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CONCEPT ACQUISITION IN GEOGRAPHY OF SECONDARY SCHOOL PUPILS

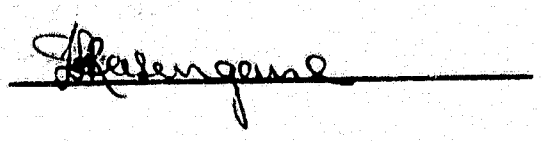
LILLIAN TENDANI RASENGANE

A research report submitted to the Faculty of Education, University of the Witwatersrand, Johannesburg, in partial fulfilment of the requirements of the Degree of Master of Education.

Johannesburg 1985.

DECLARATION

I hereby declare that this report is my own work and that I have not submitted it, nor any part of it, for a degree at any other University.



LILLIAN TENDANI RASENGANE

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But, above and beyond all is my boundless gratitude to my family for their constant encouragement and cheerful tolerance of my pre-occupation with this study. Without their understanding, encouragement and patience, this work would not have been possible.

DEDICATION

TO MY DAUGHTER

MULANGA

ABSTRACT

This study investigated the causes of difficulty experienced by Standard Nine Venda pupils in acquiring hierarchical geographical concepts. The study also focussed on intervention methods to assist pupils acquire concepts so that they could be able to transfer them to other situations. The literature was surveyed for background information on the role of prior knowledge, the transfer for attained concepts, instructional organization in acquiring concepts, and language and concept acquisition.

An illuminative approach was adopted in this research in that participants were interviewed, and were observed as they interacted with each other in class. A sample of fifteen pupils from each school was drawn involving a total observation of 135 pupils. The questionnaires were administered to Geography teachers in the Nine schools (n=27), and to Standard Nine pupils (n = 740). Responses of participants were analysed. Finally, recommendations for interventions to tackle the problem were made.

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CHAPTER 1

1. INTRODUCTION

1.1 Background of the Problem

Most pupils in Secondary Schools have problems of conceptualization in Geography. Part of this problem lies in the influence the previous skills learned have on new concepts. Learning concepts are regarded as the backbone of the educational process and one of the most important human behaviours. Cognitive learning in a school setting is based upon the attainment of many concepts both simple and complicated.

The acquisition of concepts in Geography is of special interest because there is among other subjects, a high failure rate in it. Ehrenberg (1981) writes that teachers' reports and tests indicate that even pupils who seem to have acquired concepts usually fail to apply them to situations which are new but similar.

The writer has taught Geography at the Standard 8 and 9 levels for four years and it was during this time that it became evident that many basic concepts are still imperfectly understood in the late years of Secondary School. It is interesting to note that Ledger (1978) writes in his research report about the transition period in Geography from content-orientated syllabuses which concentrated much on facts to be crammed for examination and of no use thereafter, to conceptual approach which lays emphasis on concentrating on basic concepts in Geography. Ironically, basic concepts do not seem to be understood by pupils and rote learning of facts is still a major way of acquiring geographical knowledge.

Acquisition of prerequisite concepts prior to learning new concepts makes the learning of a given area of subject-matter possible. Concepts in Geography are hierarchical in nature, for example concepts such as pattern, distribution and scale require prior understanding of the concept of space. Perception of concepts is of great significance in that it gives the pupil an understanding of that concept, and for the subject-matter to have real meaning to the pupils, it must be able to find enchorage on the existing structure. This is supported by researches conducted by Hewson (1982), Novak in Okeke and Robinson (1980), Mayer (1981), Anderson (1977), Norman (1980) and Voss and Bisanz (1981).

Many pupils are able to pass an examination without understanding concepts but this may only have short term value to the pupil because he cannot apply knowledge to novel situations. Passing the examination this way becomes possible if, according to Dahlgren (1978), only the necessary rules are correctly memorized. When the acquisition of concepts is measured according to discrimination performance, Bengston and Cohen (1979) assert that it ignores the problem of acquired meaning which is important in the transfer of learning.

It has been reported by the Commission of Inquiry into the system of Education in Operation in Venda (1982) that by 1981 nearly 40% of Secondary teachers were still not suitably qualified, and that those who qualified did not, in most cases, teach in their own discipline. This is still the case in Venda, and it is posing a lot of difficulties in the teaching of Geography. Most teaching is examination - orientated and this is encouraged by examination questions which may depend upon rote learning. It is not surprising

that underqualified teachers are employed to teach Geography because pupils can be made to memorize important facts which enable them to pass examinations without necessarily forming meaningful geographical concepts.

Concepts are basic to all communication in the classroom. According to Bell (1981) there can be communication problems at all levels of any education system between teachers and pupils, if they both use the same concept but have different meanings of that concept. It seems clear that pupils have to understand concepts in order to communicate well with others. Goodwin and Klausmeier (1975 p.245) hold that "much of formal education is based on the assumption that human beings can transfer classroom learning to later school and nonschool settings".

Many concepts are acquired as related sets of ideas which have reference to a larger topic under study. Lower order concepts have to be mastered before more abstract concepts can be understood. Van der Mark (1979) also supports this view. There is therefore, a great need for teachers to help pupils acquire basic concepts which will facilitate learning at high levels. The task of the teacher is therefore to arrange the learning environment of the pupils in a way that they will acquire concepts, skills and understandings in a meaningful way rather than superficial way.

1.2 Statement Of The Problem

The lack of prerequisite concepts in learning Geography hinders the acquisition of new concepts and this in turn leads to a high failure rate. It is important to make new knowledge meaningful to the pupil in order to optimize acquisition. Educators have not made a distinction between concepts and facts they want pupils to learn.

Pupils in Secondary School have difficulties in acquiring concepts and even after instruction, pupils still confuse those concepts in their study. It is easy for pupils to give a correct definition of a concept without understanding it such that they cannot use it in another situation. Understanding prerequisite concepts in Geography can be a useful framework on which higher order concepts can be learnt. Learning in Geography is based on concepts. The present study seeks to investigate the problems that pupils experience in acquiring hierarchical concepts in Geography.

1.3 Purpose of The Study

This study will investigate the causes of difficulty experienced by Standard 9 Venda pupils in acquiring geographical concepts. This study will also focus on intervention methods to assist pupils acquire concepts in a way that they can be able to transfer them to other situations. Teachers have the task of arranging the learning environment of the pupils in a way that concepts are acquired in organized and structured methods. For a long time, the study of concept acquisition has been the study of how pupils learn to classify discriminable entities on the basis of common attributes. Unfortunately this classification approach has been studied at the expense of accounting for the comprehension of meaning. Learning concepts hierarchically, on the other hand, will help alleviate difficulties in concepts acquisition, which will in turn make pupils do well in Geography because concepts are of paramount importance in forming the basis on which our whole pattern of thinking develops.

1.4 Importance Of The Study

The proposed study will identify difficulties that are experienced by pupils in acquiring geographical concepts. Assisting the pupils to acquire basic concepts will hopefully make pupils acquire higher-order concepts and this will in turn lead to problem solving.

Secondly, the study attempts to improve the methods for concepts learning. In the study of concept acquisition, the problem of acquiring meaning has been ignored. It is hoped that this study will assist the pupils to gain understanding of concepts and not memorize them.

Lastly, the findings of this research will contribute to th› improvement of Geography learning in establishing the extend to which prior concepts are significant for meaningful learning.

1.5 Research Questions

1.5.1 Do pupils in Venda have problems in conceptualizing because they do not possess prerequisite concepts?

1.5.2 Will the learning environment influence the way in which concepts are acquired?

1.6 Statement Of Assumptions

1.6.1 Pupils' prerequisite concepts affect their understanding and acquisition of the concepts under study.

1.6.2 Possessing hierarchical concepts will lead to meaningful learning and higher achievement in pupils.

1.6.3 A well arranged learning environment helps pupils to acquire concepts meaningfully.

1.7 Delimitation Of Study

Although the problem of acquiring concepts is experienced at all levels of schooling, this study is limited to a survey of factors contributing to this problem to pupils in Standard 9 in Venda.

There are eight inspection circuits in Venda and only one Secondary school has been selected from each circuit. The ninth school that has been included in the study is found outside Venda but it teaches Venda pupils.

1.8 Limitations Of The Study

The reliability and validity of interviews and questionnaires which will be developed specially for Geography teachers and Pupils in Venda may limit the generalizations of the study.

Concept acquisition in Geography will be studied in a selected content area namely, the Climatology part of Physical Geography, which may limit its applicability throughout the curriculum.

1.9 Conceptual Definition Of Terms

1.9.1 Concept

There is no common definition of concept that has generally been agreed upon, but for the purposes of this study, a concept will be regarded as the result of a process or group of processes, which yield a framework or structure which becomes a part of a person's experience against which he can judge and classify new phenomena and situations.

1.9.2 Concept Acquisition

In this study, concept acquisition will mean the ability of the learner to apply a newly-acquired concept in different circumstances.

