

DECLARATION

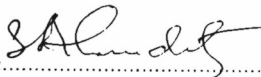
I declare that the thesis for the degree of Doctor of Education at the North West University hereby submitted has not been previously submitted by me for a degree at this or any other university, that this is my own work in design and execution and that all materials taken from other sources contained herein have been duly acknowledged.

SIGNATURE:
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CERTIFICATE OF ACCEPTANCE

This thesis entitled “**Factors Influencing Learner Achievement in Grade 12 in the Mafikeng District**”, written by Elbie-M’fungwe Mwenesongole of the Department of Professional Studies and Internship, in the Faculty of Education, is hereby recommended for acceptance for examination.

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DEDICATION

This work is dedicated to my husband, Maguzeni and my children who supported me throughout the writing of this thesis. A special dedication goes to my late father, Henry M'fungwe and my mother, Lidess Chibinda who brought me to this earth. A special dedication to Sundie, Ellen and Musanchi for their technical support. Above all, to my God who sustained me throughout the writing of this project.

ABSTRACT

In this study, the factors influencing learner achievement in Geography mapwork were investigated. The survey method was used. Literature review, questionnaires, interviews and observation schedules for both the educators and learners were used to collect data.

The questionnaires and interview questions for both the educators and learners reflected the learners' achievement, school problems and how the learners' performance could be improved. Observation was both participant and non-participant. These observations served two purposes: to establish the teaching strategies/methods used in the classroom, and to establish the classroom interaction between educators and learners and their influence on learner achievement.

The investigation involved 208 research participants from schools in the Mafikeng District. The findings reveal that most learners do not perform well in mapwork because they lack motivation in doing mapwork, they lack basic skills to map reading, and finally, they lack basic mathematical skills.

Therefore, there is need for re-skilling and retraining for all those involved in mapwork such as educators and learners in areas such as basic skills to map reading, basic mathematical skills and the importance of motivation.

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CHAPTER 1

BACKGROUND TO THE STUDY

1.1 INTRODUCTION

"Success breeds success" is one of the key principles of Outcomes-Based Education (OBE). A learner who does well at school is the one who experiences the positive rewards of school success and builds feelings of personal and academic confidence and competence (Heacox, 1991:2; Mwamwenda, 1995: 269; Pierangelo & Guilian, 2002; Van der Horst & McDonald, 2003:6).

Failure leads to negative feelings about self and school, which also lead to continued failure (Heacox, 1991:2; Mwamwenda, 1995; Pierangelo & Guilian, 2002; Mwamwenda, 2004). Many people think that learners who fail in academic learning areas are of low ability or 'troubled' learners, but this is not always the case, as other factors might come into play. There are learners who have the ability to do well in school but fail due to lack of motivation (Mwamwenda, 2004).

This study focused on learner achievement in the section of mapwork in Geography at Grade 12 level in Mafikeng District, Central Region, North West Province, Republic of South Africa (See Appendix VII). Mapwork is known to educators, learners and authors of textbooks on mapwork, as the area of greatest difficulty for students (Graves, 1980; Okpala, 1988:31; Ndlwana, 1992:1; Blackbeard, 1992: cover page).

1.1.1. Past Studies Related to Research Topic

1.1.1.1. Student Attitude

Studies which have examined students' attitude to mapwork, physical geography and regional geography, have shown that mapwork presents the greatest difficulty (Osakwe, 1982; Akande, 1982; Uwaya, 1985 and Ndlwana, 1992). Most of these studies were done in Nigeria, United Kingdom (U.K.), and South Africa. Akande (1982) investigated the factors that drove some learners away from Geography classes in some Nigerian schools

and found out that the relevance of geography to practical life, and availability of qualified teachers were the motivating factors. He added that wide coverage of the subject was confirmed as a repelling factor. The first two factors are similar to Ohuyeba's (1981) findings in his investigation of the trend in performance of students in geography in school certificate examinations in Nigeria. He attributed poor performance to shortage of qualified teachers and lack of or little practical work, among others.

Burton (1986:14-16) highlighted a number of characteristics of maps which produce learning difficulties; for example, selectivity, map conventions, relief and contours, scale and perception. Other studies and reports have revealed that students' performance in mapwork is generally poor (Boardman, 1983; Burton, 1986:1; WAEC, 1994:93 and Tshibalo, 1999:1). As a solution to students' poor ability to interpret survey maps, Boardman (1983) emphasises the need for adopting improved teaching approaches to facilitate their understanding of concepts in mapwork. The studies in Nigeria (Okpala, 1988), United Kingdom (Naish, 1988), and South Africa (Rambuda, 1994) investigated the teaching styles involved in teaching mapwork in secondary schools. The findings revealed that:

- *the teaching of mapwork in the selected classrooms was teacher – oriented;*
- *most teaching was organised on a whole class basis;*
- *teaching styles were dominated by lecturing and drilling based on past and typical examination questions;*
- *the thinking processes of classroom verbal interaction were dominated by routine classroom activities and memorization;*
- *productive thinking was significantly under-emphasized; and*
- *verbal interaction in the classroom was dominated by teacher talk (Okpala, 1988:36).*

Naish (1988:11) adds that the way the subject is taught affects the way it is learned and this often affects the total educational experience of the students. He concludes by saying that the nature of teaching style in relation to the teaching of geography may help in enhancing the effectiveness of students' learning (Kelly, 1989; Pierangelo & Guilian, 2002).

Studies concerned with improved teaching approaches (Ausubel, 1968; Flanders, 1976; Onasanya, 1982; Davwar, 1984; Arjun, 1990; Mbuce, 1997, and Tshibalo, 1999) have investigated the following teaching methods:

- Lecture methods vs. discussion methods
- Group-centred vs. teacher-oriented teaching (Ausubel, 1968)
- Discovery method vs. lecture method (Davwar, 1984)
- Inductive vs. deductive strategies (Arjun, 1990)
- Co-operative learning method (Tshibalo, 1999)

All the studies above were done at secondary school level, except Tshibalo's (1999) which was done at tertiary level. All these studies reveal the necessity to use a variety of teaching styles to improve the learners' performance (Naish, 1988:12). Naish (1988:16) summarises that teaching styles fall between two extremes: progressive and traditional teaching.

He argues that progressive teaching is forward looking and good. It is democratic, enquiry-based, child-centred and concerned with problem- solving and decision-making. Traditional teaching, on the other hand, is often stereotyped as autocratic, didactic, formal, old-fashioned, academic in style and not open to value discussion.

Bennett (1976:38) did a systematic analysis of the characteristics of progressive and traditional approaches and suggested that the teaching style is clearly linked with all the basic elements of a curriculum system. In simple terms, it shows that the teaching style and curriculum are closely interrelated.

The teaching styles in geography were taken forward by Fien, Gerber and Wilson (1988) who advocate the use of a variety of teaching styles to improve performance in geography.

Naish (1988:16) calls on the teachers to question the way they teach, and asks whether they vary their classroom strategies according to the nature of the topic or the characteristics of the learners.

The motivation for this research, therefore, is a result of the above findings: the difficulty of Geography mapwork, and the learners' poor performance. One wonders whether there is a "cause-effect" relationship between the two findings or whether there are other factors that contribute to the poor performance in mapwork at Grade 12 level in South African schools.

1.1.1.2 Student Performance

Uwaya (1985) investigated factors influencing students' performance in geography in some Nigerian schools. The two factors investigated were:

- Students' attitude towards the subject, and
- The availability and adequacy of instructional materials for teaching and learning geography in schools.

The results indicate fairly positive attitudes towards geography, even though both the students and the teachers regarded mapwork and physical geography as the most difficult areas (Osakwe, 1982; Okpala, 1988, and Ndlwana, 1992). Akande, (1982) added that both the teachers and learners considered the geography syllabus too wide.

Poor performance in geography in School Certificate Examinations has been the concern of many geographers in the UK (Boardman, 1983), in Nigeria (Ohuyeba, 1981), in Australia (Fien, Gerber and Wilson, 1988), in Zimbabwe (Khupe & Khupe, 1995) and in South Africa (Burton, 1986 and Tshibalo, 1999).

Ohuyeba (1981) investigated the trend in performance of students in geography in School Certificate Examinations in Nigeria between 1976 and 1980. He collected examination results in ten sampled schools and administered questionnaires to teachers in order to elicit reasons for poor performance. He found out that results deteriorated from 77.4% success rate in 1977 to 27.7% in 1980. He attributed poor performance to:

- shortage of qualified teachers,
- lack of essential materials,
- perpetual use of lecture methods and note copying with little practical work, and

- lack of time devoted to the teaching of geography in schools.

Suggestions made include:

- quality and quantity of teachers should be improved,
- teachers should provide adequate and suitable instructional materials, and that
- the content of geography should be re-examined.

In this research, all three suggestions above were investigated in connection with the section of mapwork in geography.

1.1.1.3. Quality and Quantity of Teachers

With regard to quality and quantity of teachers in geography, Russell (1987) articulates that without a strong force in geography, the quality of instruction will suffer. The quality of teaching affects recruitment of students and influences option choices for matric and higher education entry. Hebben and Whomsley (1983:285) claim that it is the expertise and enthusiasm of specialist teachers that attract students to a subject. Unfortunately, geography is regarded by some principals as a suitable subject for non-specialists to teach (Khupe and Khupe, 1995:19). The quality and quantity of geography educators was also an important variable in this study.

1.1.2. Potential to Learn

All children have the potential to learn and to personally succeed in school, yet not all children can be high achievers, since everyone differs in their abilities and interests. It is this researcher's conviction that underachievers in any learning area want school to be different (Heacox, 1991:2). Some children are angry, some are hurt, nearly all have negative feelings about themselves, but they still have a desire to be successful in school, but they don't know how. What then, are the factors for learners' academic success or failure?

1.1.3. Student Achievement

Heacox (1991:3) states that some people say that student achievement relies most on a supportive home environment and parental priorities. Others claim that the educator who controls the learning determines the outcomes. Still others insist that motivation to learn

and succeed must come from within the learner. In her experience in working with underachievers, Heacox (1991) believes that learner success and failure depend on all three: parents, educators and learners.

It is true that educators and parents provide the learning environment, the support systems and the modelling for achievement that learners need to succeed. However, the learner's own learning abilities, interests, academic skills, work and study habits, and personal issues such as self-esteem, stress, and perfectionism also have a direct bearing on students' school performance (Heacox, 1991:3).

Positive change is more likely to occur if partnerships are formed that involve the school and the home (Berkowitz & Bier, 2005). It is even best when parents, educators and learners co-operate to identify the causes for lack of school success and develop a plan for change. For positive change to occur, it will depend on three factors:

- The number of causes for underachievement;
- How long the learner has been underachieving – the sooner these habits are identified, the faster they can be reversed; and
- The quality of the partnerships formed between parents, educators and the learners (Heacox, 1991:4)

The home and school environments were also explored in this study to determine their influence on learner achievement in mapwork in geography.

1.1.4. Education Transformation in South Africa

Education in South Africa is undergoing transformation towards a more Outcomes-Based mode of teaching and learning. There is need to prepare learners for success in the 21st Century, hence education in South Africa needs to promote co-operation rather than conformity, integration in the curriculum as well as among learners and educators rather than segregation. Learning needs not be isolated from life outside the classroom, as Akande (1982) discovered in his study, but it should change to become less educator-centred and more learner-centred, less transmissional and more transactional (Kramer, 1999:89; Van der Horst & McDonald, 2003; Jacobs et al, 2004).

Educators need to move from traditional delivery mode of “chalk-and-talk” and share the workload of teaching and learning with learners. Educators need to move from being “active providers” and learners “passive customers” of education, to being guides and managers of a process where learners are engaged in achieving skills, knowledge and values for their futures (Kramer, 1999:90; Van der Horst & McDonald, 2003:80; Jacobs et al. 2004).

In the National Curriculum Statement – Further Education and Training (FET) Phase, Grades 10-12 (Department of Education (DoE), 2002:62), one of the five essential geographic skills to be developed in learners is “acquiring geographic information by gathering information from a range of sources in a variety of ways”. The skills and methods involved in this process include, among others, reading and interpreting maps and other graphic representations.

In the Revised National Curriculum Statement (RNCS) Grades R-9, Senior Phase (DoE, 2003:71), mapwork is one of the focus areas for Grades 7-9 learners. For example, at Grade 7 level, learners need to develop skills in:

- extracting information from maps and photos,
- measuring distances on maps, atlases and globes and converting to reality, and comparing orthophotos with reality where possible (DoE, 2003:71).

At Grade 8 level, learners need to develop skills in:

- extracting information from maps and photos,
- identifying features on maps and orthophotos, and
- comparing distances on maps and orthophotos. (DoE, 2003:72).

At Grade 9 level, learners need to develop skills in:

- extracting, analysing and comparing information from maps, atlases, satellite images, aerial photographs, and
- correlating information with observation in the field (DoE, 2003:73).

From the above quotations, it is clearly seen that maps are the distinctive tools of the geographer and the basic documents for much geographical teaching. Geography educators should bear in mind that maps serve as the basic tool of the subject and that

learners should be given a thorough grounding in mapwork, and this groundwork includes as much practical work as possible. Maps cannot be 'learnt' and the ability to interpret them correctly can only be acquired through doing practical work with the learners.

It is a well-known fact that mapwork presents learners with greater learning problems than is generally realised. Topographic maps, such as the Ordnance Survey 1:50 000 (O.S.) series, are very complex documents. These are the maps used in schools in preparation for the mapwork section in geography assessment, especially at Further Education and Training (FET) Phase. Even though the learners at FET level are introduced to such maps while in the Senior Phase, especially in Grade 9, most learners find it difficult to interpret them and to master complex conceptual skills and contours.

Topographical maps are highly selective and conventionalised representations of the real world, and their interpretation demands learners to have a considerable level of imagination and the mastery of these skills (Ndlwana, 1992:3).

Burton (1986: 14-16) describes a number of characteristics of maps, which produce learning difficulties. These are:

- selectivity
- map conventions
- relief and contours
- scale
- perception

These characteristics are explained in detail in Chapter 2.

1.1.5. A Trend in Performance in Geography from 1999 to 2003

Performance in Geography in the North West Province is shown in Tables 1 and 2 below. Table 1 shows performance at Matric level for the whole province from 1999 to 2003. Table 2 shows learners' performance in Geography in only four schools in Mafikeng District, Central Region.

Table 1: Matric Geography Results - Year 1999-2003
Northwest Department of Education - South Africa

YEARS	1999	1999	2000	2000	2001	2001	2002	2002	2003	2003
	H.G.	S.G.	H.G.	S.G.	H.G.	S.G.	H.G.	S.G.	H.G.	S.G.
No. Wrote	17224		16568		13516	6073	10573	9021	8613	9975
No. Passed	5107		3353		2895	4946	2553	5781	2531	8319
Ave. Passed	33.31		30.70		29.36	40.48	31.99	37.75	34.84	41.35
MEDIAN	30.70		6.94		25.15	28.92	28.66	34.19	24.06	34.22

At Provincial level, the Matric results from year 1999 to 2003, the average pass of all learners was below 35% at Higher Grade (H.G.) level and below 42% at Standard Grade (S.G.) level. Learners who pass four or more learning areas (subjects) at H.G. level qualify for Matric exemption and can be admitted to any tertiary institution in South Africa. Learners who take subjects at S.G. level do not qualify for university entry. The results in Table 1 above are a combination of both Paper 1 and Paper 2. Paper 1 is usually a practical paper where Ordinance Survey Maps are used to answer the questions. Items in Paper 1 include: Mathematical calculations, relief and contours, scale and measuring distance, economic and human geography. Paper 2 is usually content. Items include: Physical Geography, Ecology, Settlement Geography, and Economic Geography.

Table 2, however, shows Grade 12 continuous assessment marks (CASS), June results and Matric results. The average pass mark in all cases is quite low, especially, in Paper 1 results in CASS and June assessments, which eventually affect the final Matric results.

