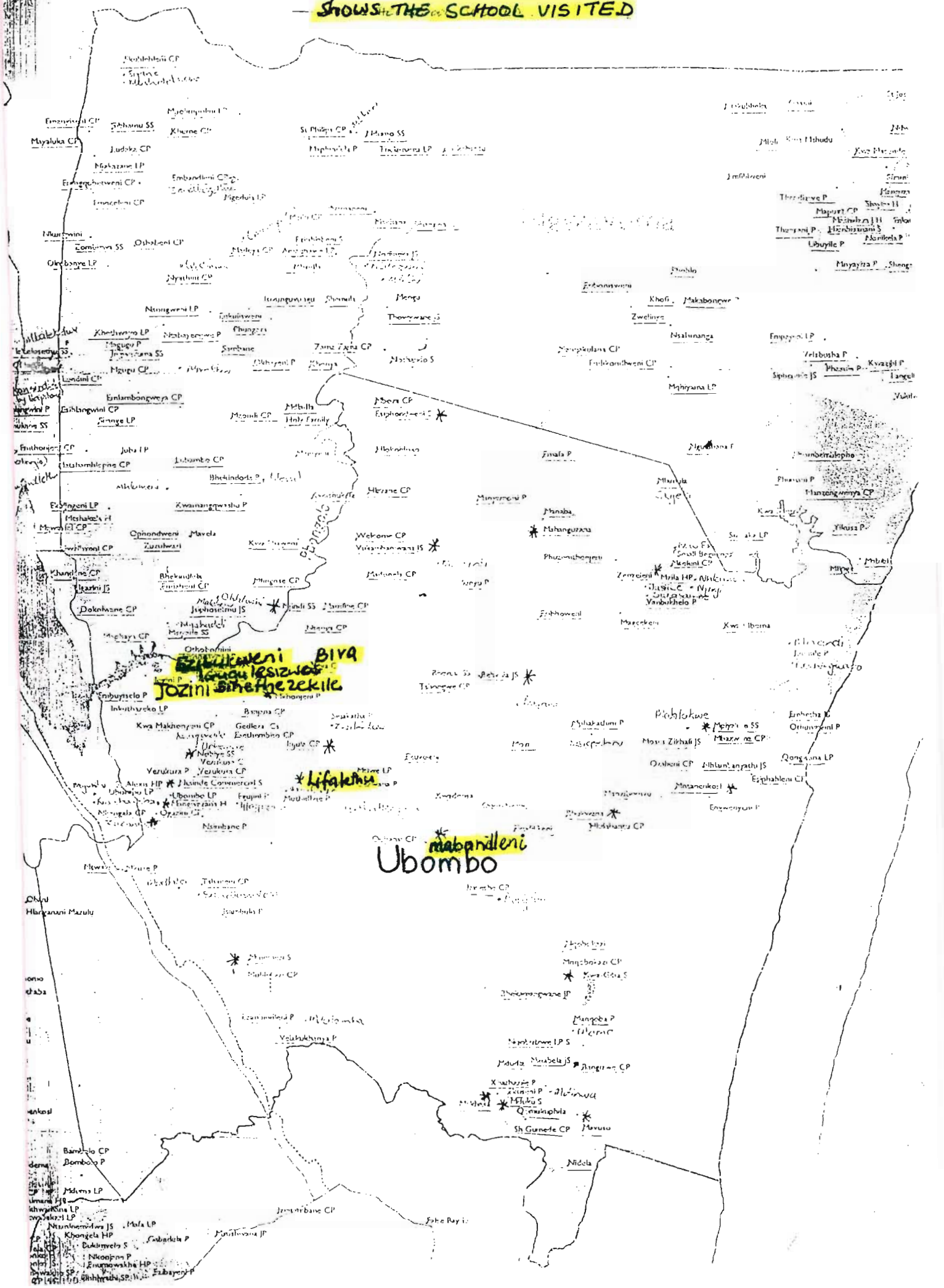
1. Bergville	14. Ndwedwe
2. Edendale	15. Nkandla
3. Enseleni	16. Nongoma
4. Hlabisa	17. Nquthu
5. Inkanyezi	18. Pholela
6. KwaMashu	19. Port Shepstone
7. Madadeni	**20. Ubombo**
8. Mahlabathini	21. Umbumbulu
9. Maphumulo	22. Umlazi North
10. Menlwesizwe	23. Umlazi South
11. Mnambithi	24. Umzinto
12. Mpumalanga	25. Umzumbe
13. Msinga	

CIRCUIT DISTRICTS AND OFFICES

KwaZulu Department of Education and Culture

A MAP SHOWING THE STUDY AREA

SHOWS THE SCHOOL VISITED



QUESTIONNAIRE FOR TEACHERS

B1

Kindly respond to the following questions in a manner that will reflect your private and honest opinion. There are no right or wrong answers. Your response will be treated with strict CONFIDENTIALITY.