CHAPTER 2

2. REVIEW OF RELATED LITERATURE

2.1 Introduction

Concepts are important in education and they have been called the building blocks of thinking. When words or terms present the same concepts to teachers and pupils, then learning and teaching are effective. There can be little, if any learning, except when concepts are acquired and applied to the mastery of whatever area of learning is engaged in. Concepts should therefore be clear and accurate in the learner's cognitive structure and as comprehensive and well delineated as possible. Subject matter will be more effectively understood, and, therefore remembered better if it is focussed on key ideas like concepts. Much of the subject matters studied is forgotten, but the residual learning - that is basic concepts - is long lasting.

The problem of how to acquire concepts faces every teacher daily. It is not enough to have a concept explained in words. What tends to happen when a concept is explained only in words is that it may not be understood and a verbatim response may result. To be well understood, concepts should be presented in terms of concrete application and exemplification.

Hudgins (1976) maintains that educational psychologists grew impatient with laboratory studies of concept learning. The inductive or discovery approach used in Psychological laboratories is not typical of how concept learning in school proceeds, and many of the experiments do not teach concepts.

Hudgins (1976, P.118) goes to urgue that they only look at the strategies which a learner uses to attach "a nonsense label to some constellation of figures or shapes". Bengston and Cohen (1979, p.732) state

> "... research which ignores the problem of relational meaning will mask rather than illuminate how persons come to comprehend and manage novel events".

Davis and others (1974) maintain that a student who has really mastered basic concepts has increased chances for success in advanced study and a greater ability to recognize and solve problems. One of the most important considerations in the teaching of concepts is the existing knowledge of the pupils. Stones (1979, p.200) reports that

> "evidence from a variety of sources indicates that if the foundations are unsound, there is a great possibility that pupils' learning will be very different from that intended by the teacher."

He goes on to say that there are teachers in different fields of study who try to teach new concepts without first making sure that the pupils have a grasp of the subordinate concepts that combine to make the new one. In line with this view, Osborne and Wittrock (1983) assert that teachers must ensure that there are linkages between newly learnt concepts to prior concepts. Lazarowitz (1982, p.62) claims that ascertaining that pupils have grasped the subordinate concepts

> "enables the teacher to plan the sequence of further instructional activities and to evaluate pupils' gains in knowledge at the later stages of the lesson."

Teachers who do not take into consideration the existing knowledge of the pupils are, according to Stones (1979), all courting pedagogical disaster by ignoring or misunderstanding the level of pupils' knowledge or entry competence.

2.2 Concept Acquisition and the Role of Prior Knowledge

The way in which pupils learn indicates that they build upon previous structures. McKeachie (1980, p.44) holds that pupils tend to learn from a prototype model. He goes on to argue that

> "in order to understand the topic, you have to be able to relate it to other things that you know. It makes sense that the relation should be made by taking some already existing knowledge and adapting it to the new situation".

Hewson and Hewson (1984, p.6) argue that what is involved in learning is the interaction between new and existing conceptions, with the outcome dependent on the nature of the interaction. They point out that

> "if these conceptions can be reconciled, learning proceeds without difficulty. If they cannot be reconciled, then learning requires that existing conceptions be reconstructed or even exchanged for the new".

Further Hewson and Hewson add that learning is not simply the addition of new bits of information, but it implies the interaction of new knowledge with existing knowledge, so that, if possible, the new may be reconciled with the existing. It is therefore imperative to make sure that the new learning can be related to bodies of concepts the learner already possesses at the interactive stage. The writer agrees strongly with Hewson and Hewson on the interaction between new and existing conceptions and feels that new conceptions should not be treated in isolation, but that together with existing conceptions they make learning more meaningful.

Research which was conducted by Finley (1982) to determine the concepts contributing to successful performance of a science process, indicates that students' performance in science processes is dependent upon their knowledge of relevant concepts. Finley's (1982, p.693) conclusion was that

> "if the correct performance of science processes depends upon the knowledge of particular concepts, science educators interested in teaching such processes need to be particularly cognizant of the accompanying conceptual knowledge."

The writer supports Finley on this score and adds that teachers should emphasize the concepts which contribute considerably to students' performance. The availability of relevant conceptual knowledge may play a far greater role in the successful learning of Geography.

Conceptualization on lower-level relationships among many particular experiences is needed by the pupils before they are able to achieve the power to deal with increasingly complex relationships on higher levels. If the prerequisite skills and concepts have been adequately learned, then the next step should not prove too difficult and the chances of success will be high. This thinking is supported by Tilch (1983, p.18-19) when she writes that the knowledge that is acquired in a meaningful way is retained longer. Further she states that

> "... because new information is linked to existing information and differentiation takes place, subsequent learning of related information is easier. Then if information is forgotten, a residual effect on the relevant concept is left also making the learning of related information easier."

Klausmeier and others (1974, p.35) reiterate this view by arguing that

> "if the prior experience of the individual is such that a relevant dimension has acquired distinctiveness for him because he has learned to respond on the basis of that cue, then he should find the task easier than if the prior experience is irrelevant to the new concept to be attained."

Simpson and Arnold (1982) in their study to ascertain pupils' attainment of four concepts considered to be prerequisite to an understanding of photosynthesis at certificate level, hold that the knowledge about certain simpler concepts must be

acquired before pupils can develop understanding of other more complex concepts. The results of their study show that Secondary School pupils have serious inadequacies in their concepts of food, energy, living things and gas although their science courses were designed to teach those simple concepts. They found that first- and second-year Secondary pupils were not better than Primary pupils at recognizing living things and describing their attributes. There was a gulf between the level of concept attainment which was actually reached by the pupils and the level of attainment assumed by the teachers. They further maintain that enough time is not given for further development of those four concepts in the Secondary Schools, but that emphasis is laid upon the acquisition of more complex concepts. The existence of stable, mature and prerequisite concepts are, according to Simpson and Arnold (1982, p.71),

> "either taken for granted or alternatively, their deficiencies are recognized but ignored due to the demands of the syllabus that the more complex areas of biology be covered".

Simpson and Arnold conclude by saying that the inadequacies in the concepts may be attributed to a number of causes - the structure, number, and timing of the learning experiences given to the pupils for development of the concepts and the lack of clear definitions and agreed meaning.

Shayer (1974) has suggested that to understand complex biological processes like respiration, genetics evolution and photosynthesis pupils need a capacity to operate at a Piagetian level of formal

thought which most of the sixteen-year old pupils have not acquired. Most Unfortunately, it has not been proved to date that an understanding of these processes is not possible even when mature and stable prerequisite concepts are known by the pupil. This view of the development of children's thinking has not met with universal acceptance. Novak (1977) has been very critical of the Piagetian model. He holds that what the learner already knows is the key to his subsequent learning rather than some age-dependant cognitive level.

According to Mayer (1979), superordinate ideas serve to facilitate acquisition of concepts by relating the new concept to a similar and simpler concept already familiar to the learner. Norman (1973) shares the same idea by asserting that concepts from the prior knowledge structure of pupils should be made explicit in a representation of the subject matter structure. Anderson and Pichert (1978) argue that prior knowledge not only influences the encoding of new and specific knowledge, but also guides the elaboration and processing of information that can result in prior knowledge dependent learning.

McVey (1981) designed a study to investigate the role of prior knowledge in the comprehension of a scientific text, the influence of reading and retelling on students' understanding of a concept, and the differences in the oral language of students who understand a concept as opposed to those who have only a partial understanding. The findings of this study revealed a positive relationship between students' prior knowledge of the concept of density and their comprehension of a written explanation of

it. McVey (1981, p.309) goes on to recommend that "a variety of instructional techniques that take into consideration prior knowledge of a concept would be most beneficial to teaching." The writer feels that if teachers are to develop new concepts, or extend the meaning of those partially understood, it is critical to link them to prior experience and knowledge.

Skills and knowledge which are lower in the hierarchy must be mastered before those which are higher can be attained. Ausubel (1969) contends that knowledge is organized into hierarchies. The apex of a hierarchy is occupied by the most abstract, stable, general and inclusive ideas. He believes that providing advance organizers helps a student integrate the new material into his cognitive structure. Gagne in Anderson and others (1969) asserts that once the subordinate learning sets have been recalled

> "instructions are used to promote their application to the performance of a task that is entirely new so far as the learner is concerned."

Failure of pupils to grasp complex concepts may therefore not be due to any lack of intrinsic ability to operate at the formal level of thought, but rather to a lack of appropriate cognitive preparations.

2.3 The Transfer for Attained Concepts

Intellectual skills constitute an important area of school learning. Beeson (1981, p.363) holds that

> "there is a strong suggestion that students tend to learn intellectual skills in a mechanical way rather than in a meaningful way."