Table 2: Learners' Performance in Four Schools in the Mafikeng District

	JUNE 2003		MARCH FINAL 2003		FINAL 2003	JUNE 2004		CASS 2004 SG
	P1	P2	HG	SG	HG	P1	P2	
School 1								
No. wrote	20	20						20
No. passed	9	9						12
% passed	45	45						42.5
Median	40	40						40
School 2								
No. wrote		72			77			62
No. passed		4			2			61
% passed		6			3			98
Median								
School 3								
No. wrote				30		19	19	
No. passed				25		9	9	
% passed				83		47	47	
Median				38		34	32	
School 4								
No. wrote						104	104	
No. passed						8	31	
% passed						8	30	
Median						20	31	

1.2. STATEMENT OF THE PROBLEM

This researcher, through her interest in, and contact with students of Geography over the years, has come to the conclusion that learner achievement in the section dealing with mapwork in Geography is generally not very encouraging. It looks like most learners find mapwork in Geography rather difficult. The reasons may not be obvious and, therefore, one positive way of tackling the challenge posed by the problem is to investigate factors responsible for this state of affairs.

In order to satisfy the researcher's curiosity, she embarked on this study which investigated the possible factors that influence learner achievement in mapwork in high schools. The study concentrated on the Grade 12 level learners of Geography in the North West Province of the Republic of South Africa.

1.2.1. Research Questions

In trying to get to the root of the problem, the following research questions formed the backbone of the investigation:

- Question 1 Why do learners find mapwork difficult to master?
- Question 2 Which aspects of mapwork do learners find difficult to understand?
- Question 3 Which aspects of mapwork do educators find hard to explain to learners?
- Question 4 What teaching strategies, methods and techniques do Grade12 educators in the North-West Province prefer to use in their daily practice of teaching Geography, particularly the section on mapwork?
- Question 5 Which of these teaching strategies, methods and techniques employed by the educators of Geography enhance learner attainment in mapwork?
- Question 6 Does educator attitude contribute positively or negatively to learner achievement in mapwork?
- Question 7 Does learner attitude contribute positively or negatively to learner attainment in mapwork?
- Question 8 To what extent do the home and school environments influence learners and educators to improve student results in mapwork?

1.3. THE PURPOSE AND OBJECTIVES OF THE STUDY

The main purpose of this study was to investigate why learner achievement in mapwork in Geography is generally poor in secondary schools in the North-West Province of the Republic of South Africa, and use the findings to develop a guideline to help improve the teaching-learning process that enhances learners' performance in mapwork.

The following specific objectives contributed to the achievement of the above main purpose, namely:

- To determine the influence of learner and teacher attributes on performance in mapwork (Q. 1, 2, & 3).
- To determine the influence of instructional strategies on learner performance in mapwork (Q. 4 & 5).
- To determine the influence of learner and educator attitudes on performance in mapwork (Q. 6 & 7).
- To determine the influence of home and school environments on student performance in mapwork (Q.8).
- To determine the influence of quality and quantity of educators on learner performance in mapwork (Demographic characteristics & literature study).

1.4. SIGNIFICANCE OF THE STUDY

It is hoped that this study will bring to light the factors that contribute to the failure and success in the section of mapwork in Geography. The findings will enable this researcher to establish some guidelines and make some practical suggestions on teaching strategies and techniques that will be considered as effective in improving learner achievement in mapwork and Geography at large. The information will be disseminated to the:

- Geography Curriculum Developers, so that they can review the content of mapwork for schools;
- Department of Education to help with the recruitment of geography specialists; and
- Lecturers and trainee teachers of Geography at higher institutions of learning to help review the Geography methodology modules and to better equip the trainee teachers in the teaching and learning process in mapwork.

1.5. DELIMITATION OF THE STUDY

- The study examined only a sample of high schools in the Mafikeng District, Central Region, North West Province, Republic of South Africa (See Appendix V11).
- Even though the researcher was looking at the factors of learner achievement at Grade 12 level, she did not lose sight of the fact that the issue of passing or failing at Grade 12 is a cumulative process starting right from the junior grades, presently known as the Senior Phase – Grades 7-9.

There are many factors that can contribute to failure or success in mapwork. Among them are the environments, intelligence, motivation, politics, financial constraints and social settings. In this study, the focus was on classroom learning, home and school environments and motivation, as the possible factors for learner achievement.

- Only “historically disadvantaged” schools were involved in this study because of the high prevalence of the problem in question in such schools.
- The results of this study, therefore, can only be generalized to such schools in the Central Region of North West Province.

1.6. DEFINITION OF CONCEPTS

1.6. 1. Achievement

According to Webster’s Dictionary (1993:16) achievement is defined “as the act of achieving: successful completion, accomplishment, fulfillment of an ambition, performance by a student in a course.”

Mensah (1999:9) defines achievement as the “outcomes of Grade 12 learners as measured by Grade 12 Matric Examinations administered by the Northern Province (now Limpopo) Department of Education.”

In this study, achievement is used to mean successful completion or performance by a learner in mapwork in Geography.

1.6.2. Performance

In Webster's Dictionary (1993:1678), performance means “the ability to perform; the capacity to achieve a desired result.” Mensah (1999:9) defines it “as the effort exerted in the process of achieving an outcome.” In this study, it means the capacity to achieve a desired result, in Geography or any other subject.

1.6.3. Matriculation Examinations (Matric Exams)

“Matric” is the shortened form of the term Matriculation Examination. According to Lawton and Gordon (1998:118-119), candidates who achieved credit grades in five subjects, including one at least from each of three groups: humanities, foreign languages, mathematics and science, at the School Certificate Examination, were given matriculation exemption by the majority of universities. In this study, the final examination that Grade 12 learners write is referred to as Matric Examination. This examination is prepared by the Provincial Department of Education according to their rules based on the National Government requirements.

1.6.4. Secondary School

Nthangeni (1991:6) states that a secondary school is for those who have received elementary primary (basic) tuition but who have not yet proceeded or qualified for entry into a university, especially learners from 11 to 16 years old. Lawton and Gorton (1998:159) add that it can also refer to state - aided institutions of the same category, for example, mission assisted secondary schools.

In this study, secondary school refers to a public institution usually run by the government where children of school age between 14 and 16 years pursue a course of study for three years starting from Grade 10 to Grade 12. In this research, private schools have been excluded. In South Africa, secondary schools are interchangeably used with the term "high schools". In this case, all middle schools are excluded as they only run from Grade 7 to Grade 9.

1.6.5. Further Education and Training (FET) Phase

Further Education and Training (FET) is the new term used in Outcomes - Based Education to denote the second level of exit from the school system. The first exit is at the end of the Senior Phase (Grade 9). In this study, FET Phase refers to Grades 10-12, formerly known as the senior secondary school or high school. These three terms are used interchangeably.

1.6.6. Learners

Learners are children or adults who are attending a course of study in formal or informal education settings. In this study, it refers to pupils or students, who are attending formal schooling in government institutions. All three terms: learners, pupils and students are used interchangeably.

1.6.7. Successful Learners

According to Webster Dictionary (1993), success is a noun related to the degree or measure of an outcome. Success or failure can only be explained by looking at the complex interactions that occur in a school environment and then isolating the variables that contribute to the result (Houliham, 1988:1). According to Houliham, success is relative.

In this study, successful learners are those who consistently perform well taking into account other variables. They are also referred to as "high achievers".

1.6.8. Diplomates

Diplomates refer to Grade 12 teachers who have the professional qualifications such as Senior Secondary Teaching Diploma (SSTD), Secondary Teacher's Diploma (STD) or Further Diploma in Education (FDE) but do not possess a university degree. They are also referred to as 'qualified teachers'.

1.6.9. Underachievers

Heacox (1991:12) refers to underachievers as children who are performing below their capabilities. Mensah (1999:9) refers to underachievers as learners who consistently achieve below 50% pass rate taking into account other variables. In this study, underachievers will refer to learners who consistently fail or do not perform well, taking into account other variables.

1.6.10. Educator

An educator is one of the persons involved in the teaching-learning process of learners. In this study the term also means the teacher, and the two words will be interchangeably used.

1.6.11. Motivation

This is the force that determines how much effort an individual puts into his/her learning. Farrant (1980:113) states that the engine of human motivation is interest and desire. It is therefore in the teacher's interest to see to it that the learner's interest and appropriate desire is aroused before trying to teach him/her. In this study, motivation refers to the arousal of learner's interest and desire to learn mapwork.

1.6.12. Effective Teachers

An effective teacher is one who aspires continually to achieve perfection in whatever

he/she does. Effective teachers have the following qualities: Academic attainment, professional efficiency, personal attributes and general components such as dedication to duty, a sense of responsibility, perseverance, and punctuality. In this study, effective teachers are those who possess the above qualities.

1.6.13. Mapwork

Mapwork involves the skills of map reading, map analysis and map interpretation, the essence of Geography teaching. These skills are all part and parcel of Paper 1 Geography Examination.

1.6.14. “Historically Disadvantaged” Schools (HDS)

Before 1994, schools in South Africa were racially grouped as follows: White, Coloured, Indian and African Schools. The African schools were the least resourced schools and they are now referred to as the “historically disadvantaged” schools. These schools are still under resourced and the student and educator population is homogeneous, that is, they are Africans with similar social, economic, and educational background.

1.7. RESEARCH ASSUMPTIONS

It is assumed that:

- The educators teaching Geography to Grade 12 learners are professionally qualified. They either have Senior Secondary Teaching Diploma (SSTD), Secondary Teachers Diploma (STD), Further Diploma in Education (FDE) or Higher Diploma in Education (HDE) and possess a university degree.
- The Grade 12 learners have been exposed to map reading in Geography at the Senior Phase (Grade 7-9).
- Grade 12 educators have relevant working knowledge, personality, proper social relations with learners, and also have sufficient background knowledge of learners and are able to motivate the learners to learn (Nance & Fawns, 1993:168).
- All learners have the potential to learn and to personally succeed in mapwork.

- The learners' success or failure depends on parents, teachers and students.
- The learner's own learning abilities, interests, academic skills, work and study habits, and personal issues such as self-esteem, stress and perfectionism have a direct bearing on school performance (Heacox, 1991:3).
- Motivation, success and achievement are closely linked to one another.

1.8. PLAN OF THE STUDY

This thesis is structured as follows:

Chapter 1 discusses the background of the study and the statement of the problem, including the purpose and objectives of the study, research questions, significance of the study, delimitations of the study, and definition of concepts.

Chapter 2 reviews the related literature to the study, including the theoretical background to the study, relevant teaching strategies and models of teaching.

Chapter 3 discusses research procedures including research design, target population for the study, sample size and sampling procedures. Included also are the instruments used for collecting data, reliability and validity of the questionnaires.

Chapter 4 analyses the collected data using descriptive and inferential statistical analysis such as Frequency Data Analysis.

Chapter 5 summarises the results from the study and relates them to the research questions, concludes and makes the necessary recommendations based on the findings. This chapter also presents some guidelines for motivating learners to achieve better results in mapwork.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

Geography has traditionally embraced the study of maps, and many geographers have suggested that 'knowledge of maps lies at the heart of the subject' (Borchert, 1987; Khupe and Khupe, 1995:19; Liebenberg, 1998:111).

Maps are the distinctive tool of the geographer and the basic documents for much geographical teaching. However, they seem to present learners with greater learning problems than is generally realized (Bailey, 1974:32; Lambert & Balderstone, 2003: 125). Hurry (1978:36) defines a map as a pictorial representation of part of the earth's surface. The map contains only those features that the compiler of the map wishes to show. These features are depicted by means of signs and symbols, the meanings, which are explained in a key. Even though maps are essentially representations of reality, they bear little resemblance to the original area of the land they represent.

They are 'abstractions' of the reality, showing only selected pieces of information (Hurry, 1978:38; Lambert & Balderstone, 2003: 125). Learners in lower grades often have difficulty in interpreting map scales, and cannot grasp the concept of linear scale properly.

It is therefore imperative that young learners be given a thorough grounding in mapwork, and this grounding includes as much practical work as possible (Lambert & Balderstone, 2003: 125). Maps cannot be 'learnt' as such and the ability to interpret maps correctly can only be acquired through doing practical work with them.

Liebenberg (1998:111) defines geographic visualization (GVIS) in terms of map use and not map design. In so doing, he strengthens the notion that in the teaching of geography, an understanding of key concepts such as direction, distance, scale, spatial location,

spatial distribution, spatial variation, spatial association and spatial differentiation can best be tested by means of maps (Liebenberg, 1998:111; Lambert & Balderstone, 2003: 125). It is therefore very important that geography learners should have a clear understanding of the basic cartographical concepts concerning earth-map relations and cartographical symbolism (Hurry, 1978:39; Khupe & Khupe, 1995:19; Liebenberg, 1998:111).

Without this knowledge, and without being trained in all three of the components of map use, namely, map reading, map analysis and map interpretation, the geography learner will never be in a position to use and understand maps to the optimum (Liebenberg, 1998:111; Lambert & Balderstone, 2003:126).

2.2 COMPONENTS OF MAP USE

Map use involves the reader's recognition of the signs and symbols on the map and the deduction of the spatial information message from them. The process of map use comprises three components: map reading, map interpretation and map analysis (Khupe & Khupe, 1995:23; Liebenberg, 1998:112).

2.2.1 Map Reading

According to Board (1984), level one tasks comprise what is usually referred to as map reading, that is, the identification of individual symbols and the differentiation of these symbols on the basis of their shapes and relative size, for example, identification of a particular contour line, spot height, place name, vegetation type or road junction. This is geographically referred to as map reading (Muehrcke, 1978; Hurry, 1978:45; Khupe & Khupe, 1995:23).

Lambert and Balderstone (2003:126), define map reading as a 'rather specific and limited action such as looking at the name of a city or a country or finding how high a hill is'. When learners read a map, they should be able to detect symbols, distinguish among symbols, recognize symbols with the help of a legend and estimate information given by map symbols (Hurry, 1978:45; Khupe & Khupe, 1995:23; Keates, 1996:13-14; Weedon, 1997:173; Lambert & Balderstone, 2003: 125-126).

According to Khupe and Khupe (1995) and Keates (1996), a simple map reading exercise may include:

- **Detection:** recognizing features such as cultivation areas, rugged terrain, communication lines and rivers;
- **Discrimination:** distinguishing physical form, human features, for example, settlements and communication lines from rivers and highlands;
- **Recognition:** naming features using the legend, for example, a prospecting trench can be recognized by referring to the legend; and
- **Estimation:** this would involve value determination like estimating the height of the summit of a hill using the contour interval.

Hurry (1978:45) is of the view that when reading a map, the map user needs to ask such questions as 'what, where, and when' Map reading is an essential skill in that it acts as an 'appetizer' as Khupe & Khupe, (1995:23) state, towards a more comprehensive map analysis and map interpretation. It gives the map-reader a more synoptic view of the map.

2.2.2 Map Analysis

Level two tasks incorporate level one tasks. This level of task involves pattern recognition. The map user recognizes symbol groups on a map as a whole, and visualizes the spatial patterns presented. This task is referred to as map analysis, for example, recognition of settlement patterns, drainage patterns and contour landforms (Liebenberg, 1998:112). Map analysis is a little more complex, it requires the map user to ask such questions as 'which, how and why' (Hurry, 1978:56).

The 'which, how and why' questions are asked in addition to the 'what, where and when' questions. After the learners understand how to read a map, they must analyse it. Special attention is paid to measurement and classification, for example direction of river flow, distribution of settlement pattern sizes and shapes, and measuring distances along roads and rivers.

2.2.3 Map Interpretation

Level three map use tasks require the map user to seek 'causal relationships' which are often not explicitly displayed on the map. This process involves the integration of map symbols with other information. The map symbols are identified as representing actual phenomena in a real landscape, for example, identification of a steep slope.

Liebenberg (1998:112) emphasizes the fact that the higher order map use tasks incorporate those at the lower level. This task is referred to as map interpretation (Hurry, 1978:56; Khupe & Khupe, 1995:23; Liebenberg, 1998:112).