Please answer all questions

1. **PERSONAL BACKGROUND**

Please "X" in the appropriate block.

1.1 Sex of educator 01 Male ☐ 02 Female ☐

1.2 Age of educator 01 20 - 25 ☐ 02 26 % over ☐

1.3 Place of residence 01 Urban ☐ 02 Rural ☐

1.4 Nature of appointment 01 Permanent ☐ 02 Temporary ☐

1.5 Actual teaching experience years_____

1.6 Academic Qualification in subject taught:

University Course	3 years or more	01
	2 years	02
	1 year	03
College of education specialization course		04
Subject studied up to matriculation level		05
Subject not studied up to matriculation level		06

1. **EDUCATIONAL RESOURCES** **B2**

Which of the following resources does your school have? In what condition are they?

	01Yes	02No	03Good	04 Poor
1.1 Electricity				
1.2 School library / Resources centre				
1.3 Computers / Computer centre				
1.4 Film strip projector				
1.5 Film projector				
1.6 Slide projector				
1.7 Epidiascope				
1.8 Overhead				
1.9 Transparencies				
1.10 TV / VCR / Videos				
1.11 Wall maps				
1.12 Atlases				

1.13 List any other resources you have at your school_____

2. Which of the following are found in the geography classrooms of your school?

	05 All	06 Most	07 Some	08 None
2.1 A usable chalkboard				
2.2 Chalk				
2.3 Work tables				
2.4 Conventional student's desks				
2.5 A teacher's table				
2.6 Other				

3. Which statement most precisely shows the general availability of textbook in your grade 10 - 12 geography class? The approximate percentage of learners who have all the required textbooks in all classes is_____

		Grade 10	Grade 11	Grade 12
About 90 - 100	09			
About 70 - 80	10			
About 50 - 60	11			
About 30 - 40	12			
About 0 - 20	13			

4. The following question wants to establish whether is there any relationship between the age and choice of media

4.1 State your age group:

14	20 - 29	
15	30 - 39	
16	40 - 49	
17	50 - 59	
18	59+	

4.2 What type of media do you employ most often?

Media	19 Often	20 Sometimes	21 Seldom	22 Not
Textbook				
Wall maps				
Overhead Projector				
Overhead transparencies				
Atlas				
Television				
Tape (Audio)				
Tape (Video)				
Charts				
Computer				
CD Roms				

5. Which of the following teaching strategies do you utilize in the classroom?

Place "X" in the appropriate block.

5.1 Mass instruction

5.1.1 Lecture Method	23
5.1.2 Video Presentation	24
5.1.3 Educational Broadcast	25
5.1.4 Discussion	26
5.1.5 Socratic method (use of probing questions)	27
5.1.6 Other (specify)	28

5.2 Individual Instruction

Discussion (one to one basis)	29
Individual worksheet, projects, readings	30
Other specify	31

5.3 Group instruction

5.3.1 Group Instruction		32
5.3.2 Experimental methods	5.3.2.1 Exploratory groups	33
	5.3.2.2. Laboratory	34
	5.3.2.3 Group project	35

6. The following is a list of resources that you could utilize in the classroom. Use the key provided to indicate which of the resources you utilize in the classroom.

Key	36	Used often	
	37	Used sometimes	
	38	Not used at all	

6.1 Worksheets	
6.2 Chalkboard	
6.3 Charts	
6.4 Photographs	
6.5 Relia e.g. rock samples	
6.6 Film strip and film strip projector	

6.7 Slides and slides projector	
6.8 Transparencies an overhead projector	
6.9 Film and film projector	
6.10 Video cassette and video cassette recorder	
6.11 Audio Cassette and tape recorder	
6.12 Television	
6.13 Computer	
6.14 Textbook	
6.15 Others (specify)	

7. Each of the following statements below expresses a feeling towards the use of resources from each response, you may: 39 A. Strongly agree; 40 B Agree; 41 C Be undecided or Uncertain; 42 D Disagree; 43 E Strongly disagree.