This suggestion is supported by the poor results in general which are obtained by students on lateral transfer tasks subsequent to their learning of a skill hierarchy. He contends that the frequent occurrence of mechanical learning of the intellectual skills may be due to students learning each of the skills in a relatively isolated manner, so that they are unable to see how to combine skills already learned in order to achieve mastery of higher-level skills. A second possibility is that the verbal instructions given during learning may not have been sufficient for the learner to fully comprehend the nature of the learning objectives. Thirdly, the learner may be unable to recall the relevant subordinate skills at the appropriate time. The skills may still be available in memory, but certain types of retrieval clues may be necessary for the skills to be recovered.

Osborne and Wittrock (1983) point out that teachers need to help the learner transfer appropriate ideas from long-term memory to the comprehending of new information, and they need to provide pupils with retrieval clues that will lead them to generate the kind of meaning that they want them to generate. In a study conducted by Beeson (1981) on the influence of knowledge context on the learning of intellectual

skills, it was found that students' learned a hierarchy of intellectual skills in the context of an anchoring idea and more meaningful learning occurred. There was superior performance on a test of lateral transfer and the superiority was greatest for far transfer and least for near transfer. The material that was not learnt meaningfully was forgotten more quickly.

A large part of school activity seems to be directed towards the conceptualization of new knowledge. Gagne in Anderson and others (1969, p.309) maintain that

> "subordinate learnings transfer positively to, and therefore facilitate the learning of the next higher item in the hierarchy. Learning sets mediate positive transfer to higher-level tasks. Very often, if not usually, the measurement of transfer of training implies that a second task is learned more rapidly when preceeded by the learning of an initial task than when not so preceeded".

Cotton and others (1977) add to this by saying that transfer looks greater from acquisition of skills on the lower level to acquisition of skills on the higher level than the reverse. The pupils who are not able to transfer their learning into a new situation would seem to need the perceptual prop of the original materials.

Transfer is facilated to such an extent that existing cognitive structure presents a number of well-developed, stable and inclusive ideas to which new and potentially meaningful material can be anchored. Mouly (1982, p.337) contends that

> "... if adequate subsumers are lacking, potentially meaningful material can be learned only by rote, or at best, inadequately anchored to concepts and proportions that are only partly relevant, so that little or no transfer takes place."

To Mouly, transfer is a continous and sequential process which involves the gradual improvement of the cognitive structure that has resulted from the continuous process of previous meaningful learning.

2.4 Instructional Organization in Acquiring Concepts

To be able to enhance meaningful learning achievement, written instructional material should place explicit focus on the organization of concepts in a body of knowledge. Novak (1976, p.84) encourages the use of concept-related instructional materials and observes that most instruction is not organized in a way that emphasizes the major concepts which are to be learned in a unit. He adds that

> "an inordinate amount of time often is spent on the details and events of a unit of instruction rather than on explanations of how these details and events relate to major concepts which students are expected to learn".

Contents should be structured to reflect subordinate and superordinate relations between concepts rather than logical or chronological prerequisite orders. Moja (1982) argues that the task of the teacher is to analyse the concepts into sub-concepts so that they should be understood by the pupils. She goes

on to say that pupils should have some experiences in order to form enough mental impression. Therefore, the teacher should decide on the concepts he wants his pupils to acquire and see to it that the pupils have appropriate experiences and guide [illegible] experiences in such a way that they will result in the acquisition of required concepts.

Gilbert (1981, p.139) commenting on the courses that are offered by the Science Education Centre at the University of Zimbabwe, states that throughout the courses, their theme is

> "the need to identify and understand the essential scientific concepts which any topic to be taught entails and to recognize the hierarchical relationship of these concepts and the necessity to follow a logical pattern of conceptual development in planning the teaching of a topic."

Most concepts which are taught in Geography are complex and relational. To understand one concept, the learner must have comprehension of others that combine in alternative forms to provide the meaning of the overaching concept. The sequence of presentation of concepts is important. Van der Mark (1979, p.8) maintains that

> "before presenting the concept "evaporation" for example, the concepts 'gas' and 'liquid' should be familiar to the student".

The relationships of new learning to existing levels of understanding will differ considerably in different lessons. Teaching which extends the

existing knowledge in a particular field will take a different tack from the one that introduces pupils to a new field of study. According to Stones (1979, p.201), in the former, the teacher

> "will be able to make use of existing bodies of higher-level concepts to which they can relate new comparable concepts by direct verbal teaching. In the latter, it will be necessary to arrange for direct sense experience if the field of study is completely novel".

Stones (1979, p.101) warns that if a teacher tries to introduce new concepts which are quite outside the experience of the learner without involving him in the elementary processes of contact with the findings described by any language he uses, then

> "he is likely to do no more than teach the sounds of the symbols-words without meaning which may enable a learner to parrot statements about the phenomena but which will, in the words of vigotsky, cover a conceptual vacuum".

Smith (1975, p.166) argues that it has not been demonstrated convincingly that one cannot teach the superconcept first and thereby teach the subconcepts as well. He cites an example of teaching the concept 'red square'. He contends that if many examples of red squares and non-red squares are given, this may enable a learner to understand without first teaching him 'red' and 'square'. He goes on to say that

> "as a matter of fact, he would learn something about what 'red' is and what 'square' is also in the process although his understanding of these would obviously be incomplete".

Smith agrees finally that this would be the hard way of teaching the concepts of red square and concludes by mentioning that one can make better progress by teaching 'red' and 'square' first.

Recent research in concept learning has resulted in the formulation of new models for expository lessons that facilitate the learning of concepts. To Tennyson and others (1981), concept acquisition is facilitated by two processes. One of the processes is the development of a prototype of the concept which is based on a teaching method consisting of explanations of matched examples and non-examples. This technique focuses the attention of the student on the defining and critical attributes of the concept being presented. The other process is the development of skills in generalization and discrimination using an instructional method called the interrogatory method which requires the students to examine newly encountered examples and non-examples for the presence or absence of attributes. Different instructional procedures could activate different aspects of existing cognitive structure. Mayer and Greeno (1972, p.166) argue that since the outcome of learning is determined by the new material and by the structure to which it is assimilated,

> "the use of different procedures could lead to the development of markedly different structures during learning of the same concept".

A considerable amount of organized verbal information is involved in many skill hierarchies. If this is reduced to discrete bits of verbalizable knowledge, and attached to the different skills in

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Recent research in concept learning has resulted in the formulation of new models for expository lessons that facilitate the learning of concepts. To Tennyson and others (1981), concept acquisition is facilitated by two processes. One of the processes is the development of a prototype of the concept which is based on a teaching method consisting of explanations of matched examples and non-examples. This technique focuses the attention of the student on the defining and critical attributes of the concept being presented. The other process is the development of skills in generalization and discrimination using an instructional method called the interrogatory method which requires the students to examine newly encountered examples and non-examples for the presence or absence of attributes. Different instructional procedures could activate different aspects of existing cognitive structure. Mayer and Greeno (1972, p.166) argue that since the outcome of learning is determined by the new material and by the structure to which it is assimilated,

> "the use of different procedures could lead to the development of markedly different structures during learning of the same concept".

A considerable amount of organized verbal information is involved in many skill hierarchies. If this is reduced to discrete bits of verbalizable knowledge, and attached to the different skills in

the hierarchy, Beeson (1981, p.264) contends that it is likely that students will be encouraged to learn those skills independently of each other.

2.5 Language and Concept Acquisition

Language can be the medium through which many concepts are acquired. It provides a powerful tool for manipulating concepts in thought once they have been acquired. Mouly (1982, p.225) asserts that schools are highly verbal and bookish that children are often

> "swamped by a flood of words and other symbols concerning which they have no experience. Occasionally the confusion reaches such Babelic proportions that they have no choice but to rely on parrot memory if they are to meet examination requirements".

Teachers often contribute to cognitive confusion by presenting new material without ensuring that the pupil has the necessary cognitive background to which the new material can be anchored. To Mouly (1982, p.226) teachers sometimes

> "discourage understanding by giving a higher grade to the student who parrots the words of the book than to students whose answers, being in their own words, are not polished as those of the text. Teachers often teach facts out of context of relationships that would make them meaningful, thereby forcing children to rely on rote learning as a means of passing the inevitable examination".

Facts should be taught, but they should not be taught as ends in themselves. Rather they should be taught in relationship to the basic concepts in existing cognitive structure to which pupils can relate the new input meaningfully. When the teacher is eager to cover the curriculum, it is easy for him to neglect pupils who are slow and tiresome process through which general meanings develop or even forget that pupils are not always helped by glib explanations.

Concepts are sometimes presented in vocabulary that is unnecessarily complicated. Mouly (1982, p.227) maintains that

> "we can no more expect children to understand unfamiliar content presented in unfamiliar language than we can expect them to lift themselves up by their own bootstraps".

Understanding of concepts is facilitated by the effectiveness and clarity of the teacher's use of language.

Most of the concepts which are learned by adults and older children are acquired by means of language experiences. Where concepts have no perceptible instances or non-verbal representations of instances, language is the only means of representing the concept. Klausmeier and others (1974, p.125) hold that

> "even in the case of concepts with perceptible instances, classroom instruction proceeds, by the large, through verbal explanations of the meanings of words provided by teachers or text materials".