Hurry (1978) clearly indicates that map interpretation is the most difficult section of mapwork. For interpretation, the learners have to think very carefully and clearly. They must use all the geographical knowledge they have ever learnt. The 'why' questions are used in addition to the above questions stated under map analysis. The learners have to use cumulative knowledge of map reading and map analysis. for example, a question like *'Why are all the major settlements found to the east of the map?'* would be asked under map interpretation.

Khupe and Khupe (1995:23) define map interpretation as the process through which information received from the map is integrated with pre-existing information in the map user's cognitive realm. They continue to say that the skill of map interpretation is at a higher level than that of map reading. This is in line with the opinions of Hurry (1978), Board (1984), and Liebenberg (1998), on map interpretation.

Khupe and Khupe (1995:23) see map interpretation as involving higher-level cognitive processes like deduction, inference, analysis and synthesis. According to Bloom's Taxonomy of Educational Objectives, Cognitive Domain, skills could be introduced to learners when they have fully grasped relationships. In this case, for beginners in map reading, map interpretation may simply involve making inferences such as the presence of dip tanks as evidence of ranching or pastoralism, water tanks as evidence of drought and the presence of a country club, golf course and a gridiron layout as evidence of an urban settlement.

2.2.4 Conclusion

For many high school learners, the very mention of mapwork seems to send a shudder of fear through them. There is really no reason to fear if the learners are well trained in the three components of map use: map reading, map analysis and map interpretation of the principles learnt in Physical Geography. It requires some independent ability on the part of the learner and it cannot be learnt off by heart, as it may be the case with the other sections. Mapwork is easy once the learner has mastered the techniques involved. Once learnt it is hard to forget.

In the following section, the problems of understanding maps are explored.

2.3. PROBLEMS OF UNDERSTANDING MAPS

There are a number of characteristics of maps which produce learning difficulties: These are:

- Selectivity
- Map Conventions
- Relief and Contours
- Scale
- Perception

(Bailey, 1974:32-36; Burton, 1986: 14-16).

2.3.1. Selectivity

When teaching mapwork, the selecting of mapmakers is often forgotten. No map shows everything; what it shows depends upon the purpose for which it is intended. Hence selectivity can be a source of bewilderment to learners, who may find it difficult, for example, to understand how, a plain white paper on the Ordnance Survey 1:50000 map can be a representation of the cultivated landscape they see around them (Bailey 1974:32; Burton, 1986: 15).

The idea of selectivity and its relation to the purpose of the map needs to be developed systematically. For example, if the map is meant for motorists, what kind of detail needs to be included, and what detail needs to be left out? This type of discussion, repeated at

different levels, helps to impress on learners the need for selectivity. The principle of selectivity will eventually be developed when pupils draw their own maps.

It is very important for the educator to consider what maps s/he uses with his/her learners exactly show. For example, a town on a small-scale map is shown by a dot. What do the learners 'see' in this dot? Do they visualize the town in the same way as the educator – its layout, appearance, growth-stages, and functions? Small-scale maps give extremely skeletal picture of reality, and their full interpretation requires a wealth of background knowledge, which learners do not have. This variable has been examined in this study.

2.3.2. Map Conventions

Map conventions, including conventional signs, also pose problems to learners. One of the conventions that cause most misunderstanding is that of colour. Most pupils, especially in lower grades, may have no idea why it is logical to show water surfaces in blue, e.g. rivers, lakes, marshes and the sea which are not generally blue, except where they reflect the blue sky. Again, they may see no reason why main roads should be marked in red, or built up areas in grey, when roads are usually made of asphalt and towns are a variety of colours. It is necessary to develop the logic behind the use of map colours in a systematic way. This variable is also included in this study.

2.3.3 Relief and Contours

Many learners find contours difficult to read and understand, even when they grasp the principles involved. The principle of contouring need to be taught early in the secondary school and regularly repeated. The use of solid models on which contours are drawn are very useful. The use of models which have a third dimension, is without doubt, the most efficient way of explaining height representation on maps. Only then, will learners understand the concept of height fully (Burton, 1986: 14, 19).

2.3.4. Scale

Map scale is another area of concern. Piaget (1985) and others have investigated the average age by which children can understand the idea of scale, and concluded that few

can do so by eleven, or fourteen. However, if large-scale plans and maps of familiar areas are introduced early in conjunction with large air photographs, then much younger children can understand the principles involved.

Another aspect of the problem of scale is being able to visualize distances and heights from map reading. This aspect has to be developed gradually over a period of years, and still, some learners never get it right. One's appreciation of the scale of a landscape is closely related to one's own first-hand experience (Bailey 1974:36; Burton, 1986: 19). This variable of scale is also investigated in this study.

2.3.5. Perception

Perception refers to the way we look at things. Bailey (1974:29) and Burton (1986: 15) suggest that learners and educators often perceive the same environment in quite different ways. Learners may find it difficult to separate the various elements that they can see, hear, smell and touch in the environment or on the map. Moreover, their perception of the relationships and relative importance of what they observe on the map or in the environment may differ greatly from the perception of their educator.

The educator, by training and experience, can look at the map or in the environment, select certain features as significant and reject others; can assign different degrees of importance to objects and events; can see some items as a foreground to the mental picture, and others as being in the background. However, the learners will do none of these unless they are systematically taught how and why to do them.

The development of a geographical perception of the local environment is a slow process. It can only be achieved by a continual analysis of one's own assumptions, and by a patient questioning of the learners to 'see what they perceive' (Bailey, 1974:30; Burton, 1986: 24).

2.3.6. Conclusion

It has already been noted that these difficult conceptual skills have a direct bearing on the overall performance of the geography learner, especially if these skills are poorly

developed at the Senior Phase of schooling. Therefore, it is imperative that educators handling Senior Phase classes are well trained. Russell (1987) points out that without a strong teaching force in geography, the quality of instruction will suffer. This variable of teachers' qualifications is later explored in this study.

In the next section, the role of maps in Geography is discussed.

2.4. THE ROLE OF MAPS IN GEOGRAPHY

Geography is defined as the discipline which addresses the making and study of maps (Khupe & Khupe, 1995:21). Geography as a subject is inseparable from maps. Most geographical concepts are mappable. Maps are fundamental to Geography; they are an essential tool for the geographer in that they help him/her map, compare and generalize patterns of distribution. They can be used as tools for highlighting problems such as the spread of HIV/AIDS, poverty, desertification and drought.

2.4.1. The Value of Maps and Mapwork

The value of maps and mapwork is reflected in the way geography examinations emphasise the use of maps to enhance the learner's answers that could otherwise be ambiguous in writing. The first paper of Geography is all mapwork based on topographical maps such as the Ordnance Survey (OS) 1:50000 series, which are very adult documents (Graves, 1980). They are highly selective and conventionalized representations of the real world, and their interpretation demands learners to have a considerable level of imagination and the mastery of difficult conceptual skills, such as map orientation, mathematical skills, topographic interpretation, relief and contours.

These difficult conceptual skills have a direct bearing on the overall performance of the geography learner, as already stated earlier, especially if these skills are poorly developed at the Senior Phase of schooling. Maps help to develop geographical thought, and hence are a ready tool for self-expression (Weedon, 1997:173; Lambert & Balderstone, 2003: 126).

2.4.2. The Revised National Curriculum Statement: A Basis for Mapwork in Geography

There is nowhere in school where the learner is exposed to more mapwork and cartography than at the senior phase, Grades 7-9. The essential ingredients for mapwork in school geography are contained in the RNCS Grades R-9, Senior Phase (DoE, 2002), as outlined earlier in paragraph four (p.7).

If the educators handling senior phase classes are well trained, read the Curriculum Statement and systematically help the learners acquire the geographical skills, geography would not pose any conceptual problems.

2.4.3. Map as a Reservoir for Geographic Data

Maps store a list of geographic data. They are communicative. It is therefore very important that learners are equipped with the necessary skills to retrieve the data from the map. A map is a graphic communication of spatial data through points, lines, areas and names (Ndlwana, 1992:3; Khupe & Khupe, 1995:20). For a learner to understand information on a map, he/she has to be familiar with the various symbols used on a map. For maps to effectively communicate information, the map user must be in a position to understand the language of the map. Maps have a language of their own. Each and every map tells one or more stories. Maps contain a wealth of information and all map users need to learn how to read map language. Learners may become better map readers if they are well versed in map language.

2.4.4. Map as a Visual Means of Communicating Spatial Data

Maps are a visual means of communicating spatial data. Visual perception is a special skill that needs to be taught to learners at an early stage. At Grade 7 level, learners should be able to make meaning from a group of lines, areas and pictures in a map form.

An accurate knowledge of the different symbols would enable learners to be aware of the cartographic 'noise' contained on map, that is, information that distracts the map user or interferes with the phenomenon being studied. For example, when studying landforms in

contour lines, symbols like roads, rail, tracks and cadastral boundaries may constitute noise and hinder accuracy (Khupe & Khupe, 1995:21). The lines may run into each other and impair map readability.

Learners should be trained to see 'one thing at a time'. Training enables the eye to concentrate on one aspect while all other aspects are 'visually absent'. The mind has a tendency for selective concentration. Proficiency in map reading develops through training. Naturally, human perception is deficient; map users may overcome this deficiency through constant exposure to the map. Common perception problems are associated with lines, shapes and areas (Bailey, 1974:29-30, Khupe & Khupe, 1995:19). Once a learner has grasped the conventional signs used on 1:50000 Ordnance Survey Maps, it should be easier for him/her to appreciate the graphical conventions used in atlas maps. The use of colour to show relief in an atlas gives an alternative symbolic method of showing relief on a map. The learner will come to appreciate that lines can also be used to represent temperature or rainfall on a map, while population density can be symbolized by dots or colour.

2.4.5. Map Generalization

The concept of the scale of a map is quite baffling to the layman. The idea of scale should be to determine how much information can be shown on a map. A large-scale map shows a small area in great detail while a small-scale map shows a large area with relatively little detail (Khupe & Khupe, 1995:19). For example, given the two scales: 1:25000 and 1:50000, the former is larger; therefore it will show a smaller area in greater details than the latter. The latter scale, being smaller, will show a larger area with little detail.

2.4.6. Map Reading to Map Interpretation

It is incumbent on every Geography educator to aim at making learners informed map users. The learners should be able to proceed from map reading to map interpretation (Khupe & Khupe, 1995 and Liebenberg, 1998) with ease.

Robinson and Petchemick (1975) define map reading as a specific and limited action such as looking at the name of a city or country or finding out how high a hill is. Hurry (1978:45) adds that when reading a map, one should ask such questions as 'what, where and when'. For example, questions such as: "what is the title of the map? Where is the true north? And when was the map compiled?" would be asked. Khupe and Khupe (1995:23) conclude that map reading requires one to detect symbols, distinguish among symbols, recognize symbols with the help of a legend and estimate information given by map symbols. Map reading gives the map-reader a more synoptic view of the map.

2.4.7. Conclusion

Maps remain the most important tools for studying geography. Geography without maps is incomplete. The topographical map 1:50000 O.S. used for examination purpose, is a multipurpose map containing a large quantity of geographic data that can be used by researchers in geography, road engineers, demographers, hydrologists and farmers. Researchers from these fields can use it as a basis for problem-solving.

It is therefore very important that map-reading and interpretation should be introduced at an early age. Like all skills, 'practice makes perfect'. Using a map with understanding needs a lot of training and constant practice. Learners will only become proficient map users or readers when they are constantly exposed to maps and expertly guided. Every educator should by all means try to reduce cartographic noise by generalizing maps.

Crowded maps are confusing, and a map without a legend is like a 'room whose keys are lost' (Khupe & Khupe, 1995:23).

In the next section, the teaching quality and subject specialist is explored.

2.5. TEACHING QUALITY AND SUBJECT SPECIALISTS

2.5.1. Teaching Quality

The quality of teaching affects recruitment of students and influences option choices for matric and higher education entry. Hebben and Whomsley (1983:285) claim that it is the

expertise and enthusiasm of specialist teachers that attract students to a subject. Unfortunately, geography is regarded by some site managers (Principals) as a suitable subject for non-specialists to teach. This inevitably increases the burden on geography department heads (HOD) who must devote more of their pressured time to in-service training of non-specialists. Worse still, the present cut-backs in teacher training cannot be placed solely on HODs in schools (Hebben & Whomsley, 1983).

It is therefore, very appropriate for the continuing education of geography teachers to be included in this study. Continuing education refers to the evolution of a teacher's professional skills throughout the period of his/her career as a geography teacher. It is important that teachers undergo 'de-skilling' and 're-skilling' if they and their subjects are not to be rendered obsolete (Williams, 1988:231).

Obsolescence is the main threat, which is the driving power for much of the current pressure on continuing education, presently referred to as life - long learning. This threat is real and appears to intensify year after year in some countries, such as South Africa, where educational transformation is taking place at all levels of education.

The substantive changes taking place with regards to geography are only one source of difficulty for the classroom teacher. Other difficulties emanate from changes in the pedagogy associated with the subject. Irrespective of the numerous changes which may

be occurring in the teaching profession as a whole, for example, in the conditions of service of teachers, or in the structure of schooling and the internal organization of schools, geography teachers generally are under pressure to keep abreast of their subject and the most effective strategies to employ in their classrooms. Ideally, a career ladder for geography teachers should take full account of their evolving professional needs. Such a career ladder would have three stages: initial training, induction as a transition stage and continuing education (Williams, 1988:231; Magwenzi, 2003:1-4). Each stage would have its own curricular characteristics marked by clearly stated aims and objectives, sharply defined content, appropriate teaching-learning strategies, and relevant modes of assessment. Teachers would be enabled to move easily from stage to stage becoming ever more competent as they improve in their knowledge and skills and modify their attitudes to all aspects of their professional work.

In reality, the term 'continuing education' is rarely used in the vocational education of geography teachers. Instead, the expression in-service education and training (INSET) is used; INSET could be retained for the classroom related aspects of education and training.

Continuing geographical education derives its impetus from changes taking place in the research laboratories and studies in institutions devoted to research in geography. INSET derives its impetus from research undertaken in the field of education (Williams, 1988:231).

2.5.2 Subject Specialists

There is need for specialist geographical educationists who themselves have undergone appropriate professional training to gain the skills required for continuing education and training. Initial training of geography educators is largely the responsibility of geographical educationists, engaged as 'specialists' (Marsden, 1984; Williams, 1988:231). To reduce the possibility of obsolescent geography being taught in schools, more attention must be paid to the education and training of specialists in continuing geographical education and INSET, and who will be able to provide the relevant experiences for classroom teachers of geography.

William (1988:237) mentions the following broad groups of aims of continuing education and INSET:

- *The extension and up-dating of academic knowledge and skills;*
- *The changes of attitudes toward aspects of geographical education, e.g. gender and race related issues, international understanding and the new technologies;*
- *The extension and up-dating of pedagogic knowledge and skills, for examples, new modes of assessment and new approaches of fieldwork; and*
- *The fostering of personal and interpersonal development, for example, to facilitate the departmental development and team-teaching.*

Specialist geographical educationists (Earley & Bubb, 2004:1) referred to by Gerber (1988:3-5) and Johnson (1983:78-79) as 'experts', and who are called in South Africa as

'subject specialists' or 'subject advisers', should have the following proposed qualities because of their training and experience:

- *Know what must be learned;*
- *Are able to do things that most people cannot and so are proficient at generalizing information;*
- *Are smooth, fluent and efficient in their actions;*
- *Know many tricks and caveats for tackling problems;*
- *Are smart at dismissing irrelevant information in order to get to the basic issues;*
- *Can recognise problems as instances of familiar types of problems; and*
- *Can transfer performance across specific task situations.*

2.5.3. Teacher Training: The Continuum of Teacher Development

The education and training of teachers must be seen as an on-going process of life-long learning. This process, as Magwenzi (2003:1) puts it, encompasses the whole teaching continuum from recruitment to preparation, certification, induction and the rest of the educator's career. Recruitment and retention of good educators is the key to developing effective teaching-learning environments in the school (Earley & Bubb, 2004: 2-3). Given that quality educators play a key role in determining student success, and also the increased expectations associated with the different roles educators now play in shaping learners of the complex world of the 21st Century, Magwenzi (2003:1) adds that recruitment of teacher education students should be given adequate attention by all pre-service education institutions which Williams (1988:232), refers to as initial training. Presently, in the South African context, the low number of prospective recruits into the teaching profession has allowed the pre-service education institutions to accept anyone into the teaching profession (Magwenzi 2003:1).