	A	B	C	D	E
7.1 Teaching with maps is very interesting to me					
7.2 I do not like maps in geography and it scares me to have to teach with it					
7.3 I am always under terrible strains when teaching topographical maps / orthophoto maps					
7.4 Geography is fascinating and funny if resources for teaching are available.					
7.5 Geography teaching makes me feel secure and at the same time is stimulating.					
7.6 Do you ever use trigger videos for ± 4 - 5 minutes in your teaching					
7.7 Do you learners appreciate the issues illustrated in the triggers?					
7.8 Are the learners able to respond afterwards in discussion					
7.9 Are they able to suggest their own views after the video has been shown?					

USE OF RESOURCES

1. Did your professional training include guidance in the use of teaching strategies and methods?

44	Yes	
45	No	
46	Not applicable	

2. Do you have the necessary expertise to use the kinds of materials you wish to use

Yes	No

3. How do your learners respond to the use of resources?

47 Enjoy	48 Bored	49 Confused	50 Exited	51 Understanding

4. Do your students have the prerequisite knowledge and skills to use and / or learn from materials?

Yes	No

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VARIOUS DEFINITIONS OF RESOURCES

(Adapted from Nel, 1990)

These are various definitions given by different scholars to define resources.

5. Everything organizations and the community requires, from written materials such as books, magazines, pamphlets, to slides, photo, posters and equipment

(Sached, How to run workshops)

6. The money, materials and people necessary for the pursuit of a goal.

(Rountree, 1981 :266)

7. Anything which can be an object of study or stimulus to the pupils or an aid to the teacher; but normally distinct from the equipment with which resources are used or made available. A resource can include print form, audio visual and museum items as well as specimens and items in the locality.

(Page and Thomas, 1977 : 291)

C2: LEARNING RESOURCES

1. "Not only the learning materials, but also the human beings (teachers, other students, skill models, and other people knowledgeable in a certain subject) from who students might learn.

(Rountree, 1981 : 155)

2. All the resources which may be used by a learner (in isolation or in combination with other learners) to facilitate learning.

(Percival and Ellington, 1984 : 184)

C3 MEDIA

1.a. The physical tools of education technology, including printed words, film, tape.

records, slides and various combinations thereof.

1.b. The various channels of mass communication, including the press, radio and television

(Percival and Ellington, 1984 : 185)

2. A means of communication. Derived from the Latin medium, "between", the term refers to anything that carries information between a source and a receiver."

(Heinich, Molenda and Russel, 1985 :399)

3. "The graphic, photographic, electronic, or mechanical means of arresting, processing, and reconstituting visual or verbal information.

(Edling. L. Paulosn, 164)

C4 INSTRUCTIONAL MEDIA

"The physical tools of educational technology or instructional technology, including print, film, tape and records. The terms is used particularly of complete and largely self supporting learning-teaching systems

(Page and Thomas, 1977 :178)

C5 MATERIALS

This term is used to describe the complete range of physical for us for the recording of information carried by the media, for example, books, wall-charts, pamphlets, video-recording and sound recordings.

(Fothergill and Butchart, 1978 : 10)

C6 TEACHING MATERIALS

Materials devised for use in teaching a particular course or subject.

(Page and Thomas, 1977 : 338)

C7 LEARNING MATERIALS

1. Anything in the world could be a learning material in that it might help the student learn. But the term is usually applied to books, worksheets, tapes, films, etc. on which some educational content has been pre-recorded, or to some natural object (eg. A rock specimen or prepared microscope slide) whose educational content is brought out by the teacher or by other accompanying materials.

(Rountree, 1981 : 154)

2. "A collective term for books, audio-visual materials, programmes, games, etc. which have been designed for the use of the learner. The carrier of the information is less important than the function for which it is designed"

(Tucker, 1979 :157)

C8 RESOURCE MATERIALS

1.c. "The basic components of a package used in an exercise, programme, course, etc."

1.d. "A general terms for resources and instructional materials used by learners or teacher."

(Percival and Ellington, 1984 :200)

2. Non-human learning resources : that is, learning materials such as books, worksheets, tapes, films, models, specimens etc.

(Rountree, 1981 : 255)

3. "Teaching materials or learning resources available to teachers in planning and carrying out their teaching or pupils engaged in investigations, projects or topics".

(Page and Thomas 1977 : 293)

C9 CURRICULUM MATERIALS

"....include such items such as paper, chalk, chemicals, electricity and the kind of supplies used in courses like cooking and woodwork, about which most decisions are routine. More attention is necessary to those materials that are vehicles of communication such as books, films and audiotapes. Such materials are often called software."