Concept acquisition and concept growth is acute in Geography and, as Graves (1975, p.154) holds,

> "is intimately linked with the development of language and with the pupil's experience of the world".

Language plays a part in conceptual development and this part becomes more and more important as one moves from the attainment of concepts which represents concrete objects to those representing ideas.

The acquisition of valid and usable concepts depends probably upon experience with actual instances and appropriate language experiences. The advantage of linguistic encoding is seen by Klausmeier and others (1974, p.155) as enabling the individual to abstract particular attributes of

> "an experience for consideration while ignoring others, thus maximizing the independence of cognitive operations from the immediate stimulus situation. Moreover, linquistic codes are maximally efficient for tasks involving sequential information processing, inferring a concept definition by means of inspecting exemplars and non-exemplars is such a task".

Language is therefore a powerful medium for representing conceptual or abstract experience.

CHAPTER 3

3. RESEARCH METHODOLOGY AND THE GATHERING OF DATA

The research methodology adopted by the writer is illuminative. In the illuminative approach, different techniques are combined to throw light on a common problem. A method called 'triangulation' is used as a way of viewing the problem from a number of angles and the cross-checking of otherwise tentative findings.

The reason for using a triangulation of methods is that every data gathering technique is potentially biased and has certain validity threats in it. The systematic use of different methods would offset the limitations inherent in one method. According to Parlett and Hamilton (1977, P. 113), "... no method is used exclusively or in isolation; different techniques are combined to throw light on a common problem".

Illuminative evaluation aims, according to Parlett and Hamilton (1972, P.10), at

> "studying the programme; how it operates; how it is influenced by the various school situations in which it is applied, What those directly concerned regard as its advantages and disadvantages; and how students' intellectual tasks and academic experiences are most affected. It aims to discover and to document what it is like to be participating in the scheme, whether as teacher or pupil, and, in addition to discern and discuss the innovation's most significant features, recurring concomitants and critical processes".

In the illuminative approach, the study is carried out under naturalistic conditions instead of under controlled 'laboratory-type' experimental conditions. The task is to provide a comprehensive understanding of the complex reality or realities surrounding the project.

This research methodology will enable the writer to make observations, hold interviews with teachers and pupils and administer questionnaires to the participants. This will be followed by data analysis collected from the respondents, in order to help illuminate problems and important issues.

The chief characteristic of an illuminative approach is an openness to the situation being investigated. It takes into consideration that subjective judgements of various individuals and interest groups are relevant and seek to report on those. Measurement becomes only part of the whole design of collecting data. This approach does not only concentrate on pupil achievement but looks into how the tests for instance, are affected by other factors in a school. The hallmarks of an illuminative approach are the in-depth analysis and a seeking after understanding rather than the mere collection of figures.

A weakness inherent in the illuminative approach is that it tends to make it difficult for the person conducting research to adopt a neutral, value-free, objective position as he would do if he had used a psycho-statistical approach which is Scientifically tidy; but the latter would fail to protray the opinions of the participants in their entirety. However, a value-free, objective position seems not attainable in a research which deals with human beings, because human nature does not allow it.

An illuminative research may be distorted by subjective influences due to the research relying on tuition rather than objective criteria.

3.1 Subjects Description And Sampling Procedures

Standard Nine pupils from nine senior secondary schools were involved in this study. There are eight circuits in Venda, and for the sample to be representative, it was felt that each circuit should be represented by one school.

Most schools in Venda fall under rural areas and only one school in this sample falls under an urban area.
Initially, the writer wanted to find out if there was any significant difference between the performance of pupils in urban schools compared with those in rural schools. It was felt that the information from rural schools would outweigh that of urban area school since there was only one school found in this area. As such, a school outside Venda, which teaches Venda pupils was included in this study, making the sample schools nine.

The selection of these schools is considered appropriate because teaching and learning in these schools is likely to be influenced by the differences due to the location of the schools.

MI and TA Senior Secondary schools are in urban areas. TA has a small number of pupils. Almost all the teachers are undergraduates with the exception of the principal and one member of staff. MI consists of Black and White teachers and most of them are graduates. Because of the shortage of classrooms, Standard Eight has been done away with and the school starts only from Standard Nine to Ten. Admission restrictions at MI are only imposed on the Standard Ten pupils, that is, pupils who have failed Standard Ten from other schools are not admitted. At TA pupils residing locally are the only ones admitted.

ME, DA and VL are typical rural schools with large numbers of pupils drawn from the surrounding areas, despite the shortage of classrooms and teachers. Teachers are very few at these schools. At DA all but one are undergraduates. There is only one class for the one hundred and seven geography pupils at DA and one class for the ninety-three geography pupils at VL. MU, TW and TV are situated in rural areas which are being developed into urban areas, and few teachers have degrees at these schools.

LU Senior Secondary School has a unique character. It has large numbers of pupils, with a very big shortage of staff and classrooms. There are only two under-graduate teachers (including the principal) and nineteen of them have Standard Ten only. Of the twenty-one teachers at this school, twelve are qualified to teach only lower classes with either a Junior certificate Teachers course or a primary Teachers Diploma, and the rest are unqualified teachers. The principal's office is conspicuous by its absence, and at times because of the shortage of classrooms, the staffroom is converted into a classroom leaving teachers with nowhere to stay.

Geography has turned out to be the most popular of the subjects done in std 9 and one can be tempted to believe that it is quasi-compulsory.

Although Geography is not a compulsory subject, the curricula of these schools are such that pupils are compelled to do Geography either because Geography is paired with a subject they like best (for instance Housecraft or Biblical studies), or they cannot do science subjects since the curriculum does not provide a wide choice of subjects.

For the purpose of effective in-depth study, a maximum of fifteen interviewee was decided on from each school by a random sample method. Each pupil was given the chance to be selected by using this method. In all the sample consisted of one hundred and thirty-five pupils from the nine schools.

3.2 Pilot Study

A feasibility study was carried out in two schools which were not included in the study. This was carried out on a highly informal basis including loosely structured interviews to pupils and teachers. From this pilot run

emerged two questionnaires, one to be answered by teachers and the other by pupils. It was found, from the pilot study, that teachers were eager to motivate their responses and it was decided to present as many open-ended questions as possible, although difficulties are encountered when analysing these responses.

A number of questions used in interviewing pupils were reworded as a result of this experience.

3.3 Gathering Of Data

Data was collected from three sources - Geography teachers, the sample pupils and the 1985 June Geography marks. Three methods of collecting data were used - observations, interviews and questionnaires.

3.3.1 Observations

Observations were thought to be very useful in describing classroom behaviour. They were thought as the best approach for gathering accurate information about what takes place in classrooms. By observing procedures in teaching, the writer wanted to determine whether teachers do arrange the learning environment of the pupils in a way that concepts are acquired in a meaningful rather than superficial way. Observations have the advantage of enabling the observer to conduct the study in the subject's natural environment.

In some of the schools, observations came hot on the heels of a panel inspection. To some Geography teachers, the period after a panel inspection meant relaxation from making thorough preparations. As a result of this, most teachers gave all sorts of excuses, pointing out to the writer that they should have been given time to prepare

their lessons. However, such requests in all schools were not acceded to, for an artificial learning-situation would have been set.

Two lessons were observed in each school and by so doing, the writer familiarized herself with the day-to-day reality of the setting she was studying. These observations provided a valuable supplement to achievement data.

3.3.2 Interviews

The data from participant observation was complemented with information taken from interviews. As a research technique, the interview is a conversation that is carried out with the definite purpose of getting certain inform tion. It is designed to gather valid and reliable information through the responses of the interviewee. Interviews, according to Sax (1968), represents a direct attempt by the researcher to get reliable and valid measures in the form of verbal responses from one or more respondents, and data obtained represent attempts to confirm or reject hypothesis. Kerlinger (1973) considers interviews as one of the most powerful tools in social research.

The interview has the advantage of being highly flexible and can be applied to many different types of problems. Again, the interviewer may change the way of questioning if the occasion demands, he can rephrase his questions if the answers given by a subject are unclear and ambiquous. He can also be able to collect personal attitudes, perceptions, information or beliefs and probe for additional information if needed. The pupils are likely to be open and frank with the interviewer and this adds to the validity of the interview.

The interviews conducted with the Geography teachers were semi-structured where structured questions were asked followed by clarifying unstructured questions. The concern of the writer in these interviews was to find out the methods that teachers use in helping pupils to acquire concepts and the difficulties which they encounter in teaching concepts.

To assess pupils' conceptual understanding in Geography, an interview schedule was devised for the area of Geography being investigated. A series of short questions was devised to probe pupils' understanding of each of the concepts and this included all the relevant sub-concepts and the relationships of those concepts. These short questions provided pupils with a lot of opportunity to demonstrate their level of understanding. Each interview was designed to last thirty-five to forty minutes and to be administered to pupils individually.