In courses for pre-service education, there should be a clear connection between theory and practice. Learning theorists, such as Vygotsky, (1978) have articulated that individuals learn best through the provision of rich learning environment.

The following is a list of some of the recommended guidelines on an effective teacher preparation programme:

- *It must engage educators in concrete tasks of teaching, observation, reflection and assessment to understand the teaching-learning context;*
- *It must be intensive, sustained and supported by coaching and modeling;*

- *It must take into account the knowledge, skills, attitude, and motivation of the student educators and develop them accordingly; and*
 - *It must equip the student educator with a broad repertoire of teaching strategies to meet different needs of learners.*
- (Lieberman, 1995; Magwenzi, 2003:3; Earley & Bulb, 2004: 3-4).*

The new certificated educators should have mentoring and support during the first critical year of their career. During this induction period, the new educators develop positive attitudes and a commitment to the profession. Good induction programmes for new educators include peer observation, mentor support, coaching, workshops and educator networks (Magwenzi, 2003:3).

Educators should be made aware that 'teaching is a life-long journey rather than a final destination of knowing how to teach' (Magwenzi, 2003:4; Earley & Bubb, 2004:3). Educators should be motivated to engage on a continuous search for knowledge. In-service education should help them to develop their knowledge and skills so that they become increasingly 'experts' as they advance in their teaching. Teaching experience should not be an accumulation of 'dead experience' as Magwenzi (2003:4) calls it, but a journey of learning where educators appreciate that they are continuously working towards becoming 'the best educators they can be'.

2.5.4. Conclusion

The training and development of competent, committed and reflective educators is a complex and challenging task for any nation (Magwenzi, 2003:10). A serious evaluation and scrutiny of existing programmes offered for both pre-service and in-service training and development of educators is required. The whole process of training and developing should be addressed from pre-service to in-service level. This variable, however, is beyond the limits of this study, but it certainly is cause for concern, if effective and competent educators are to be developed.

2.6. EFFECTIVE TEACHING AND LEARNING STRATEGIES, METHODS AND TECHNIQUES FOR GEOGRAPHY

Effective teaching and learning at school depends mainly on the cordial relations between educators and learners. Mutual trust and respect need to be the underlying characteristics of every pedagogic encounter for any meaningful results to be realized in mapwork .

The profession of teaching in the 21st Century has changed in line with all other changes in modern life. The principles of facilitating learning see teaching as a professional activity with its own body of skills, knowledge and values that are acquired through training, development and ongoing practice in the same way as with other professions.

There are various principles that govern effective teaching (Kramer, 1999:90-91):

- **Effective teaching needs training, support and ongoing effort at improvement**
Educators need to spend time and energy on becoming and remaining professional in the face of huge changes in the world around them.
- **Teaching is both an art and a science**
Teaching is a creative art that requires the educator to do more than just apply learned techniques. The educator here plays the role of an instructor, entertainer and manager. As a scientist, the educator needs to be intelligent and skilled, and as an artist s/he needs to be passionate.
- **Teaching is an eclectic activity**
There is no one best way to teach. Effective learning depends on educators having a wide variety of approaches, creativity in their use and the insight into knowing when to use one set of techniques as opposed to another. Teaching cannot be mechanical because learners are not machines. Learners are all different and so teaching and learning need to be varied. Educators need to practise some risk-taking and independent decision-making.

- **Teaching must be a reflective process**

Success in teaching cannot be taken for granted. Each learner and each class is different and learners grow constantly. Educators need to constantly reflect and evaluate their actions to ensure that they are achieving what they set out to achieve.

- **Good teaching does not automatically result in good learning**

The educator is only one of the important factors in learning. There are many other factors that affect learners and their learning, for example, other learners, relationship issues, conditions at home, emotional and physical conditions and other variables. There is need therefore, for the educator to involve learners as much as possible in the process of learning to divert their attention from such factors. The educator may not be able to control all the factors, but s/he must acknowledge their impact. These variables were investigated in this study.

- **Teaching is a set of simultaneous actions rather than one activity**

Teaching is not simply preaching knowledge from the front of the classroom, but it is more the management of learning. Present day educators have simultaneous roles as administrators, managers of learning resources, managers of the classroom atmosphere, entertainers, material developers, researchers, sociologists, psychologists, counsellors and facilitators.

Gold, Lee, Riley, and Unwin (2001:229-232) expand Kramer's (1999) guiding principles of effective teaching and learning as follows. **Good teaching practice:**

- **Encourages staff – learner contact**

Frequent staff-learner contact, in and out of classes, is the most important factor in student motivation and involvement. This is in line with the notion of Magwenzi (2003), stated earlier in this section of effective teaching and learning. The educator's concern helps learners survive rough times and keep on working.

- **Encourages co-operation among students**

Learning is enhanced when it is more like a team effort than a sole race. Good learning, like good work, is collaborative and social, not competitive and isolated. Working with others often increases involvement in learning. Sharing one's own ideas and responding to others' reactions improve thinking and deepen understanding.

- **Encourages active learning**

Learning is not a 'spectator sport'. Learners must talk about what they are learning, write about it, relate it to past experiences and apply it to their daily lives. They must make what they learn part of themselves.

- **Gives prompt feedback**

Learners need appropriate feedback on performance to benefit from courses. At various points and at the end, learners need to reflect on what they have learnt, what they still need to know and how to assess themselves.

- **Emphasises time on task**

Time plus energy equals learning. Learning to use one's time well is critical for learners and educators alike. Learners need help in learning effective time management. Allocating realistic amounts of time means effective learning for learners and effective teaching for educators.

Educators need to expect more from learners and they will get it. Expecting learners to perform well becomes a self-fulfilling 'prophecy' when educators and schools hold high expectations of themselves and make extra efforts.

- **Respects diverse talents and ways of learning**

There are many learning styles, for example, group work, discovery learning, individual investigation, and many others (Bailey, 1974; Okpala, 1988 and Kramer, 1999). Children bring different talents and styles of learning to school. Learners need to be given the opportunity to show their talents and learn in ways that work for them, before they can be pushed to learning in new ways that do not come so easily.

- **Evaluates itself**

Educators' knowledge of how learners are receiving their efforts and what they are really learning is a vital stimulus to improving teaching. Educators should have a reflexive evaluative attitude to their teaching.

- **Is clear about its aims and objectives**

Learning outcomes and performance indicators need to be stated for each lesson. Without learning outcomes, it is difficult to design and structure courses/lessons. Without assessment standards and performance indicators, it is hard to assess or evaluate the learning activities.

- **Is clear about consulting the educational literature**

There is a well-researched educational literature relevant to teaching in higher education and secondary education. A conscientious educator will consult authorities in education and the subject. For example, authorities in education include: Beard (1976), Brown and Atkins (1988) and Eble (1988), and the Geography literature include Journal of Geography in Higher Education, Teaching Geography, Journal of Geography and Geography Education which are full of valuable ideas that can be readily adapted for use in high schools.

From the above guidelines of good teaching practice, it can be deduced that good and effective teaching practice should be learner-centred and not educator-centred.

Learner-centredness is one of the key principles of Outcomes - Based Education (Kramer, 1999, Van der Horst & McDonald, 2003:5; Jacobs et al, 2004). This approach to schooling recognizes the importance of matching the content and methods of children's learning to what is known of child development and the basic needs and characteristics of children (Farrant, 1988:127-128).

Learner-centred education, according to Farrant:

- *acknowledges that learner's needs should determine what they learn at school;*

- *recognizes and responds to the changing characteristics that distinguish children at different ages;*
- *trains learners in skills that are within the capabilities of their stage of development;*
- *selects what is taught and the methods used so that they are appropriate to the comprehension and experience of the learner;*
- *utilizes the strong motivational forces that control so much of the learners' natural learning; and*
- *applies knowledge of child psychology and child development to the content and methods of learning and teaching.*

In summary, learner-centredness is precisely expressed by the following Chinese saying:

Tell me, I forget

Show me, I remember

Involve me, I understand

(Matiru & Mwangi, 1995; Gold et al., 2001:231).

Educator-centred education dominates the learning process by determining what is taught, how it is taught, and the sequence and pace of the teaching (Farrant, 1980:127). In educator-centred education, the educator has a great influence on the kind of education that is offered, while the learners have a very minimal say in shaping their education.

The following are the main characteristics of educator-centred education and which must be avoided as much as possible:

- *Educators act as mediators between the learner and what s/he is learning;*
- *Educators select what the children learn, the methods by which they learn and the pace at which they learn;*
- *Educators see their role as communicating knowledge to their learners as efficiently as possible;*
- *Educators spend most of their time actually teaching;*
- *Learners get the impression they can learn only when their educator is present and teaching; and*
- *Learners tend to be regarded as more or less uniform groups of learners rather than as individuals with different gifts and needs.*

(Farrant, 1980:129).

Teaching strategies decide the approach that educators take to manage learning activities. A teaching strategy is a plan of action to achieve set objectives. There are different strategies that educators can use, and in reality, classroom practice mixes and integrates

them. The way the subject is taught affects the way it is learned and this in turn affects the total educational experience of the learners.

Naish (1988:16) articulates that the nature of the teaching style in relation to the teaching of geography may help in enhancing the effectiveness of student learning. Studies done on various teaching strategies, methods and techniques in the United Kingdom, Australia and Africa in relation to teaching geography (Ausubel, 1968; Flanders, 1979; Davwar, 1984; Onasanya, 1985; Naish, 1988; Okpala, 1988; Fien, Gerber & Wilson, 1988, and Lambert & Balderstone, 2003:235) have indicated that teaching styles fall between these two extremes: progressive or traditional.

Progressive teaching is forward looking and good. It is democratic, enquiry-based, and open to value considerations, child-centred and concerned with problem solving and decision-making. Traditional teaching, on the other hand, is often stereotyped as autocratic, didactic, formal, old-fashioned, and academic in style and not open to values discussion (Naish, 1988:12). Farrant (1980:127) and Naish, (1988:16) refer to progressive teaching as 'child-centred' and the traditional teaching as 'teacher-centred'.

Kramer (1999:91) refers to child-centred as 'learner-centred' and 'teacher-centred' as 'educator-centred'.

Bennett (1976:38) did a systematic analysis of the characteristics of progressive and traditional approaches and suggested that the teaching style is clearly linked with all the basic elements of a curriculum system. In other words, it shows that the teaching style and curriculum are closely interrelated.

2.6.1 Geography and Teaching Styles

The interest in teaching styles in geography is taken forward in publications on geography teaching by Fien, Gerber and Wilson (1988) and Lambert & Balderstone (2003), on a variety of teaching styles. Rawlings (1986) and Roberts (1996), call on educators to question the way they teach, and ask whether they vary their classroom strategies according to the nature of the topic or the characteristics of the learners. These variables are given greater scrutiny later in this study.

Van der Horst and McDonald (2003) refer to 'teaching styles' as teaching strategies: A teaching strategy is defined as a broad plan of action for teaching activities with a view of achieving an outcome. Each strategy has its own methods and techniques. Teaching methods are the means by which the educator organizes and uses techniques, subject matter, and teaching media to meet teaching objectives and to attain the desired learning outcomes. The following are some of the desired methods used in progressive teaching: groupwork, pairwork, question and answer, experiment, role-play, observations, presentations, research, projects and fieldtrips (Kramer 1999; Lambert & Balderstone, 2003; Van der Horst & McDonald, 2003)). All these methods are regarded as learner-centred. This study investigated all the teaching strategies, methods and techniques used in the teaching of mapwork in Geography.

2.6.2 Examples of Effective Teaching Strategies for Geography

2.6.2.1 Direct Observation Method

In this method, learners observe directly what can be seen. For example, an educator can take learners to a river valley and ask them to describe the physical or cultural features they can see (Graves, 1982:46; Lambert & Balderstone, 2003:240).

Teaching techniques based on direct observation include field work or 'outdoor' work and weather studies.

Fieldwork or outdoor work is now an essential part of any geography course. It needs to be started as early as possible with a simple exercise, e.g. going out to collect rocks or soil types. Any geographical fieldwork involves three steps:

- *Observing what can be seen*
- *Recording this on a map or in a notebook*
- *Interpreting what has been recorded*
(Graves, 1982:48; Gold et al, 1991:25; Roberts, 1996; Lambert & Balderstone, 2003:242).

There are many advantages of using this technique (Fien 1984: 136). Learners learn to orientate a map and correlate the features shown on it with those on the ground. They

also learn something about their local area. This would be an ideal technique to use when introducing topographical mapwork to learners, especially when dealing with such key elements of map reading as orientation and direction, location and reference system, distance and scale and symbols. This method could be used both in rural and urban areas. Fieldwork in rural areas could include land use survey, village survey and factory work visits. Fieldwork in urban areas could include survey of buildings, urban land use studies and transport system.

Weather studies are used in the observation of scenery and of weather. Weather can be observed with or without the use of instruments. Weather observation with the use of instruments deals with measurements of temperature, rainfall, barometric pressure and relative humidity. Weather observation without the use of instruments deals with cloud types, wind direction and wind speed. Weather observation involves two steps:

- *Regular daily readings of maximum and minimum temperatures or rainfall, and of atmospheric pressure, and daily variations of weather.*
- *Recording weather observation by use of symbols or graphical presentations (Graves, 1982:48; Roberts, 1996:243; Lambert & Balderstone, 2003:243).*

This method of direct observation affords learners a practical experience which helps them to acquire map skills more effectively than using an indirect method. For example, Mackenzie and White (1982), Fien (1984) and Lambert & Balderstone (2003), found out that practical experience or fieldwork not only facilitates learning but also improves retention of related geographical concepts and map skills.

2.6.2.2 Indirect Observation Method

This technique is based on scientific attitude to knowledge, that is, on observations, which are recorded and later interpreted. This method requires that the educator insists that the learners find out as much information as possible for themselves under his/her guidance, from materials (e.g. maps, books, pictures, films, etc) which the educator provides for them, or that they have obtained for themselves, rather than learning from direct instruction.

Techniques such as oral questioning and instruction based on wall-maps, atlases, textbooks (for photographs, maps, charts, and diagrams) sketch maps on the chalkboard, statistics of population and production and written notes (guided or blank spaces) are used. Other techniques include the use of:

- **Large-scale maps**, for example, Topographical Map of 1:50 000 – Learners' power of observation is exercised. Procedures or stages involved when using large-scale maps as a means of teaching geography include:
 - i. Learners learn the meaning of conventional signs or symbols used on a map. It is best done by using the map outdoors, so that the learners can know the features represented by the symbols. Geographical aspects at this stage would include direction, types of roads, vegetation, human features, etc. (Graves, 1982:49; Lambert & Balderstone, 2003:125).
 - ii. Learners learn to visualize the relief of the map as shown by the contour lines. Both direct and indirect methods should be integrated here; otherwise it is doubtful whether the learners can ever do this if they are not shown the landforms outside the class. Future map reading becomes much easier once learners have learnt to associate a particular contour pattern with a real physical feature. This can be done by asking learners to draw a cross-section, giving direction of features, describing relief and drainage patterns in the area (Graves, 1982:49; Boardman, 1986: 118; Lambert & Balderstone, 2003:127).
 - iii. Learners learn to interpret the information on the map to show that they understand the influence of physical features and drainage on human features and vice versa.
 - iv. The learners learn to answer the 'what' and 'why' questions (Graves, 1982:49; Lambert & Balderstone, 2003: 130).
- **Pictures, photographs and charts**
These techniques have two main aims:

- i. A photograph, a picture or a chart gives reality to a word, a notion, or a concept, which was vaguely understood in mapwork.
- ii. Visual presentation has a stimulating effect on the learners and helps to keep them interested in mapwork.