(Pratt, 1980 :370)

C10 INSTRUCTIONAL MATERIAL

General term for audio-visual aids or printed texts which assist teaching and learning. Also termed didactic material.

(Page and Thomas, 1977 : 178)

C11 AUDIO-VISUAL AIDS

1. A general term for hardware equipment and media used in learning; teaching and research. Such aids include all forms of transparent film, sound and television broadcasts, wall charts and illustrations.

(Page and Thomas, 1977 : 32)

2. These are those aids which use the senses of both sight and hearing. It has been shown that training with these two sensory inputs achieves bigh effectiveness. There is a large variety of means available, including sound, film, film strip, tape slides, broadcast, television, closed circuit television, video recording, and so on. A recent development with enormous potential is the micro-processor, used in computer assisted learning / training.

3. (Hills. (ed), 1982 : 83)

C12 TEACHING AIDS

1. Teaching aids are structured objects which the teacher uses to help the learner interpret reality.

(Yules and Steyn, 1982 : 2)

2. "Teaching aids are primarily the tools of the teacher and are used mainly to demonstrate. They help him to explain something or impart knowledge to his class."

(Duminy and Thembela, 1983 : 16)

3. "Aids...are instrumental that aid learning primarily through the senses of hearing and seeing."

(Robinson. 1980 : 75)

4. "A device or material used to facilitate instruction such as an audio tape player or chalkboard pointer."

(Hawes and Hawes, 1982 :226)

5. "A teaching aid is anything which a teacher uses over and above mere talk in order to illustrate or demonstrate an idea or concept or piece of information)

(Glover, 1986)

C13 RESOURCE BASED LEARNING

1. "A mode of learning in which students work very much on their own (or in small groups) using learning resources - especially textbooks, programmes, home experiment kits and other self-instructioned materials - that have been specially selected or developed to enable students to learn all that is required in a particular

course with little or no group sessions with a teacher"

(Rountree, 1981 : 255)

2. "A highly structured; individualized, student centred learning system that makes full use of appropriate resources, both material and human, in creating an effective learning situation."

(Percival and Ellington, 1984 : 200)

C14 RESOURCE BASED TEACHING

1.a. An approach to teaching in which the emphasis is on resource-based learning (that is, with the students using specially developed resources largely on their own).

1.b. An approach to teaching in which the teacher makes abundant use of learning resources in expository teaching.

(Rountree, 1981 : 255)

C15 RESOURCE CENTRES

1. "A library development where resources used in resource based learning are held. Resource centres are used by both teachers and students.

(Unwin, 1978 : 681)

2. "Resource centres are given a variety of names, including learning materials centre, audio-visual centre, learning aids laboratory or instructioned materials centre. Usually these centres have collections of print and non-print materials held in a room which has study carrels containing the necessary equipment to view or listen to the material. Collections are often in a limited subject area and typically includes books, magazines, journals, slides, films, posters, audio and video tapes, overhead projector, transparencies and self-teaching units containing a variety of media.

(Hills (ed), 1982 : 237)