Initially, the writer wanted to tape-record each interview. The use of a tape-recorder was considered appropriate because it is an efficient instrument of retaining the entire oral communication. It was also going to be used to guard against interfering with the process of conducting interviews. However, The act of tape-recording the interviews appeared to make the pupils somewhat uneasy. After interviewing four pupils, it was felt that pupils would make more errors with the tape-recorder near them than they normally would and the idea of a tape-recorder was abandoned.

The interviews were a little short in that they averaged about thirty-five to forty minutes. There was very little that could be done about this, bearing in mind that interviews took place during the time when there were a lot of unscheduled official school activities. Pupils were required to take part in the unscheduled uneducational school activities at random, making it impossible for the writer to have more time with the interviewee.

There was a conscious strategy employed by the writer to relax the respondents as soon as possible. They were told that efforts were being made to help them understand Geography better and as such the writer needed to test their understanding of Geography before that could be done. Before starting with the structured interview, an informal interview was conducted with each sample pupil about Geography. This proved very effective in creating a warm atmosphere conducive to getting information from pupils.

Pupils were free to tell the writer the problems they encounter in Geography; for example, pupils told the writer about the way in which Geography lessons are conducted.

By far the greatest problem in the interview situation is bias. The respondent or the investigator can project their own personalities into the situation due to the flexibility of the situation and they can influence it by means of gestures, different emphasis and facial expressions. Cosper (1972) asserts that the very presence of the investigator will affect the responses he will obtain, but this of course cannot be avoided. This was magnified in the investigation because of the writer's previous teaching experience. Another disadvantage is that fewer pupils can be tested out of the total number because only one pupil can be interviewed at a time.

The concepts selected for investigation were only from physical geography. These concepts were selected because they are prerequisite to pupils' full understanding of Geography. Again, these concepts are found in an area that is receiving considerable emphasis in textbooks.

The writer hypothesized that mature, stable and accurate concepts of atmosphere, atmospheric pressure, horizontal pressure difference, pressure gradient, and pressure gradient force would make the necessary appropriate 'cognitive' preparation for the understanding of coriolis force.

3.3.3 Questionnaires

The questionnaires were used as a back-up to provide data which might establish additional problem areas and to provide additional data for the focus established by observation and interview. Two questionnaires were administered - one for Geography teachers and another for Geography pupils.

The basic structure of the pupils' questionnaire was that of closed questions, requiring only one-word answer to pupils. This was done to allow for easier analysis of the results. Pupils' questionnaire was drawn up to asses their perspective perceptions of the nature of problems they experience in studying Geography. The teachers' questionnaire was mainly open-ended in order to get more detailed responses. Both questionnaires were pretested on the pupils and teachers who were not included in the sample. Modifications were made to the questions after the pretest.

Questionnaires were considered appropriate in this study because each respondent gets the same set of questions phrased in exactly the same way and the data obtained from the questionnaires are more comparable than information obtained by means of interviews. A questionnaire is objective and can establish a reasonable degree of internal validity and reliability. However, the motivation of the respondent cannot be checked when using a questionnaire and without the indication of the emotional level of the respondents, it is difficult to judge the validity of their responses.

In this study, it was felt that the questionnaire would be complemented by the interviews.

During the administration of the questionnaires, the writer was present to clarify any misunderstandings or pupils' uncertainity and to make sure that the subjects selected for the sample returned their questionnaires, failing which would have resulted in a biased sampling.

The pupils responded to their questionnaire at the same time and they were not allowed to discuss the questions until after responding to it. Teachers were allowed to answer their questionnaire at their own time.

The pupils' questionnaire was answered by the only Standard Nine Geography class at TA and ME Senior Secondary Schools, with a total number of thirty-four and forty-seven pupils respectively; at MI ninety-seven pupils answered the questionnaire; at LU the questionnaire was administered to seventy-six pupils; at TV one hundred and fifty-three pupils answered the questionnaire; at DA and VL, the questionnaire was answered by one-hundred- and one and eighty-seven pupils respectively; at TW only sixty-one pupils responded to the questionnaire and lastly at MU the questionnaire was answered by eighty four pupils.

All the Geography teachers in these schools were asked to respond to the questionnaire. Twenty-seven teachers answered the teachers' questionnaire.

3.3.4 Data Analysis

The research findings from the two questionnaires has been presented in the form of tables and descriptive statements. The organisation of data in tables has provided the writer with the means for measuring relationships and differences between variables. Cohen and Manion (1980, P. 257) suggest rank scoring and response counting, among others, as possible methods of working out the data.

Because the teachers' questions in the questionnaire are open-ended, the interviewee's responses are recorded during the interview itself and subjected to content analysis. The data are submitted to response counting thereafter.

In this study, in order to give a clear or completely trustworthy evidence of the presence or absence of a relationship between the pupils' understanding of concepts in the interview and the pupils' performance in the June examination, the Spearman's Rank Order correlation Coefficient is used. The spearman's Rank Order correlation coefficient is suitable in this study as a test statistic to test the association between two variables.

CHAPTER 4

4. OBSERVATIONS IN VENDA

4.1 Data Obtained from Observations

The observations made were found to be very revealing. They pointed out clearly that if one wants to understand and improve the process of teaching, one should take cognisance of teaching as it happens in its most familiar setting, the classroom.

From the observations made, it became patent to the writer that teachers did not prepare their lessons thoroughly to fit properly into the time slot allocated to it on the time-table. This was one of the greatest difficulties that more than half of the teachers (52%) encountered. The teachers ran short of the subject matter twenty minutes before the end of the lesson and had to start all over again with the lesson without asking questions. One would think that their experience in teaching would enable them to time lessons correctly, but this was not the case in all the lessons observed. Four teachers confessed that they were not well prepared and that they ought to have been told on time about the observations in order to prepare themselves well. This made the writer to realize that most teachers are well prepared when they are told about an inspection or a visit by an official, so as to give the impression that everything is well in schools.

The teaching-learning situation is still dominated by the "traditional" approach of teaching, namely, the teacher stands in front of his class and lectures to passive pupils. He ends up by giving pupils notes which they learn off by heart and later regurgitate in a test or an examination.

This type of education is what Holdstock in Collier (Rand Daily Mail Eve, January 7, 1982) calls the "mug and Jug" theory of education, which was propounded by Rogers. The teachers are the jugs pouring their contents into pupils, the empty mugs.

The lessons observed were good examples of teacher-centred approach as opposed to teaching-learning situation. The teachers complained after the lesson about pupils not having a sound background, either because they were not well taught or did not do Geography in Standard 8. The teachers seem to be very aware of the unsound background of pupils but they proved to be too busy to supply pupils with the necessary background.

It was also observed that most teachers had difficulties of expressing themselves in English and as such it became almost impossible to impart the subject matter effectively. Most teachers used both Luvenda and English in their teaching with a lot of time given to explaining things in Luvenda. The problem of language has long been noted by Makhudu and Reel in Freer (1983), when they contend that "there has been a noted low level of teacher competence in spoken and written English." Although this has been a case in the Soweto English Research Project, it nevertheless applies in all the levels of teaching in most, if not all, Black schools. The difficulty of language that teachers have will obviously be conveyed to pupils. White (1983) strongly feels that all teachers need adequate command of the language used for teaching and of basic instructional skills.

The secondary classes in Venda have an average occupancy of 60 and classes of over 103 are not uncommon. Over-crowding is so severe in classrooms that teachers find it virtually impossible to give pupils individual attention which is very important in learning.

4.2 The Prescribed Textbook

TABLE 1

EXTENT TO WHICH TEXTBOOK IS HELPFUL	N	%
Sometimes	23	85,1
Often	4	14,8
Hard ly ever	-	-
TOTAL	27	100

Most teachers (85,1%) have indicated that the prescribed textbook used is not always helpful. The general complaint from these teachers is that the language used in the textbook is very difficult for pupils to understand. They feel that a lot of facts and material are crammed into the textbook but not interrelated or explained at length. They also feel that terms are used without full explanation. They go on to say that the textbook has very outdated statistics, maps and data. They further state that large sections of regional Geography are totally outdated.

It is interesting to note that of all the teachers, only 14,8% stated that the textbook is helpful to them. They argue that it is helpful to them because it covers the syllabus well.

4.3 The length of the Syllabus

Insofar as the length of the syllabus is concerned, the Geography teachers were very critical of it. 74,1% of the teachers are not satisfied with the length of the syllabus. The general trend of the argument, which came out clearly from interviews and questionnaire, was that the syllabus was too long to be covered within a year. The teachers indicated that at times lessons were taken up for weekly tests and at other times there were sudden interruptions in school work, resulting in less time available for effective teaching. Their other complaint was that examinations were spread over a very long period, so that teaching time was reduced.