There are three main ways of using pictorial material:

- *within the textbook*
- *use of single pictorial material*
- *use of pictorial material in group form*
(Graves, 1982:49; Lambert & Balderstone, 2003: 131).

▪ **Projected Pictures**

These are large enough for all learners to see each detail. Questions can be prepared in advance to help learners make their observation on the picture that represents a feature on the map.

▪ **Sample Studies**

A sample study is a detailed study of a unit on a map, chosen particularly to show human response to environment and chosen so as to be typical of the major region concerned. This technique has a number of advantages:

- i. Sample studies include photographs and statistical information that the learners can use to gather facts about the relief and climate of the area where the sample is taken.
- ii. The learners can easily comprehend a sample unit better than a whole region.
- iii. A sample study helps learners in the field of international understanding of other people especially foreigners from a far country.
- iv. A sample study can be used in

- *Geography of commodities, e.g. crops.*
- *Regional geography of the world, e.g. the desert.*

- *Regional contrasts within a continent.*
- *Regional contrasts within a country*
(Graves, 1982:50).

2.6.2.3 Co-operative Learning Method

Co-operative learning is commonly known as group work or interactive learning. This method provides for learners to work together and help each other to achieve the outcomes of the learning task in mapwork. A group can have three to six members or as many as the whole class, depending on the activity and the strategy used (Kramer, 1999:92; Van der Horst & McDonald, 2003:112).

Group work or co-operative learning is an important part of the teaching and learning inventory of the techniques in mapwork because it makes learning authentic. Working co-operatively is the most critical social skill that learners learn when one considers the importance of co-operation in the workplace, in the family, and in leisure activities (Kramer, 1999:96; Lambert & Balderstone, 2003: 265-266).

Johnson, Johnson & Holubec (1986) and Van der Horst & McDonald (2003: 113) identified five elements critical to implementing cooperative learning successfully:

- The first is called positive inter-dependence. The learners have to believe they are in it together, sink or swim. They have to care about one another's learning.
- Second is a lot of verbal, face-to-face interaction. Learners have to explain, argue, elaborate and tie in the material they learn today with the previous work.
- The third element is individual accountability. Every member of the group has to learn and do some work.
- The fourth element is social skills. Learners are taught appropriate leadership, communication, trust building, and conflict resolution skills so that they can operate effectively.
- The fifth element is called group processing. Periodically the groups have to assess how well they are working together and how they could do better.

In co-operative classrooms, speaking and listening acquire increased emphasis. Traditionally, reading and writing are the primary focus on most classrooms; outside the school, speaking and listening are the important communication skills. Co-operative

learning improves learner achievement in mapwork in all grade levels, and goes beyond academics in terms of improving socialization skills and building class unity (Lambert & Balderstone, 2003: 266).

Levin & Nolan, 1996) and Van der Horst & McDonald, (2003) have identified four sets of skills that need to develop over time in order for the group to function successfully. These skills are forming skills, functioning skills, formulating skills and fermenting. Once these skills are developed, group norms are established that lead learners to:

- *be engaged in learning activities*
 - *strive towards learning*
 - *interact with each other in ways that will facilitate the development of positive self-esteem.*
- (Slavin, 1990; Van der Horst & McDonald, 2003:126)

2.6.2.4. Inquiry/Problem Solving Method

Inquiry or problem solving can engage learners in seeking knowledge, processing information, and applying ideas to real world situations, and it has the potential to motivate learners and show them practical reasons for learning. These advantages can be obtained in all learning areas including mapwork in Geography (Van der Horst & McDonald, 2003:138).

A problem can be defined as any situation in which some information is known and other information is needed, for example, measuring distances on the map using the scale given.

Van der Horst and McDonald (2003:138) define problem solving as the process of applying existing knowledge to a new or familiar situation in order to gain new knowledge. Lambert and Balderstone (2003: 303) define problem-solving as a “cognitive strategy integrated with a values analysis strategy leading to personal clarification of values, decision making and option of personal actions”.

Problem solving, therefore, is a form of inquiry learning. When used as a teaching strategy, problem solving can help learners to realize that the knowledge they have

already gained can be applied to new situations, and that this process can lead them to gain new knowledge. As a teaching strategy, problem solving can be used as a part of a lesson, as a theme for several lessons, units or programmes, or as the basis for an entire course of study.

Killen (1996 b) gives an important reason for having learners solve problems. Solving problems helps learners gain insights that will enable them to understand the learning area better. An educator can use problem solving as a teaching strategy to:

- *Help learners gain a deep understanding of the learning area, rather than just remembering facts (i.e. mere recall, according to Bloom's taxonomy).*
- *Develop the learners' thinking and reasoning skills, that is, their ability to analyse situations, to apply their existing knowledge to new situations, to recognize the difference between facts and opinions, and to make objective judgements (i.e. higher order thinking).*
- *Develop the learners' problem solving skills, that is, their ability to assess and respond to new situations.*
- *Intellectually challenge the learners.*
- *Encourage the learners to take greater responsibility for their own learning (a great need among South African learners).*
- *Understand the relationships between what they are studying and the real world.*
- *Vary the learners' learning experiences and make them interesting (Van der Horst & McDonald, 2003:139).*

Problem solving is an ideal strategy to use in confirmation with co-operative learning. This would encourage learners to discuss with one another what they understand the problem to be, how they feel about the problem and the various steps in their attempts to solve the problem.

Using problem solving as a teaching strategy has many advantages, and a few are outlined below:

- *It provides a challenge for the learners;*

- *It engages learners actively in learning;*
- *It helps learners to develop new knowledge and to feel responsible for their own learning;*
- *It develops critical thinking skills;*
- *It keeps learners' natural curiosity alive;*
- *It helps them to make informed judgements;*
- *It gives them the opportunity to apply their knowledge and to see that the knowledge has some real world applications;*
- *It helps learners to integrate the knowledge they gain from the different learning areas;*
- *It engages them in learning long after the formal lesson is over; and*
- *The familiar learner question, "Why do we need to know this?" is usually replaced with "What do we need to know? Or "What do we need to find out?" (Van der Horst & McDonald 2003:139-140).*

2.6.2.5 Discovery Method

When planning instruction, an educator has to balance between what is to be learned through presentation of facts, concepts or skills (i.e. reception learning) as opposed to the learners researching, experimenting and discovering through their own experiences (i.e. discovery learning). It is usually believed that when learners find things out by experimenting, they learn it more deeply and effectively (Kramer, 1999:100). Ausubel (1968) describes a continuum, which describes the extent to which learners are either taught directly or are required to discover learning for themselves. He says reception learning occurs when educators teach (transmit) and learners learn (receive). Discovery learning takes two basic forms: Guided discovery and Independent discovery. In guided discovery, the educator helps learners to discover the teaching topics. Independent discovery is when learners do research and experiment on their own, or when they discover the facts or principles or skills that have been set as learning outcomes (Kramer, 1999:101).

2.6.2.6 Practical Method

For learners to have a thorough grounding in mapwork, they need as much practical work as possible (Hurry, 1978:39; Weedon, 1997:173; Lambert & Balderstone, 2003:125); whenever learners are involved in mapwork, they should be given as much practice as possible in the following aspects:

- Map scale;
- Direction and/or bearing;
- Position (latitude and longitude) including relative position;
- Representative signs and colours, and the use of the key; and
- Special practice in the correct interpretation of topographical details (that is, colours, hill shading, and contours).

The following are some suggestions from the experts concerning practical exercises that learners can be involved in:

i. Introduce maps by using photographs

Experience has shown that most learners are familiar with photographs. The educator can use a series of photographs from calendars to familiarize the learners with the idea of photographic representation. Learners can be shown pictures of distant views of hills, plains, towns and close - ups to trees and rivers (Hurry, 1978:39; Lambert & Balderstone, 2003:130). Only thereafter can vertical aerial photographs of the area in which their school is situated be introduced. Let the learners choose their own symbols themselves.

ii. Map scales

At the onset, it must be stressed that maps use linear scale and this must be made clear to the learners. This means that it is distances that have been reduced on the map and not areas. Vertical aerial photographs should be used to explain scale. Learners should practise drawing plans of small areas. Plans and sketches help learners to practise using map signs and symbols and provide good training in neatness and presentation (Hurry, 1978:40; Wiegand, 1986:130; Lambert & Balderstone, 2003: 130).

iii. Direction and bearing

It is important that geography learners should be able to locate places they are studying on a map. They should also realize that places have positions relative to each other. Relative position is one of the important things that a map indicates (Hurry, 1978:40; Lambert & Balderstone, 2003:130).

Maps can also be used to find places on the ground. This is known as map orientation. Map orientation must be seen as a very basic part of all mapwork. Most educators tend to leave this part until Grade 12 which is not good enough.

Bearings provide a reliable, unchanging point of reference. The geography learners must be taught the location of geographical and magnetic north and south and the significance of each. Playing games like “The Treasure Hunt” could be used, especially with lower grades (e.g. Grades 7-9) to practise direction. Learners, in groups of four or five, are given a set of instructions to follow, which, if properly followed, would lead to a treasure (Hurry, 1978:40-41).

iv. Representative signs and colours

These cannot be ‘taught’ but learners need practice in interpreting signs correctly (Hurry, 1978:45). Local maps drawn by educators or learners could be used for practice in this area. Learners should be allowed to choose their own signs or symbols for the phenomena being represented.

v. Height representation on maps

Most learners experience some difficulty in identifying the topography of an area from a map. Whether height is shown by colours or by contours, learners need help in understanding the technique. Without a doubt, the most efficient way of explaining height representation on maps is by means of models, which have a third dimension (3-D). Sand models could be used in this case. The Chinese saying mentioned earlier on page 59 illustrates the importance of practical work in class or outdoors.

2.6.2.7 Fieldwork

Fieldwork is an important teaching tool and the main methodology for uniting geographical knowledge. Fieldwork is defined as a teaching and learning method

involving direct contact with outdoors. It is a means of curriculum enrichment through experiences in and outdoors (Chibambo, 2000:7; Lambert & Balderstone, 2003: 240-241).

Various definitions of fieldwork have been suggested depending on the main emphasis and paradigm shift. In the traditional approach, fieldwork is a field 'confrontation' in which the learner comes into contact with reality and identifies unique features, patterns, places, and trends (Chaza, 1997:1).

In the scientific approach, fieldwork is an encounter with reality which involves measurement, collection and analysis of data about a geographical phenomenon for hypothesis testing. Chaza (1997:2) states that it is 'the science of selecting, observing, evaluating and reporting on geographical phenomena in a specific area'.

In the behavioural approach, fieldwork focuses on values and attitudes attached to issues and decisions as made by human beings (Chaza, 1997:2). Learning from direct experience through fieldwork is a central aspect of geographical training at all levels. The focus of the learning process shifts from the educator to the learner. The educator becomes a mere guide in the use of the tools and the development of skills necessary for fieldwork and learning. The dependence of learners on educators is thus reduced.

Through direct experience, learners can acquire knowledge, skills and ideas and test hypotheses in a local environmental situation, in order to enhance the scope for self-education (Fien, 1984: 136; Bailey & Binns, 1987:327-331). Fieldwork and outdoor experiences have direct social as well as academic advantages, providing challenges and opportunities for handling different aspects of the environment. Fieldwork breaks the classroom routine, which can be monotonous and boring. Variety and interest are introduced, and at the same time learners develop a more critical appreciation of the information obtained from textbooks. Leadership training, safety consideration and codes of good practice can also be emphasized and developed through this medium (Fien, 1984: 136; Bailey & Binns, 1987:327; Chaza, 1997:2; Chibambo, 2000:7-8).

There are a number of problems that deter most educators from using fieldwork as a teaching strategy. The following are but a few examples (Chaza 1997:3; Chibambo 2000:8):

- A congested school curriculum – geography competes with other subjects for time, resources and manpower.
- The need to complete the syllabus in time for examinations.
- Inexperience – fieldwork is often ignored by the educators because of ignorance, lack of confidence or perceived difficulties in understanding fieldwork. This is related to past experiences as a student both at school and college level, and to lack of relevant training.
- The Mukuvisi Environment Centre in Zimbabwe, in Chaza (1997:3), carried out a survey on fieldwork and found out the following additional factors:
 - large classes;
 - lack of space;
 - lack of equipment;
 - lack of transport; and
 - uncooperative administration.

Some of these perceived problems are simply excuses. Educators need to be innovative and imaginative. Equipment can be improvised and fieldwork can be carried out within the school grounds or locality to solve the transport problem and costs. Head teachers and others should be advised of geography's specific, school timetables' need to be more accommodating, and teacher/ resource centres should be able to provide the more expensive items of equipment for scientific monitoring together with the collection of maps and worksheets (Bailey & Binns, 1987:329).

Three types of fieldwork can be identified:

- A field excursion

- A field study
- Field research (Chaza, 1997:2-3)

A field excursion is a trip to a particular locality or area to observe places, areas or features of geographical interest. The technique is mainly qualitative, characterized by activities which include field sketching, a guided tour, oral description, a traverse and a transect.

A field study is a traditional approach, which involves a trip to a permanent field centre, such as a school weather station, or the Botanical Gardens, which are specifically maintained for study purposes. Learners can undertake activities such as measurements, experiments and demonstrations. Generalisations from such results can be used to support theoretical concepts.

Field studies require equipment, time, space and models to stimulate desired conditions. This technique can be hindered by the shortage or non-availability of such equipment.

Field research involves the identification of a geographical problem, relationship, trend or pattern. It is in these that tentative explanations and hypotheses are advanced and measurements and experiments are carried out over a period of time. Data collected are processed, analysed and interpreted, leading to the rejection or acceptance of hypotheses. Field research is interesting but requires a lot of time.

Chibambo (2000:7-8) came up with a curriculum model for fieldwork in geography based on Boardman's (1986) Model (see table 3 below).

Table 3: A Curriculum Model for Fieldwork in Geography

OBJECTIVES	CONTENT	ASSESSMENT	CONSTRAINTS	METHODS
Classroom comprehension	Geomorphology	Applying	Resources	Graphicacy
Field comprehension	Environmental issues	Drawing	Teacher's time	Numeracy
Map skills	Settlement	Reporting	Time table	Literacy
Recording skills	Land Use	-	Staffing	Articulatory
Attitudes	Industry	-	Training	-
Geographical analysis	-	-	Learners	-
Geographical synthesis	-	-	Examinations	-

He identified that content for fieldwork could be derived from the following areas among others; geomorphology, environmental issues, settlement, land use and industry. Fieldwork objectives should cover the following: classroom comprehension, field comprehension, map skills, recording skills, attitudes, geographical analysis and geographical synthesis. The methods to be employed in fieldwork excursions should include the following skills: graphic, numeracy, literacy and articulatory.

Assessment of student's fieldtrip performance should focus on the learner's ability to apply, draw and report accurately what was observed in the field.

Fieldwork has been promoted for a long time and now is the time for this expertise to be allowed to achieve its full potential. Those who choose to question the value of geographical fieldwork and direct experience as costly should know that when compared to other school 'subjects', it is relatively a low cost learning area.

2.7. MODELS' APPROACH TO TEACHING AND LEARNING

2.7.1 Introduction

Models for teaching are approaches to creating environments for learning, and a way of thinking which can be used to analyse them, compare and contrast them, and decide what educational purposes they can serve.

Models for teaching mapwork in Geography can help a teacher build up his/her capacity to reach more children and create a richer and more diverse environment for them. They can help curriculums, which offer to children a variety of educational alternatives.

2.7.2 Definition of Models

A model for teaching, as Joyce & Weil, (1972:3) use the term, "is a pattern or plan which can be used to shape a curriculum or course, to select instructional materials, and to guide a teacher's action."

Teaching should be seen as a process by which a teacher and students create a shared environment including sets of values and beliefs, which in turn colour their view of reality (Joyce & Weil, 1972:3).