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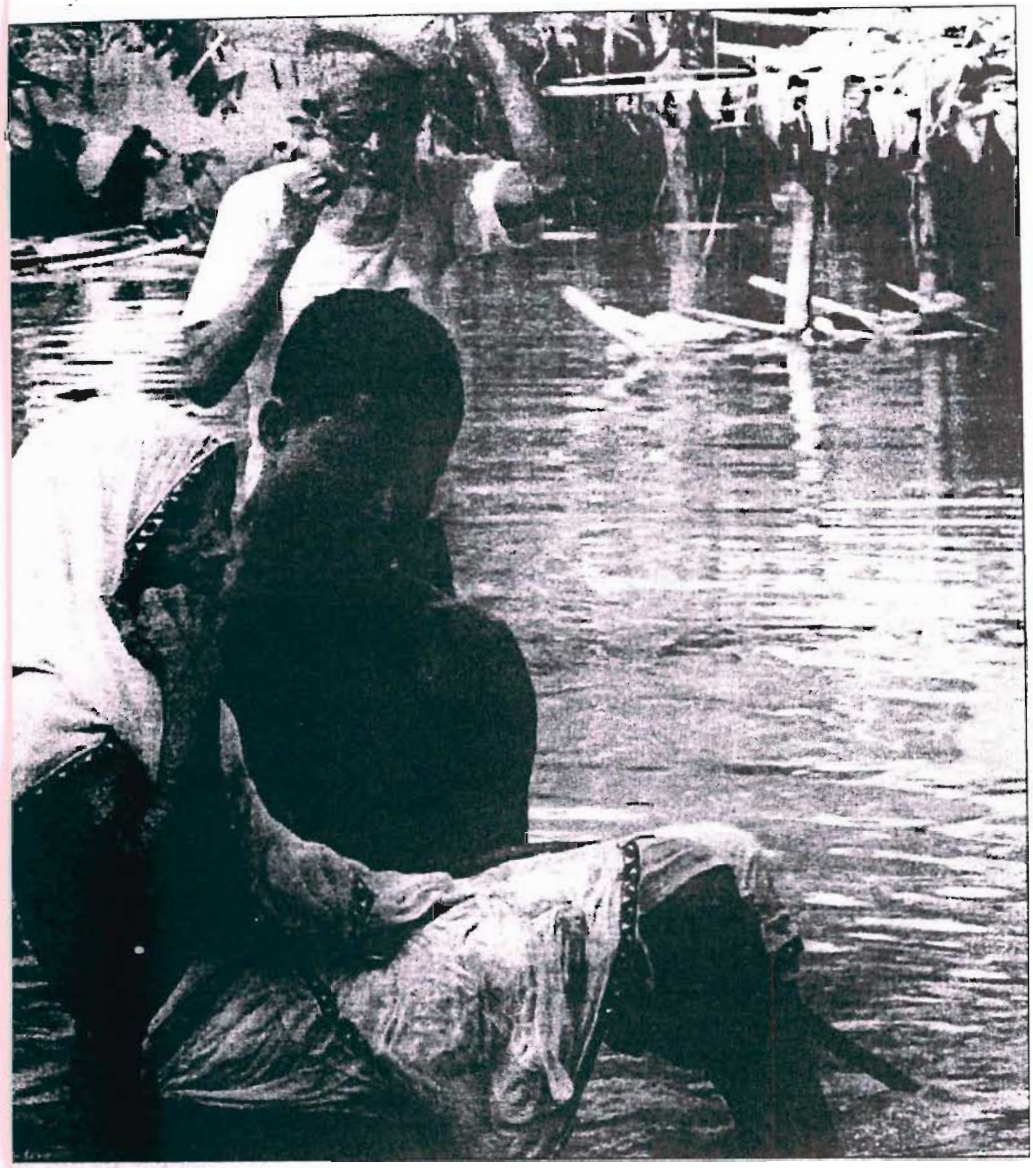

Monday Image

HOMELESS: A Bangladeshi man carries his elderly mother while searching for shelter in the flood-ravaged western district of Kushtia. The floods and accompanying diseases have killed at least 70 people and left more than 1 million homeless.

PICTURE: REUTERS

l warming triggers extreme weather

) predict with confidence the sort of events that could strike and where, writes **Richard Inghar**

ıth Asia; crippling
ica; hot, dry spells
ı Europe and the
grip; a North Pole
ı water; typhoons
m rim; and freak
hat swamped the
in a few hours.
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ath to blame it for

neer science still groping around for tools, in particular data about past weather patterns that could be a vital pointer to the present and future.

And the weather is such a complex thing, they say, that it is difficult to predict much more than the most obvious changes in climate: a gradual rise in mean atmospheric temperatures, and sea levels that will rise through thermal expansion and a partial melting of polar ice.

Windswept

"A lot of extreme events you can certainly, to a large extent, associate with nat-

at the Hadley Centre, the climatology branch of Britain's Meteorological Office.

Mr Mitchell blames the strong monsoon and flurry of typhoons in Asia, as well as the dry temperatures in the western US, at the tailend of La Niña, the reverse of the El Niño effect. Although the overall atmospheric temperature has risen over the past century, there is no "compelling evidence" that it has caused La Niña or her brother, he says.

becomes available, along with more so isticated software to crunch it.

Some experts now say that present c of extreme weather can be linked, at l partially, to global warming. And others beginning to predict with confidence sort of events that could strike and wh after global warming – a machine that ta a long time to stoke up – really kicks in.

"The recent series of extreme weat events must have been influenced by higher average temperatures," say Mr Vellinga and Mr Willem van Verseveld the Institute for Environmental Studie Amsterdam's Free University.

"This implies that at least part of damage caused by weather extremes is to human-induced climate change," t say in research, published last week.

They predict that countries south of