44,4% of the teachers acknowledge that it becomes difficult to make effective teaching when the syllabus is overloaded. They indicated that they rush through the syllabus in order to meet the deadlines for the completion of the syllabus. They further indicate that they rush over the syllabus in order to make pupils pass without them understanding important issues in Geography. What they say they are concerned with under such conditions is giving pupils facts for the examination.

In the light of the above findings, one can safely conclude that quality is being sacrificed to meet the deadlines for the completion of the syllabus. On the other hand, the overloaded syllabus should be unloaded to allow effective teaching to take place. The syllabus should be more selective, rationalized and relevant to the pupils' environment.

4.4 The Use of Geography Dictionary

To question sixteen, "Do you use a Geography dictionary?", 51,9% of the teachers answered in the affirmative, and 48,2% were negative (see table on the next page).

TABLE 2

RESPONSES	NUMBER	PERCENTAGE
Yes	14	51,9
No	13	48,1
TOTAL	27	100

The fact that 48,1% of the Geography teachers do not use a Geography dictionary is a cause for concern. When these teachers were interviewed, they agreed that they had not been exposed to any Geography dictionary. The cause for concern comes in when one realizes that almost all the sample schools, save one, have Geography dictionaries, and one or two teachers are using them. This suggests that there are no contacts among teachers teaching Geography in Schools. There does not appear to be the togetherness which should and could exist between the subject-head and teachers. Every teacher seems to be trying to fight the battle alone which could be easily won if they would pool their resources and their thinking. When this aspect of a Geography dictionary is considered in the light of the fact that 85,1% of the teachers find the textbook helpful sometimes, it appears reasonable to assume that teachers experience a lot of difficulties in handling Geography because there is nowhere they refer to; and with no contacts among teachers, the teaching of Geography becomes unpleasant.

4.5 Teachers' Perceptions Of Problems/Difficulties Experienced By Pupils In Understanding Geographical Concepts

TABLE 3

DIFFICULTIES	N	%
Pupils' failure to link what they are taught with what is obtained outside the classroom	19	70,4
Lack of sound background	25	92,4
Poor comprehension ability in English	24	88,9
Academically ill-equiped teachers responsible for Geography in lower classes	11	40,7

Table 3 reveals that a high percentage of teachers (92,4%) sees the lack of background as the most hindrance to pupils' understanding of geographical concepts. Many of pupils did not do Geography in Standard 8 and this poses a number of problems to both teachers and pupils. The teachers were sceptical about the way the Standard 8 examinations were conducted in Venda in 1984. They feel that there was a poor screening of pupils; that is, there were irregularities that left much to be desired in the marking of scripts. This resulted in pupils who were poor in Standard 8 passing along to the next grade. There was also a unanimous feeling that pupils should start with Geography from lower classes and not from standard 9.

Twenty percent of the teachers feel that the way in which the Standard 8 examination is set encourages rote-learning. They maintain that it is easy to see what the examiners are after when going through a question paper. The teachers who mark those papers are also aware of how pupils could score high marks and their teaching is geared towards that with no emphasis on basic concepts. They go on to say that the examination questions are designed to demand recall of learned facts rather than reasoning. Pupils are also aware of the assessment procedures so that they know they could pass the examination even when they are dull.

Approximately 89% of the teachers have indicated that pupils have poor comprehension ability in English. As it has been said elsewhere in this report, most teachers too have difficulties of expressing themselves in English. To put this right, teachers should get some lectures in English to correct this and there would be no problems with pupils.

It is also stated by 40,7% of the teachers that pupils find difficulties in understanding geographical concepts because Geography is put in the hands of academically ill-equiped teachers in the lower classes.

70,4% of the teachers say that pupils fail to link what they are taught with what is obtained outside the classroom. This point further highlights the importance of fieldwork. Fieldwork puts teachers in a position to make Geography come alive, because what is learned rests upon foundations of reality. It also enables pupils to make sense out of their environment. Reality should not be studied in a second-hand manner, but pupils need to go out and see for themselves. However, during the interviews and discussions held with the teachers, 82% of

the teachers out of the whole sample, put the blame of pupils not understanding geographical concepts on themselves. Their line of argument was that they were not going out with pupils to make Geography a practical subject to them.

4.6 The use of other Textbooks

With reference to the question whether the teachers consult other textbooks when preparing their lessons, 48%, responded in the negative and 52% responded in the affirmative. When one looks at the 85,1% of the teachers who said that the textbook was helpful to them sometimes, one wonders how the 48% of the teachers manage to present a good lesson using that prescribed textbook only.

The successful teaching of Geography is, to a certain extent, dependent upon the use of other textbooks. Although the textbook is a necessary aid, it should not control teaching. Most teachers are using only one textbook. There are serious concomitant disadvantages in using one textbook. Firstly, textbook writers do not give detailed descriptions of specific examples of all the phenomena they treat in their attempt to cover everything in Geography. Secondly, the language used in some of the prescribed textbooks is difficult for pupils to understand; that is, textbooks are far too advanced for pupils, and as such they learn most of the concepts parrot-wise. Teachers should make use of supplementary books which would simplify the language and give enough examples to topics treated. More should be done to discourage parrot-learning from the textbook.

4.7 The Difficulties Experienced By Pupils In Understanding Geography

In the first phase of this study, standard 9 pupils at two Secondary Schools which were not included in the sample were asked to list the reasons that they felt were important in their not understanding Geography. The reasons given were grouped into four categories and included in the questionnaire administered to sample pupils. In response to the question whether pupils have difficulties in understanding the Standard 9 Geography, 87,7% responded in the affirmative while 12,3% answered in the negative. As illustrated in table 4, 30,6% of the pupils experience problems with the prescribed textbook. Regarding the difficulty of not being able to relate what they have learned in the previous lesson to the new lesson, 28% of the pupils identified this as their problem. 17,4% of the pupils responded by indicating that they are expected to memorize definitions of terms and reproduce them in a test. On the other hand, 18% of the pupils stated that they cannot understand their teachers. However, relatively few pupils (6,4%) indicated that they experience the problem of not following their teacher's explanations.

MI and LU have higher percentage (99% and 100% respectively) in as far as understanding their teachers is concerned. The writer feels that this partly explains why pupils at these two schools are not able to relate the previous lesson to the new.

TABLE 4

THE DIFFICULTIES EXPERIENCED BY PUPILS IN UNDERSTANDING GEOGRAPHY

DIFFICULTIES	SCHOOLS																			
	TA		DA		MI		ME		Ta		LU		VL		MU		TV		TOTAL	
	n	% of class	n	% of class	n	% of class	n	% of class	n	% of class	n	% of class	n	% of class	n	% of class	n	% of class	n	% of the total sample of 740
The textbook used is difficult to understand	9	26,5	90	89,1	70	72,2	38	80,9	31	50,8	56	73,7	68	78,2	70	83,3	100	65,5	532	30,6
I cannot relate what I have learned in the previous lesson to the new lesson	20	58,8	56	55,4	66	68	25	53,2	44	72,1	69	90,8	66	75,9	30	35,7	112	73,2	488	28
I am expected to memorize definition of terms and reproduce them in a test	14	41,2	24	23,8	71	73,2	26	54,2	20	32,8	60	78,9	27	31	27	32,1	33	21,6	302	17,4
I cannot understand my teacher	3	8,8	9	8,9	96	99	15	31,3	16	26,2	76	100	21	24 1	2	2,4	68	44,4	306	17,6
I do not follow my teacher's explanations	0	0	0	0	19	19,6	14	8,3	11	18	14	18,4	4	4,6	4	4,8	56	36,6	112	6,4

* n = 740 number of pupils who gave this response.

4.7.1 The "Other" Problems Experienced By Pupils

4.7.1.1 Fieldwork

Most pupils (84,3%) stated that they did not do fieldwork to see things in reality so that they could remember them best. This supports the fact that no fieldwork was done in Geography in all schools but one. In fact, there was 95,4% response in the negative when pupils were asked as to whether they did fieldwork in Geography.

Geography is the study of man's spatial, physical environment and his interaction with that environment. Beckedahl and others (1979, p.3) contend that Geography has a "real, tangible manifestation in a real world and it seems absurd that one should study reality entirely in a theoretical manner. A theoretical approach inevitably leads to a polarization between what "teacher said" and what exists in the physical world around us".

It is important to have pupils gain information from the primary source, because it makes them understand most of the concepts well. Baster in Educamus (May, 1985), sees the importance of fieldwork as developing the critical reasoning ability of pupils. He contends that pupils are always spoonfed with ready-made concepts, deductions and conclusions which they accept without questions.

Most pupils have not been on an educational tour with their teachers. Only one school did fieldwork. Approximately 88% of the teachers wrote that they do fieldwork with pupils. However, teachers contradicted themselves when they were interviewed about this. Those who never did fieldwork were quick to say that they had never gone out with pupils. The reason why they wrote they did was, as they said, because they knew it was important to do fieldwork with pupils. Almost all the teachers (88,8%) when interviewed on why they did not undertake educational tours, they related the difficulty they experienced with the authorities who did not give them permission to go out. Their other problems were that

pupils were unwilling to pay for the trips, and that they (teachers) did not have time for fieldwork because the seven Geography periods a week were used for teaching, giving notes and writing weekly and monthly tests. The teachers feel that since the syllabus is long, there would not be time for fieldwork because they are required to finish it on time and having given pupils a specific number of tests.