A model can be defined as "a simplified structuring of reality which presents significant features or relationships in a generalized form" (Arjun (1990:115). Models are useful to the classroom educator because they are based on standardized teaching strategies, which have been tested and proven by scholars over a period of time. In addition, by eliminating "noise" and "less important signals", they aim at reflecting only the essential points in mapreading.

Arjun (1990:116) defines models "as prescriptive teaching strategies designed to accomplish particular instructional goals. They are prescriptive in the sense that the educator's responsibilities during the planning, implementing and evaluating stages are clearly defined".

Teaching models differ from general teaching strategies in that they are usually designed to achieve certain specific goals. For example, when an educator selects a goal (e.g. developing thinking skills through inquiry) and selects a particular strategy designed to reach that goal (e.g. steps in Suchman inquiry), the educator is using the model's approach. If the correct model is used to reach a particular goal, the model becomes a "blue print" for teaching the topic in mapwork (Joyce & Weil, 1972:42; Arjun, 1990:116).

"Models", Arjun (1990: 116) contends, "are of interest and value because of their generalizing properties, which suppress or eliminate certain aspects of the world of experience yet retain certain relationships considered essential in that experience, so that it can be more readily utilized". Models present generalized experience in a way which can be easily learned by students. Therefore, they are quite useful as a teaching device in mapwork in Geography.

2.7.3 Types of Models

There are many different teaching models, depending on what the focus of each is.

- Some teaching models focus on the uniqueness of each individual and the role of the school in furthering personal development and adjustment (e.g. Neil in Joyce & Weil, 1972:6).
- Some teaching models focus on research skills (e.g. Torrance in Joyce & Weil 1972:6). The emphasis is on the importance of helping students to learn to come up with solutions to problems. It aims to create cooperative, socially committed, but independently creative citizens.
- Some teaching models focus on field studies (e.g. Skinner in Joyce & Weil 1972:6). The emphasis on the role of the environment in shaping of behaviour should be deliberate and humane rather than accidental, with unpredictable effects or side effects.

- Still other models of teaching focus on the nature of the subject disciplines and how to teach them. A large number of models for teaching derived from theorists who have developed theories about child development, or theories about the learning process. Good examples are the Piaget's theories on intellectual development of children. These models emphasise the importance of developing the intellect and the role of the school in stimulating mental growth.
- Many models of teaching have also resulted from attempts to improve society, including the desire to reform it radically, for example, Dewey in Joyce & Weil (1972:7).
- Over the years, many more models have been developed by people engaged in different kinds of educational activity. Some are based on empirical work, others on theories, some on hunches, and some on speculation about the meanings of theories and research done by others.

Basically, models of teaching can be organised into four families, which represent different orientations toward man and his/her universe. These are:

- Those oriented toward social relations and toward the relation between man and his culture, and which draw upon social sources;
- Those, which draw on information processing systems and descriptions of human capacity for processing information;
- Those which draw on personality development, the processes of personal construction of reality, and the capacity to function as an integrated personality as the major source; and
- Those developed from an analysis of the processes by which human behaviour is shaped and reinforced.

(Joyce & Weil 1972:8-9)

These families of models are further grouped according to their sources respectively:

- **The Social Interaction Sources** – emphasize the relationships of the person to his/her society or his/her direct relationships with other people. They reflect a view of human nature which gives priority to social relations, and the creation of a better society.
- **The Information – Processing Sources** – share an orientation toward the information – processing capability of the learner and systems which can be taught to him/her so as to improve his/her information – processing capabilities. Information – processing refer to the ways in which people handle stimuli from the environment, organize data, sense problems, generate concepts and solutions to problems, and employ verbal and non-verbal symbols. Some of these models are concerned with the learner's ability to solve certain kinds of problems and others concentrate on creativity or on general intellectual ability.
- **The Personal Sources** – share an orientation toward the individual person as a source of educational ideas. Emphasis is on personal development and the process by which the individual constructs and organizes his/her reality. The personal psychology and the emotional life of the individual is stressed.
- **Behaviour Modification as a Source** – attempts to create efficient systems for sequencing learning activities and shaping behaviour by manipulating reinforcement. Operant conditioning is their central procedure, and they are frequently referred to as behaviour – modification – theories in the likes of B.F. Skinner.

These families of models are quite similar to one another, especially when developing learning environments for teaching mapwork. Also, within the families, certain models share many features pertaining to goals and the way they can be applied.

Table 4 below shows a list of models, classified by family, and briefly annotated:

TABLE 4: The Models of Teaching Classified by Family and Mission

MODEL	MAJOR THEORIST	FAMILY OF ORIENTATION	MISSIONS OR GOALS FOR WHICH APPLICABLE
Inductive Teaching Model	Hilda Taba	Information Processing	Primarily for development of inductive mental processes and academic reasoning or theory-building, but these capacities are useful for personal and social goals as well.
Inquiry Training Model	Richard Suchman	Information Processing	
Science Inquiry Model	Joseph J. Schwab (also much of the Curriculum Reform Movement; see Jerome Bruner The Process of Education for the rationale)	Information Processing	Designed to teach the research system of the discipline but also expected to have effects in other domains (i.e., sociological methods may be taught in order to increase social understanding and social problem-solving).
Jurisprudential Teaching Model	Donald Oliver and James P. Shaver	Social Interaction	Designed primarily to teach the jurisprudential frame of reference as a way of processing information but also as a way of thinking about and resolving social issues.
Concept Attainment Model	Jerome Bruner	Information Processing	Designed primarily to develop inductive reasoning.
Developmental Model	Jean Piaget, Irving Sigel, Edmund Sullivan	Information Processing	Designed to increase general intellectual development, especially logical reasoning, but can be applied to social and moral development as well (See Kohlberg).
Advance Organizer Model	David Ausubel	Information Processing	Designed to increase the efficiency of information processing capacities to meaningfully absorb and relate bodies of knowledge.
Group Investigation Model	Herbert Thelen John Dewey	Social Interaction	Development of skills for participation in democratic social process through combined emphasis on interpersonal and social (group) skills and academic inquiry. Aspects of personal development are important outgrowths of this model.

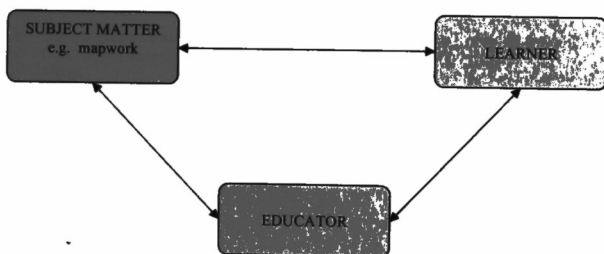
Non-Directive Teaching Model	Carl Rogers	Person	Emphasis on building capacity for self-instruction and through this, personal development in terms of self-understanding, self-discovery, and self-concept.
Awareness Training Model	William Schutz Fritz Perls	Person	Increasing personal capacity for self-awareness. Much emphasis on development of interpersonal awareness and understanding.

Source: Joyce & Weil (1972: 11-13)

2.7.4 The Basic Teaching-Learning Situation.

In the educative teaching-learning situation, a tripartite relationship exists between the educator, the learner and the subject matter, as illustrated in Figure 1 below:

FIGURE 1: The Basic Teaching-Learning Situation

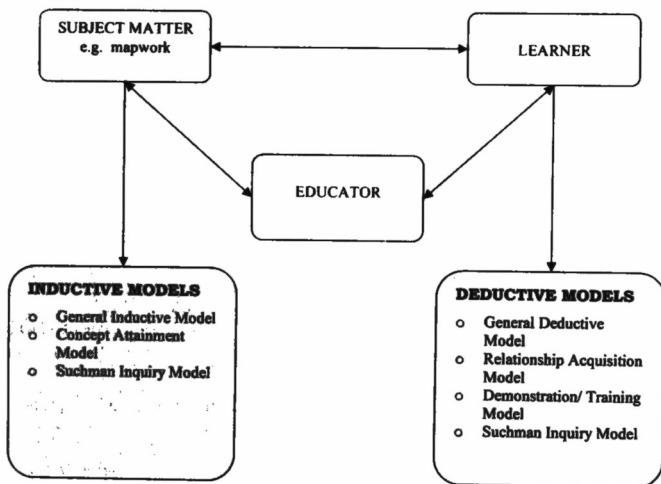


Depending on the educator's teaching style and the strategy used, the educator may or may not come between the learner and the subject matter. For example, if s/he wishes to promote inquiry – based learning, s/he would avoid coming between the learner and the subject matter, but s/he will allow the transaction between the learner and the subject matter to continue unhindered.

However, s/he will position himself/herself in a manner to intervene in the transaction whenever necessary. Whatever intervention process the educator adopts must take

cognizance of the fact that ultimately learning must become desirable, pleasurable and rewarding. Because teaching models present a scheme or framework for intervention and organization within the flow of the teaching and learning experience, they can be incorporated according to the following diagram (Figure 2):

Figure 2: Incorporation of Teaching Models into the Basic Teaching-Learning Situation



Source: Ariun (1990: 118)

2.7.5 Brief Descriptions of Models of Teaching

Below are brief descriptions of teaching models relevant to teaching mapwork in Geography:

2.7.5.1. Inductive and Deductive Models

Generally, most lessons are taught according to one of the following models: General Inductive Model or General Deductive Model.

i. General Deductive Model

This is a well-structured, mainly content-oriented teaching model in which the reasoning moves from the general to the specific. In teaching, the deductive model may appear as shown in Figure 3 below.

Eggen & Kauchak (1996) state that the major premise in a deductive sequence is either a concept definition or a generalization. The major premise is a fact or observation. The conclusion is either an explanatory or predictive inference. Arjun (1990:120) concludes that explanatory and predictive inference involves deductive reasoning and the inference (i.e. conclusion) can be valid only if the generalization (i.e. the major premise) is valid. Diagrammatically, a deductive sequence is illustrated in Figure 3 below.

Major Premise- (Concept definition)	For example, a contour line is a line on the map that joins places with the same height above sea-level.
Minor Premise- (Observation)	On this topographical map, there are many contour lines on the eastern side of the map, numbered 1002m to 1020m.
Conclusion (Inference)	- Contour lines are all brown in colour They have the same vertical line

The typical deductive pattern is illustrated by the flow chart below:

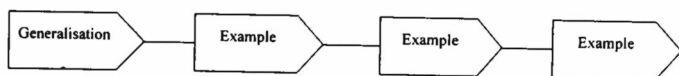
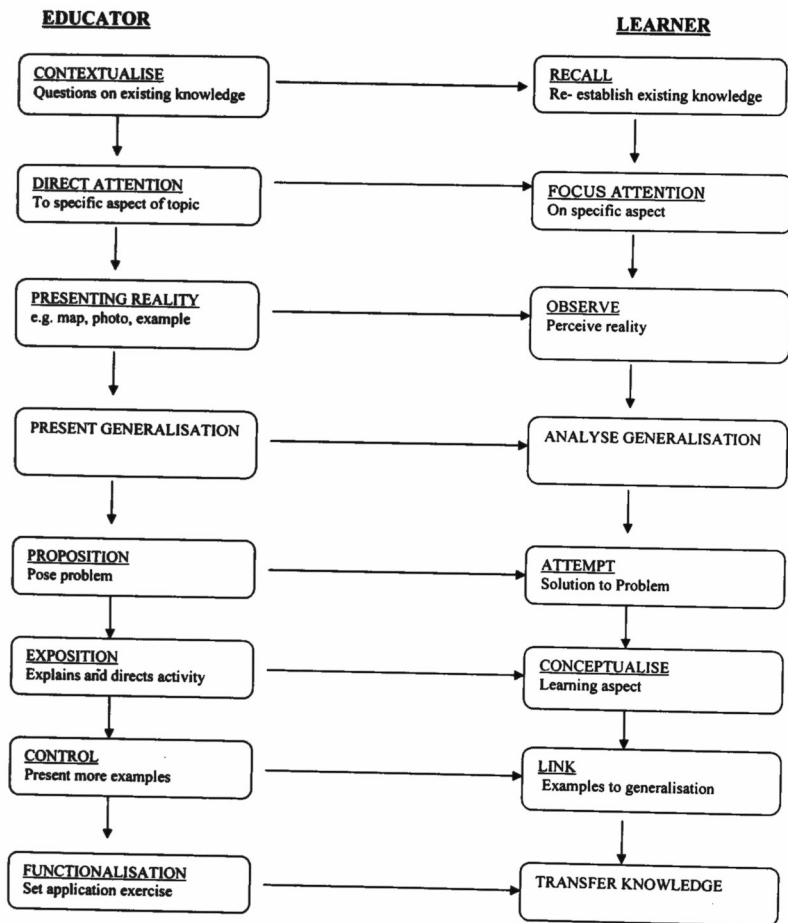


FIGURE 3: THE GENERAL DEDUCTIVE MODEL



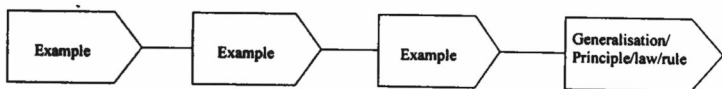
Source: Arjun (1990: 120)

Arjun (1990:122) describes deductive teaching strategy as expository learning, and defines it as a type of learning in which the learner is presented with the “rule” and then asked to seek relevant examples. This is similar to Van der Horst & McDonald’s (2003:122) definition. The learners’ active participation is confined to the application of the given statement and rule, to numerous examples.

Arjun (1990:2) recommends that deductive reasoning should be used with mature learners or above average learners in the senior secondary school or the more highly gifted students in the junior secondary school. Simple generalizations and abstractions can be used for deductive reasoning in the average and below average learners. This writer totally agrees with Arjun, and especially that this strategy is used extensively in mathematics (Van der Horst & McDonald, 2003:122), an important aspect of mapwork skills learners need to acquire.

ii. General Inductive Model

Inductive thinking proceeds from the specific to the general (Arjun, 1990:122; Van der Horst & McDonald, 2003:123). Van der Horst and McDonald expand the statement by saying that inductive thinking proceeds from a particular set of causes or facts of experience to the general law or principle or from the effects to the cause which is not yet known or understood. A flow chart of the typical inductive logic would be as follows:



Diagrammatically, the sequence of teaching-learning activities can be illustrated as follows in Figure 4.

Arjun (1990:124) and Van der Horst & McDonald (2003:124-88) call this approach discovery learning and they are of the opinion that this method is most appropriate for highly motivated learners in upper grades, including Grade 12. They note that even though this strategy is most appropriate for older learners, learners in lower grades and

even pre-schoolers learn inductively. They explain that from the day babies are born they take in sensory impressions and try to make sense of these impressions, inductively.

Present day education theory places much stress on the 'discovery' principle which maintains that if a learner discovers for himself/herself s/he will understand the mapwork concepts better and remember longer (Arjun, 1990:124). Arjun links problem-solving strategies to the inductive approach.

Both inductive and deductive approaches have merits and the choice between them depends on the learner's level and ability, time and tempo, structure of the subject, and teaching style. In geography teaching, both approaches are useful. Much depends on the educator's ability to handle each effectively.

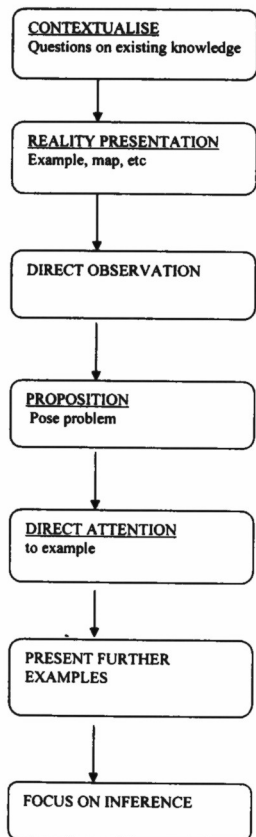
2.7.5.2. The Concept Attainment Model (CAM)

Relevance of model to geography teaching: The CAM model was originally designed by Joyce and Weil and it is based chiefly on the research done by Jerome Bruner and his colleagues (Joyce & Weil, 1972:109; Arjun 1990:126).

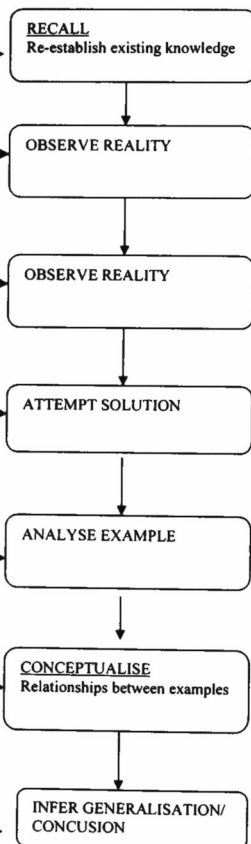
Arjun (1990) defines concepts as "sets of attributes that identify a class of phenomena". Concept learning involves observing similarities in objects, forming categories on the basis of similarities, and generalizing or abstracting from the categories.

FIGURE 4: THE GENERAL INDUCTIVE MODEL

EDUCATOR



LEARNER



Source: Arjun (1990: 123)

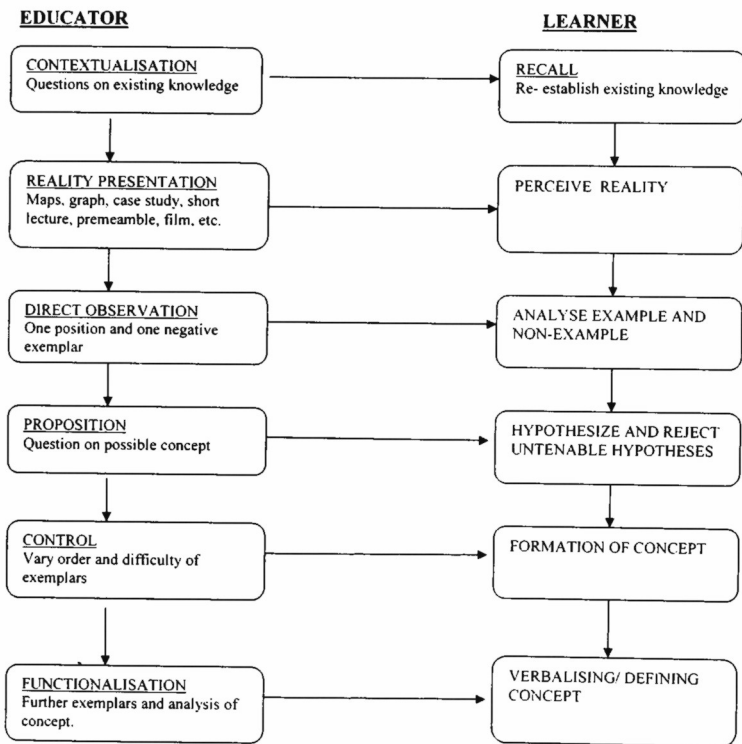
CAM is mainly an inductive model designed to teach concepts in a process – orientated manner, proceeding from the known to the unknown. According to Eggen & Kauchak, (1996: 258), this model is “an approach to teaching concepts in which the teacher provides examples and non-examples of the concept; and the students determine the concept from the examples”. The goal of this model is the acquisition of a particular concept, for example, ecosystem, weathering and sphere of influence. The medium for presenting exemplars should be words, pictures, sketches, models or real objects. As much concrete reality as possible must be brought into the classroom. If a choice between words and pictures exists, pictures should be chosen. Likewise, if a choice between actual objects and pictures exists, actual objects should be chosen. They conclude by suggesting discovery methods to be one of the best ways of assisting the learners to understand basic concepts in geography. Webb (1980:128) adds that CAM consists of a lively interaction between teacher and pupils during which the teacher presents examples and non-examples of the concepts he/she has in mind. The learners attempt to determine the concept from the examples. The following diagram (Figure 5) presents the interaction that goes on in the classroom between the educator and the learner.

Factors influencing attainment of concepts include the following:

- Background experience of the learner;
- Types and quality of exemplars used (depends on the skill of the educator); and
- The degree of abstraction of the concept.

In conclusion, it should be noted that implementation of this model requires more time than the conventional lessons and the educator needs to be aware that learners may not be able to arrive at an understanding of totally unfamiliar concepts such as “sphere of influence”, or “commercial farming”.

FIGURE 5: CONCEPTS ATTAINMENT MODEL



Source: Arjun (1990: 126)

2.7.5.3. Relationship Acquisition Model (RAM)

Relevance of model to geography teaching: Geography is seen as eclectic discipline because it draws its philosophy and subject matter from various schools and disciplines. Since its field is broad, it necessitates the need for a model for organizing instruction. In addition, although geography comprises many sub-disciplines, its unity is maintained through interrelationship between man and the environment. Acquisition of relationships is an important category of objectives of geography, hence the need to examine this model (Joyce & Weil, 1972; Arjun, 1990:130).

The Relationship Acquisition Model (RAM), (Figure 6 below), is based on the Ausubel model, and it is particularly suitable for organizing large bodies of information and for teaching interrelated bodies of content containing concepts, generalizations and relationships.

In this model, more inclusive ideas or generalizations, called advance organisers are presented first followed by less inclusive ideas. The advance organizer is a particular feature of deductive teaching strategy which forms the basis of RAM. Gagne (1985:60) and Lambert and Balderstone (2003:253) define the advance organizer as “a communication given to the learner prior to the encounter with the set of information to be learned”.

Eggen & Kauchak, (1996: 258) state that the advance organizer “acts as a connection between the material to be learned and the learner’s cognitive structure”. They contend that it is “a cognitive roadmap, guiding learners over the new content to be learned”. Ausubel (1968) describes the advance organizer as an “intellectual scaffolding”, which structures ideas and facts encountered during the lesson (Joyce & Weil, 1972:165-166; Arjun, 1990:133). Another useful function of the advance organizer is the retrieval or recall of material which has been learned.

The most popular method used in this model is the question-and-answer method and the lesson type is explanatory. In this model, the educator adopts an expository, deductive

teaching strategy. Expository, in this case, means that the educator provides the necessary information to be mastered in its final form.

The chief objective of this model is the acquisition of relationships, for example, climate and natural vegetation. Eggen & Kauchak (1996: 272) contend that "the model is used most effectively to summarise and relate content that has been learned in previous lessons or in some other way". The educator therefore uses the question-and-answer method, and the lesson progresses from the known to the unknown. The educator can test the application and transfer of knowledge to new situations by the same method of question-and-answer, by referring to a topographical map showing the landforms in question.

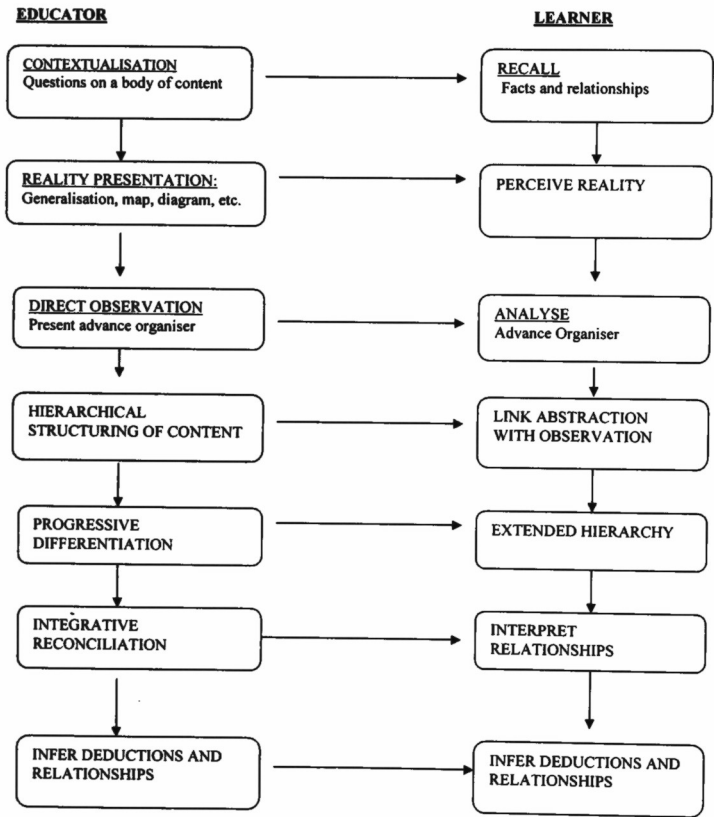
There are three types of advance organisers:

- The first type deals with concept definitions and is valuable when the content to be taught is new or unfamiliar to learners.
- The second type is inter-related generalizations.
- The third type is one in which an analogy is used.

In structuring content, some hierarchical order must be given to the content from the most inclusive idea to the least inclusive, for example, a flow chart below in Figure 7. The educator has to distinguish between super-ordinate, co-ordinate and sub-ordinate concepts and relationships. The following diagram (Figure 7) is an example that represents the "concept definition" type of advance organizer.

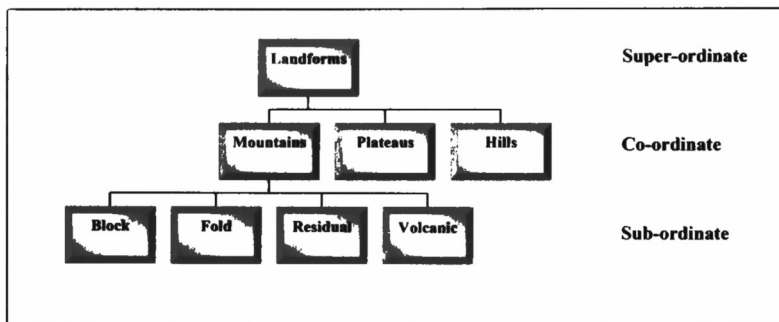
The following is a diagram representing the Relationship Acquisition Model:

FIGURE 6: RELATIONSHIP ACQUISITION MODEL



Source: Arjun (1990: 138)

Figure 7: Hierarchical Structuring Levels of Content



In conclusion, RAM has many advantages, especially in the hierarchical structuring of content in mapwork. One can see at a glance the super-ordinate, co-ordinate and sub-ordinate relationships contained in the structure. Such a structure, therefore, provides a conceptual framework for teaching and learning. This model can also be used as a guide in curriculum design in mapwork.

RAM can be used to teach concepts and generalizations, as well as the relationship between these abstractions. Therefore, various types of test items can be used, following Bloom's taxonomy of recall, comprehension, analysis, application, synthesis, prediction and evaluation.

RAM also helps the educator to structure content; it helps in the teaching and learning of geographical relationships and lastly, it helps the educator to use expository method meaningfully, as this is still the more frequently used mode of instruction (Arjun 1990:139; Lambert & Balderstone, 2003: 251). By considering the learner's frame of reference in the presentation of new material, it promotes active reception learning.

2.7.5. 4. Training/Demonstration Model

Relevance of Model to geography teaching: Geography has its own important skills, which have to be taught. The following are some of the examples of geographical skills to be taught:

- Interpretation of photographs, models and sketches;
- Interpretation and understanding of maps, especially topographical maps. This has its own set of skills, for example, orientation of map, direction and grid reference. Mapwork skills are included here:
- Use of quantitative techniques; and
- Development of structured thinking.

Joyce & Weil (1980:369-387) have designed the training model, which is described as a demonstration strategy. The training/demonstration model is highly recommended for teaching proficiencies and skills. Joyce & Weil state that this model is applicable to a variety of simple and complex skills, including psychomotor skills, problem-solving strategies, and interpersonal competencies.

The goal of the educator is to produce training conditions that will shape the behaviour of the learners into a desired pattern, for example, calculation of true bearings. The type of skill chosen can range from a simple psychomotor skill to a more complex interpersonal competency.

This model imposes a great deal of structure on the learner in that he/she has to follow prescriptions to achieve success. The educator and the learner are able to provide necessary feedback concerning the mastery of the skill. Finally, the educator provides the necessary support and creates a suitable environment for practising the skills to be learned.

In this model, the educator uses the demonstration or illustration method. The two most important elements of the training model are demonstration and practice. The educator usually demonstrates the skill (for example, the calculation of true bearings) to small

groups of learners within a few minutes; thereafter the learners practise the skill (Arjun, 1990: 142).

Since this model emphasizes a lot on structure or steps in acquiring the skill, it becomes obvious that deductive learning principles are used. Usually, the educator presents the “rule” first, demonstrates the skill, and then gives pupils an opportunity of practicing the skill. The principles referred to here are demonstration/illustration and self-activity. Sometimes, the principle of individualization might be applied when necessary. When the educator demonstrates the skill, he/she uses the visual principle. Finally, the famous saying of “practice makes perfect” needs to be applied here because the skill can only be mastered through exercise, coaching, repetition, revision, assignments and homework.

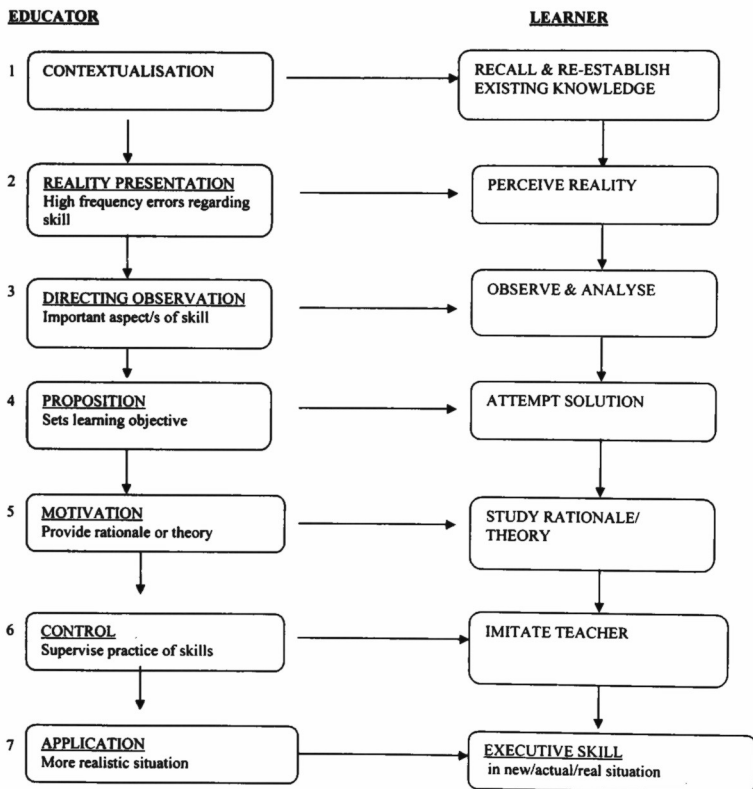
There are six phases of the training model which are illustrated in Figure 8 below:

1. **Actualisation of existing knowledge (Item 1)** – this is done by the question-and-answer method, moving from the known to the unknown.
2. **Proposition (Items 2 & 4)** – the educator tries to link new information to existing knowledge with the help of clearly formulated questions.
3. **Motivation (Item 3)** – the educator needs to provide the rationale or theory forming the basis of the specific skill.
4. **Visual principle (Item 3)** – a sensory image is provided to the learners, for example, a film, videotape or live demonstration.
5. **Practice and control (Items 5 & 6)** – the learners practise elements of the task, for example, identifying “observer” and “object”. By “practice” the learners repeat elements of the task with a view to achieving an improved performance or greater precision and obtaining the necessary feedback for self-correction.

Gagne (1985:207) contends that “the most obvious feature of motor skills is that they improve with practice”. A skill such as the calculation of true bearing, which is both cognitive and psychomotor, does require constant practice for improved performance (Arjun, 1990:144).

6. **Functionalisation (Item 7)** – the learners are required to transfer the skill to more realistic situations, for example, a topographic map or in the field. The proficiency of the learners also improves with greater practice. This phase can actually be incorporated into the practice and control phase.

FIGURE 8: TRAINING/DEMONSTRATION MODEL



Source: Arjun (1990: 142)

In conclusion, the technique of demonstration and practice are necessary for teaching geographical skills, therefore this model is very useful to geography educators.