The teachers should know that fieldwork does not necessarily involve large amounts of time or long journeys to make it successful. Bailey (1974) argues that fieldwork can be done anywhere. From the observations made, an inordinate amount of time is spent revising a lesson which only takes fifteen to twenty minutes to finish. This made the writer to feel that teachers do have a lot of time at their disposal, but that they do not know what to do with it. One thing that could be successfully done is planning short educational trips to help pupils relate what is in the textbook to what is outside the classroom. It is a vital part of lesson planning to arrange the subject matter to lead to the selected end. A Geography teacher would only be fully effective in teaching when he speaks in some measure from his own experience and understanding (Bailey, 1974). This, the writer believes, is lacking in most teachers because they have not, in some instances, seen the things they teach about. When the pupils get some of their evidence at first-hand from the world outside the classroom, this also adds to the full effectiveness of the teacher. Field studies, according to Beckedahl and others (1979, p.5), help pupils in the process of consolidation. Instead of pupils comprehending in a compartmentalized fashion, fieldwork becomes the means through which they can visually perceive and take part in the interactions of physical, economic and human activity over space and through time. These may be truisms, but they do not seem to be recognized as such in many schools.

Another important factor to be noted is that when teachers were interviewed about what they considered as the basic problem to pupils in understanding geographical concepts, twenty-two (81,5%) responded by saying that pupils have difficulties because they are not taken out to the environment they study. The teachers give one the impression that they know they should be prepared to take pupils out but they would rather not, perhaps because of being under pressure of time.

Also, there are contrasting arguments in connection with fieldwork between the teachers and pupils. Whilst teachers argue that pupils do not show any interest of going on an educational tour, pupils have indicated their interest in undertaking such tours in the questionnaire. The pupils show their interest in fieldwork because of the importance they attach in doing that. A lot of pupils argue that they understand the lesson better when they are taken out to see things for themselves. It is arguable that educational trips are not well planned so that pupils have problems in asking for money from their parents when they have just asked for money to go on another school trip. Another point is that teachers may not be encouraging pupils in a way that they see the importance of fieldwork.

4.7.1.2 <u>The Difficulties In Understanding Teachers</u>

As indicated on table 4, 17,6% of the pupils have problems in understanding their teachers. It is interesting to note that among pupils who have "other" problems, 30,3% have indicated that their teachers use non-understood terms when teaching them so that they are left confounded after the lesson. Pupils have voiced their frustration in the use of jargon in Geography and it should be noted that the use of such special words has disadvantages in the learning of pupils.

4.7.1.3 The Treatment of Pupils' Responses in Tests/Examinations

The "other" problem reported by the pupils is that when they give answers in their own words, teachers mark them wrong. This was reported by approximately 34% of the sample. 33,4% of the pupils stated that they memorize facts in Geography without understanding since it makes them get high marks. This point reiterates the fact that pupils are encouraged to learn things parrot-wise from the textbook, which many teachers are overdependent on. What strengthens this argument is the 32,8% of the pupils who indicated that teachers did not explain their difficulties when asked. The pupils were told to go and study at home. Whilst the writer agrees that pupils should do a lot of reading on their own, she finds it unprofessional not to help pupils out with their difficulties. Pupils do need guidance from teachers and if they learn without understanding, that is, through memorizing as it appears they are required to do that, it is almost wholly useless for them. When pupils give answers in their own words it shows understanding and this should be encouraged, because it is superior to the regurgitation of facts and concepts learned off by heart from a text-book.

4.8 Teaching Aids

Teaching aids are considered to be important in effective teaching and this strengthens the link between theory and the environment. Teaching aids are not used today in schools. This is substantiated by the information given on table 5 on the next page.

TABLE 5 Responses to the Statement "My teacher uses teaching aids to help me understand the lesson". (APPENDIX D) (Question 15)

RESPONSES	SCHOOLS																			
	MI		TA		ME		DA		VL		MU		TW		LU		TV		TOTAL	
	n	% of class	n	% of class	n	% of class	n	% of class	n	% of class	n	% of class	n	% of class	n	% of class	n	% of class	n	% of the total sample of 740
Strongly agree	-	-	8	23,5	-	-	-	-	-	-	2	2,4	-	-	-	-	-	-	10	1,4
Agree	3	3,1	1	2,9	-	-	-	-	-	-	4	4,8	-	-	-	-	-	-	8	1,1
Strong disagree	37	38,1	14	41,2	35	74,5	73	72,3	52	59,8	74	88	29	47,5	54	71,1	112	73,2	480	64,8
disagree	57	58,8	11	32,4	12	25,5	28	27,7	35	40,2	4	4,8	32	52,5	22	28,9	41	26,8	242	32,7
TOTALS	97	100	34	100	47	100	101	100	87	100	84	100	61	100	76	100	153	100	740	100

n = 740 Number of pupils who gave this response.

64,8% of the pupils strongly disagree that their teachers use teaching aids to help them understand a lesson. A further 32,7% of the pupils disagrees with the statement. This is in agreement with 22% of the pupils, who indicated that the "other" problem that makes them not to understand Geography is that there are no teaching aids used.

The statement "My teacher uses only maps and a globe as teaching aids in Geography" (Question 18) was included in the pupils' questionnaire in order to check whether the teachers used any of the teaching aids available at school. The results as given on table 6 show that most pupils strongly disagree (53,2%) to this statement. A further 32,4% of the pupils disagrees to the statement. A mere 7,3 % strongly agree while only 7% agree with the statement. This means that neither of the aids present is used. However, TA and MU have different responses. At TA a higher percentage of pupils (32,4%) strongly agreed with the statement and a further 29,4% agreed to the statement. TA is situated in an urban area and a variety of teaching aids are found here. Perhaps one of the reasons why this school has a lot of teaching aids would be found in the fact that the principal is a Geographer, doing post-graduate studies in Geography and also offering Geography in Standard Ten. One would expect this school to have all relevant materials because the principal has an interest in Geography and he knows what should be used to help pupils in learning. For an analysis of these responses see Table 6 on the next page.

At MU the results show that 21,4% of the pupils strongly agree with the statement "my teacher uses only maps and a globe as teaching aids in Geography." A further 14,3% of the pupils agrees to the statement.

TABLE 6 Responses to the statement "My teacher uses only maps and a globe as teaching aids in Geography". (APPENDIX D) (Question 18)

RESPONSES	SCHOOLS																			
	MI		TA		MF		DA		VL		MU		TW		LU		TV		TOTAL	
	n	% of class	n	% of class	n	% of class	n	% of class	n	% of class	n	% of class	n	% of class	n	% of class	n	% of class	n	% of the total sample of 740
Strongly agree	8	8,2	11	32,4	–	–	–	–	5	5,7	18	21,4	2	3,3	–	–	10	6,5	54	7,3
Agree	4	4,1	10	29,4	–	–	7	6,9	9	10,3	12	14,3	4	6,6	–	–	8	5,2	52	7
Strongly disagree	50	51,6	7	20,6	39	83	60	59,4	50	57,5	33	39,3	32	52,4	50	65,8	73	47,7	394	53,2
Disagree	35	36,1	6	17,6	8	17	34	33,7	23	26,4	21	25	23	37,7	26	34,2	62	40,5	240	32,4
TOTALS	97	100	34	100	47	100	101	100	87	100	84	100	61	100	76	100	153	100	740	99,9

n = 740 number of pupils who gave this response.

MU has two teachers offering Geography. One of them is highly experienced in the teaching of Geography, that is, he has seventeen years of experience in teaching Geography. As observed in his classes, he uses teaching aids and most of them are prepared teaching aids.

Part of the answer to the question why teachers do not use aids should possibly be found in the fact that 99% of the teachers have pointed out during interviews that there are no teaching aids in schools. In almost every school visited a globe and maps of the world which were in a bad state were found. When asked why they did not have teaching aids, most teachers (63%) blamed their principals for not purchasing aids for them. They also attached greatest significance to the fact that there was a lack of time to construct aids.

Most teachers indicated that they did not have topographical maps which were very important in Geography. What has become clear to the writer in this regard is that teachers are not making use of the In-service centre where, in the department of Geography, there are so many teaching aids that could be of help to them. The topographical maps which are not found in schools are given free at the In-service centre.

Almost all the teachers (81,1%) indicated that they use teaching aids when giving lessons. Although a globe and maps are found in schools they are, in most cases, never employed by teachers as table 5 and 6 have shown. The sudden disappearance of pictures in Geography today is almost as great a loss in the classroom as the disappearance of maps. Long and Roberson (1970, p.71) argue that pictures form an important and vital link between outdoor and indoor study. Pictures encourage fieldwork methods in the classroom. They further assert that if teachers cannot go out with pupils, an analysis

of, say a landscape, can be carried out indoors with the right picture. Pupils, according to Long and Roberson, "show considerable innate interest in looking at well-chosen pictures." A verbal definition of a concept not accompanied by illustration may lead to a somewhat hazy concept or to a completely erroneous idea at the worst. Graves (1971, p.33) hints that the use of all kinds of audio-visual aids is a "means of ensuring that, for example, when the word 'escarpment' is mentioned, pupils have a fairly accurate notion of what the word stands for, because, they have examined several escarpments on photographs."

Granted. Pupils cannot directly perceive all the objects in Geography they are learning. There is a limit to the amount of fieldwork that can be undertaken, but that does not absolve the teacher from the blame of not bringing the learner closer to the direct experience of reality. The means to that end are, among others, aspects such as picture study, map reading which things are absent in schools.

4.9 Pupils' Feelings About Geography Lessons

With reference to table 7, most of the pupils strongly agree that they understand the lesson best if their teachers involve them in a discussion (52,8%). A further 41,1% of pupils agrees on this point. 3,8% of the pupils disagree with this idea whereas only 2,3% strongly disagree. The high percentage here (52,8%) indicates that pupils prefer methods of teaching which will make them involved actively in the lesson rather than methods whereby they are passively involved. These responses are in accord with 26,5% of the pupils who indicated that the "other" problem they experienced in understanding Geography was that they did not have much time for discussion but that only teaching and writing took place most of the time.

TABLE 7 Responses to the statement "I understand the lesson best if my teacher involves us in a discussion". (APPENDIX D) (Question 19)

	SCHOOLS																			
	MI		TA		ME		DA		VL		MU		TW		LU		TV		TOTAL	
	n	% of class	n	% of class	n	% of class	n	% of class	n	% of class	n	% of class	n	% of class	n	% of class	n	% of class	n	% of the total sample of 740
Strongly agree	46	47,4	21	61,8	25	53,2	49	48,5	48	55,2	48	57,1	30	49,2	37	48,7	87	56,6	391	52,8
Agree	42	43,3	11	32,4	15	31,9	49	48,5	35	40,2	33	39,3	26	42,6	32	42,1	61	39,8	304	41,1
Disagree	4	4,1	1	2,9	2	4,3	2	2	2	2,3	–	–	5	8,2	7	9,2	5	3,3	28	3,8
Strongly disagree	5	5,2	1	2,9	5	10,6	1	1	2	2,3	3	3,6	–	–	–	–	–	–	17	2,3
TOTALS	97	100	34	100	47	100	101	100	87	100	84	100	61	100	76	100	153	100	740	100

n = 740 number of pupils who gave this response.

At TV and MI, pupils were unanimous in complaining about their teachers who taught for few minutes and spent the rest of the period cracking jokes. The writer believes that pupils at TV and MI have voiced their frustration at the lack of preparation on the part of the teachers, when 68% and 73% of the pupils respectively stated that their teachers come late to class everyday and rush over the subject matter. There is absolutely no virtue in going to class late, for professional courtesy demands punctuality. At, TV in particular, it was pointed out that unless teachers were fetched from the staffroom, they would not go to class regularly to teach.

In all schools but three, namely TA, MU and ME, pupils have difficulties in understanding Geography because their teachers only read from the textbook without them understanding. Most of the pupils who did not do Geography in Standard Eight complained about teachers skipping most of the work related to the Standard Eight work, encouraging them to go and revise at home. These pupils saw that as a stumbling block to learning because they are never guided. The pupils also indicated that there are no revisions done of the previous work before the teachers start with a new lesson.

The observations made support the line of argument put forward by pupils above, and that does not only apply to one school. Teachers only went into the class and started off with a new lesson. In many cases, no mention was made of the previous lesson even when it was connected to the new. What made it worse was that what was taught in the lesson was not made to have any relevance to what was

outside the classroom. A particular case is very much in point here. Almost all the teachers observed were treating primary activities in human Geography. There were no examples of primary activities given from pupils' surrounding areas; for instance, primary activities such as farming, forestry, fishing and mining are mostly done in Venda. Pupils would have understood the lesson better if these activities were related to what is written in the textbook.

4.10 Methods Used By Teachers in Teaching Concepts

TABLE 8

METHODS	N	%
Question and Answer	3	11,1
Textbook	5	18,5
Telling and discussion	3	11,1
Telling	14	51,9
Lecture, discussion, Question and answer and group activity	2	7,4
TOTAL	27	100

A large percentage of teachers (51,9%) revealed that they use the telling method only in teaching concepts. An equal number (11,1%) use question and answer, and telling and discussion methods respectively. 18,5% use the textbook method.

A small percentage of teachers (7,4%) stated that they use lecture, discussion, question and answer and group activity methods.

Geography is partly a descriptive subject and pupils must learn, among other things, to write good descriptions of places. The high percentage of teachers using only the telling method is a cause for concern. The exposition method alone in teaching, as Long and Roberson (1970, p.28) put it, is contrary to many good purposes of education. They go on to say that telling, at worst, "devolves into a routine set of notes, all to the same pattern, perhaps even copied down by the class". However, this does not mean that pupils are precluded from taking down notes. What Long and Roberson (1970) consider as important about pupils' notes is how they come to make them.

Most teachers would accept that telling is not teaching; but despite the unfortunate effect mere telling has had upon Geography, the tradition dies hard. A lesson should be characterized by an active interplay between teacher and taught, which was absent in almost all the schools observed. Very few teachers (11,1% and 7,4%) indicated that they use, among others, the discussion method. This did not appear to be the case as personal visits to the classroom have shown, save with 7,4% of the sample. The question and answer method was used in most cases when teachers wanted to see whether pupils understood the lesson, or when pupils were asked to name something. Most of the teaching took the authoritarian pattern of learning where pupils accepted information from the teacher and from the textbook without questioning. This, the writer finds to be in keeping with the "banking" concept of education (Freire, 1970). Pupils become 'depositories', they are seen as 'adjustable', manageable beings who are therefore easily 'dominated'. The teacher is often a classroom despot. During interviews, the teachers did

point out that the discussion method helps pupils to develop critical thinking and that while they are aware of this, they cannot use the method because it takes a lot of their teaching time and cannot be effective in overcrowded classes.

The writer agrees with Frances in Helburn (1979, p.329) when he says that teaching the answers without raising the questions takes most of the meaning out of learning. The writer feels that teachers should provide situations where pupils are motivated to take an active part in the lesson. Properly done, this would ensure that the pupils are thinking for themselves rather than being the passive recipients of facts or conclusions.

A cause for concern is the admission by approximately 19% of the teachers that they use the textbook method only. Their argument is that the textbook method helps pupils to study exactly what the teacher has taught. In the light of the above findings, it seems not illogical to conclude that Geography-teaching seems to be too geared to the study of the textbook. Pupils see geographical concepts as something to be committed to memory for future reproduction in a test or an examination. In fact, this point is also emphasized by 33,4% of the pupils elsewhere in this report. The writer feels that to stick slavishly to the textbook and to be unable to put one's personal stamp on the work, shows a lack of adequate training and the necessary zeal and interest in teaching the subject.

4.11 What Teachers Emphasize in Tests

TABLE 9

	NUMBER	PERCENTAGE
Reasoning out answers	11	40,7
Recall of learned facts	20	74,1
Application of facts	15	55,6
No response	1	3,7

With reference to table 9, 74,1% of the teachers acknowledge that when they set tests, they put emphasis on recall of learned facts, 55,6% on application of facts; 40,7% on reasoning out answers and 3,7% made no response.

It is interesting to note that when teachers were asked what they considered as a successful lesson, 59,3% cited helping pupils understand more important geographical concepts. 51,9% considered the lesson successful when pupils are supplied with enough body of ordered facts and 40,7% indicated that when pupils are able to define the main concepts of the lesson, their lessons are successful. For an analysis of these responses see Table 10 on the next page.

TABLE 10 What teachers consider as a successful lesson

	N	%
Supplying pupils with enough body of facts	14	51,9
Helping pupils to understand the most important geographical concepts.	16	59,3
Pupils able to define the main concepts	11	40,7

When one compares the information given on Table 9 with that on Table 10, a question arises. Why when there is 74,1% of the teachers laying emphasis on recall of learned facts in the test, should 59,3% of the teachers help pupils to understand the most important geographical concepts in making the lesson successful? The writer believes that when preparing a lesson, teachers do think about helping pupils to understand geographical concepts, but in practice this is not so. This is supported by 44,4% of the teachers who, when arguing about the effects of a long syllabus on teaching said that effective teaching was impossible with such a syllabus. They argue that in such a case all they do is to give pupils facts for examination purposes.

Facts are, impermanent. They change rapidly, whereas concepts make people to handle situations with greater ease, to order, classify, and relate what may otherwise prove chaotic. Concepts are more flexible and

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