Firstly, it draws the attention of learners to the essential points and principles. It also relates principles and concepts taught to real world situations. Furthermore, Davies (1980:41) maintains that the demonstration method is “challenging and thought – provoking”. He adds that its pace is flexible and it can easily be altered to fit the needs of pupils. However, he mentions a significant disadvantage of this method: that “it demands very careful preparation and organization. If things go wrong, the effect is lost”. Despite this disadvantage, demonstration method is very useful for teaching geographical proficiencies and skills (Arjun ,1990:146).

2.7.5.5 The Suchman Inquiry Development Model

Relevance of model to geography teaching: the form of this model is simulated scientific experiment and inquiry: the aim of this model is to acquire skills of inquiry through involvement in a simulated scientific experiment. The objective of this model has two important components: the development of explanations; and the development of process skills. Arjun (1990: 146) adds that the goal is “to help learners improve their ability to relate data to the explanations they have formed”. The outcomes in this model show the interdependence between content and process goals.

The underlying assumption of this model is that learners will acquire a firm grasp of the content by learning that all knowledge is tentative and that as tentative knowledge is refuted, it can be replaced with new knowledge (Arjun, 1990:147; Lambert & Balderstone, 2003: 272).

In this model, the educator develops a specific problem or, according to Joyce and Weil (1972:63), a puzzling event which is suitable for data gathering and hypothesis testing. Since the problem is the focal point of this activity, firstly it must be structured properly, and stated and unambiguously. Secondly, the problem must be suitable for the age and ability of the learner, therefore, the learner's background must be considered. Furthermore, the problem must be stimulating or motivating. It must arouse curiosity and create added interest in finding an explanation. Finally, the narrower the problem, the

better sense of direction it provides learners for formulating hypothesis and data collection.

The Suchman Model attempts to present a simulated portion of the real world for analysis through inquiry. Therefore, the educator has to design learning experiences, which correlate with the problem – evoking situation. To do this, the educator uses the following media as introductory materials: films, audiotapes, demonstrations, graphs, tables, map, case studies, etc.

Data gathering may create problems because the real world is far removed from the classroom. Firstly, the opportunities for observing, handling and manipulating real objects and events as they naturally occur in the world are lacking. Secondly, various constraints limit fieldwork activities, for example, time. Also, gathering data from written sources may be slow and tedious, which discourages students. Lastly, the learners may dislike the process of inquiry if it is spread over a long period of time.

As a result of the above-mentioned problems, Suchman devised an inquiry model illustrated in Figure 9 below in which data is collected by students asking the educator questions. The educator acts as a source of information and answers the questions. In this way, the learner is allowed to be a constructionist, that is, he/she organizes the data collected and avoids any kinds of ‘information drift’ or irrelevant data (Arjun, 1990: 148).

This method will be successful with above average ability students because understanding the cyclical nature of the data gathering hypothesizing process is central to understanding inquiry in general and the Inquiry Model (Eggen & Kauchak, 1996).

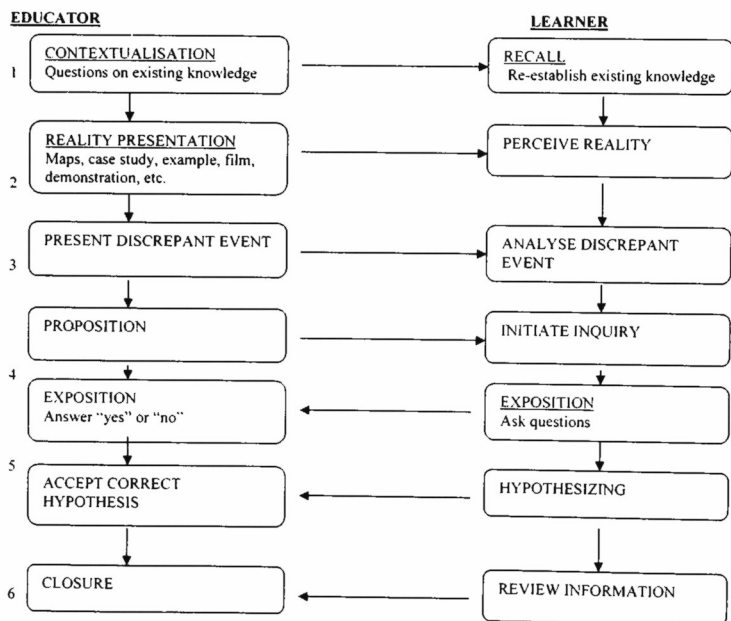
The Inquiry Model employs both inductive and deductive modes of reasoning in which the learners are actively involved in solving a problem. When learners gather data, inductive reasoning is involved, but when the hypothesis is tested to ascertain whether it should be revised, rejected or retained, deductive mode of reasoning is used (Arjun, 1990:149).

The information gathered is obtained through observation alone. The whole model is based on observation and perception. The following are the steps followed:

1. Actualization of existing knowledge
2. Presentation of the problem
3. Hypothesizing and data gathering
4. Control
5. Closure
6. Functionalisation

FIGURE 9: INQUIRY DEVELOPMENT MODEL

(Based on Suchman Inquiry Model)



Source: Arjun (1990: 148)

Regarding evaluation of this inquiry activity, Arjun (1990: 149) maintains: “The most critical form of evaluation is the determination of the learner’s ability to relate data to explanations and to form hypotheses. An excellent way of doing this is with the case study approach”.

Arjun (1990:152) examines the major criticisms against the Inquiry Development Model and contends that the hypothetic – deductive model is too prescriptive. He also contends that one cannot expect youngsters to produce new and reliable knowledge; rather, the emphasis should be on the development of critical thinking skills. He also states that not every learner has the experience and ability to formulate and test hypotheses. Finally, he argues that once a learner formulates a hypothesis, he immediately begins to search for positive answers to confirm the hypothesis. To him, if the hypothesis is rejected, it is seen as a personal failure.

In response to the above criticisms, it should be made clear that prescription is necessary for any theoretical – deductive model, without which the model cannot exist.

The ‘new’ knowledge that is produced by the learners is ‘new’ to them in the sense that they have not yet learned it. All teaching is directed towards acquiring content and critical thinking skills. On the issue of experience, the learners will need guidance from the educator. Finally, the issue of formulating hypothesis will need learners to be trained. In conclusion, the following observations are pertinent to the success of the use of the Inquiry Development Model:

- Suchman offers a clearly defined model for presenting problems that arouse student interest;
- By using this model, the educator develops creative thinking, encourages critical analysis, and stimulates active participation in the learning activities;
- Suchman’s evaluation system can be modified so that other attributes or behaviours can be identified at the educator’s discretion; and
- The model also develops values such as causal reasoning skills, learning autonomy, verbal prowess, tolerance and persistence.

Finally, the interesting part of the Suchman Inquiry Model is that it uses the form of scientific inquiry as didactic lesson form, and it has the acquisition of scientific inquiry skill as objective.

2.8 A STUDENT WHO IS SUCCEEDING (OR ACHIEVING) IN SCHOOL

It is true that educators and parents can strongly influence a student's motivation or lack of motivation, but it doesn't mean that one or the other should be blamed for the failure of the learner, though in some cases, it might be so. Parents, educators and learners themselves should be equally involved in the achievement of the learner.

Motivation is an individual's need or desire to achieve a particular goal. It is necessary for success in the classroom, in business, in personal relationships and in virtually every human endeavour. Motivation must come from within. One cannot give a child motivation, but one can promote it and support it (Heacox, 1991:22; Mwamwenda, 1995: 269).

Motivation, success and achievement are closely linked to one another (Mwamwenda, 1995). Students are more likely to be successful if they put in their best effort. Once successful, they are motivated towards their next goal. Eventually, they come to believe they are capable. They expect positive results for their own efforts – they have become achievers.

Achievers have the following characteristics: They are goal- oriented, positive thinkers, confident, resilient, proficient, risk takers; they have self-discipline and pride (Heacox, 1991:10).

Whitmore, in Arends (1994) in her research on academic motivation identified two factors that critically influence a child's ability to be successful in school:

- the child's self-esteem, and
- how well the learning in school matches what the child is capable of learning.

Both of these factors can be addressed within the classroom setting by the educator. The environment of the educator's classroom can support the development of self-esteem, or it can slowly erode it. Whether the curriculum meets the learner's needs is under the educator's direct control.

In general, classroom learning activities should not be so low-level that they provide insufficient challenge; neither should they be so difficult that students never experience success (Arends, 1994: 115-116; Mwamwenda, 1995: 269-270).

2.9 A STUDENT WHO IS FAILING (i.e. Underachieving)

2.9.1 The Underachieving Learner

The underachieving learner may have some of the following characteristics or profiles (Heacox 1991:12-20):

- **Rebellious** – a rebellious learner doesn't see the relevance of classroom activities and assignments, therefore s/he does not do the work. There might also be power struggle going on between this learner and the adults in his/her life.
- **The Conformist** – a conformist learner is the one who has decided that doing well in school is just not worth it. S/he may decide to do less than his/her best because of peer pressure. S/he wants to blend in with his/her friends, and not stand out from them.
- **The Stressed Learner** – s/he is a perfectionist. His/her self-esteem rises and falls depending on her most recent academic performance. S/he is a poor risk taker, always choosing the class activity or assignment that offers greatest chance of success rather than challenge. S/he is less productive because s/he spends too much time revising his/her work. S/he also procrastinates because s/he believes that s/he cannot perform well enough. As a result, his/her academic performance goes down over time.

- **The Struggling Student** – this learner might have been bright and managed to go through the primary grades without learning much new. But as the content becomes new and demanding enough to require study skills, he/she hits the wall because he/she never learnt how to study. He/she doesn't know the basics of how to learn, how to manage his/her time and assignments, and how to organize his/her workload.
- **The Victim** – a victim learner is reluctant to accept responsibility for his/ her lack of school success. He/she uses every excuse in the book for why her work isn't done or is done in an inferior manner.
- **The Distracted Learner** – this learner has personal problems or concerns that affect his/her school performance. He/she may be experiencing stress or anxiety for very personal reasons of which the educator may be unaware.
- **The Bored Learner** - he/she is a learner who needs more challenging activities due to his/her advanced skills and abilities. Learners who enter school with advanced skills may wait for years until the curriculum catches up with their learning needs. By then, they will have formed sloppy work habits and lazy learning patterns.
- **The Complacent Learner** – he/she is basically content with how school and his/her learning are going. He/she is satisfied with his/her academic performance, though the adults in his/her life believe that he/she could do better, if he/she tried.
- **The Single-Sided Achiever** – he/she is a learner who has decided that only certain learning areas are worthy of his/her attention and energy. He/she chooses to achieve in some classes and to underachieve in others. He/she may be motivated by the subject matter, teaching style, or learning activities of the classes he/she achieves in. Others are dismissed as “boring” or “useless”.

2.9.2 Causes of Underachievement

- **Most learners who are termed as underachievers see no value for learning.**

Underachieving learners need a lot of motivation to learn. Many learners who are not academically successful have outside interests where their talents and abilities shine. If these children can succeed outside the classroom, what makes them fail academically?

Many learners need to believe that learning is important for them to be motivated to learn. The educator needs to show them how learning applies to the real world, to know that specific information and skills have real meaning and value.

Parents need to be actively involved in educating their children. They need to be aware of opportunities within the community where their children can experience the joy of learning for its own sake. On the other hand, the educators need to be enthusiastic about their work; they need to communicate to their learners to show that they value their learning and their efforts to learn. They need to make learning a pleasure by providing learning experiences that draw the learner's curiosity, interest and actively involve them.

- **Inappropriate Learning**

An easy curriculum is as un motivating as a curriculum which is beyond the learners' grasp. Learning needs to be challenging, but not unattainable. It needs to assure success without being repetitive and redundant. It needs to motivate and not overwhelm. There must be a match between the learners' abilities and aptitudes and their learning goals. The following guidelines can help both the educators and the parents to arrive at a balance:

- a. Determine appropriate expectations;
- b. Establish standards for school performance and efforts; and
- c. Meet and communicate ideas and decisions.

○ **Identifying Learning Styles**

The different ways people learn are called their learning styles. Learning styles are important because learning becomes more difficult when styles and teaching methods clash. The learning environment can either support or frustrate the individual's learning style. Some learners learn by reading, others need pictures, maps, and graphs before they can really understand the material.

○ **Poor Study Habits**

Teachers need to communicate their homework policy and practice to parents and learners early in the year. This will help the learners and parents plan the study time properly to avoid distractions, even illiterate parents can be guided to help in this regard. Learners need to set goals which will directly affect their school performance. They should have short-term and long-term goals.

○ **Personal Issues**

Success builds self-esteem. A learner who is failing definitely has low self-esteem. Self-esteem is shaped at home and at school. Attitudes, expectations, acceptance or lack of it by classmates, the ability or inability to make and keep friends, and the appropriateness or inappropriateness of learning activities can affect how a student feels about himself/herself (Heacox, 1991:85; Kubiszyn, 1996; Pierangelo & Guilian, 2002). A safe climate is one that establishes trust, respects the individual, encourages caring and promotes honest exchange of thoughts, ideas and feelings. For a learner to have positive self-esteem, he/she must:

- feel accepted and unique;
- believe that life's consequences are the result of his/her own decisions and actions;
- develop personal values and goals and live by them;
- have a support system; and
- be able to focus on his/her personal strengths instead of his/her limitations (Heacox, 1991:85; Mwamwenda, 1995).

○ **Perfectionism**

Perfectionism is a problem for many underachievers. Perfectionists are not born; rather, perfectionism is a learned set of behaviours and perceptions about oneself (Heacox, 1991:90). Not wanting to disappoint the important people in his/her life, he/she believes he/she must be perfect. Not all perfectionists keep striving to be perfect.

Some get tired and give up because of frustration. Some resort to angry rebellion, some settle into low levels of work, which conceal their earlier academic promise. Such students need help from both the teachers and parents.

○ **Friends**

Learners choose friends on the basis of common interests and experiences. However, each group has an attitude toward school learning and achievement. While one group may have positive feelings about school, another may be 'anti-school'. The learner's friends may set his/her achievement standards. Failing to maintain the group code of conduct may lead to rejection by the group, something the learner is not willing to risk (Heacox, 1991:93; Kubiszyn, 1996).

○ **Stress**

Stress is a personal response to a person, situation, or activity. Stress shows up in how we feel, act, and react. At low levels stress can improve our performance by increasing our energy and keeping us alert. At high levels, it can result in headaches, upset stomachs, exhaustion, and an inability to concentrate, learn, and remember (Heacox, 1991:97).

○ **Power and Control**

Heacox (1991:99) states that experts in the field of child upbringing tend to agree that power imbalances occur when parents and teachers do not set rules and guidelines, or do not consistently enforce the ones they set. For teachers or parents to reclaim control once lost is not easy. Things may be rough for a while, but in the end, your

presence will have a positive effect on his/her academic, social, and emotional well being (Berkowitz and Bier, 2005).

○ **Health Issues**

For some underachieving learners, poor school performance may be related to health problems. In this case, it is advisable to consult the school nurse, counsellor, or psychologist for advice on the appropriate steps to take based on the school's policy.

2.9.3 Conclusion

Every learner needs to learn to keep track of his/her assignments, and should develop a method for recording and prioritizing schoolwork, and scheduling time to complete it if s/he is to succeed in school. The learner must commit himself/herself to the work plan while educators and parents can help with ideas, suggestions and support.

2.10 LEARNING ENVIRONMENTS AND MOTIVATION

2.10.1 The Learning Environment

The structures and process educators choose to build in the classrooms influence how a class develops and the norms it establishes for social and academic learning (Arends, 1997:4). A productive learning environment is characterized by:

- An overall climate where students feel positive about themselves, their peers, and the classroom as a group;
- Structures and processes where students' needs are satisfied and where students persist with academic tasks and work in co-operative ways with the educator and other students; and
- A setting where students have acquired the necessary group and interpersonal skills to accomplish the academic and group demands of the classroom (Arends, 1997:104; Pierangelo & Guilian, 2002).

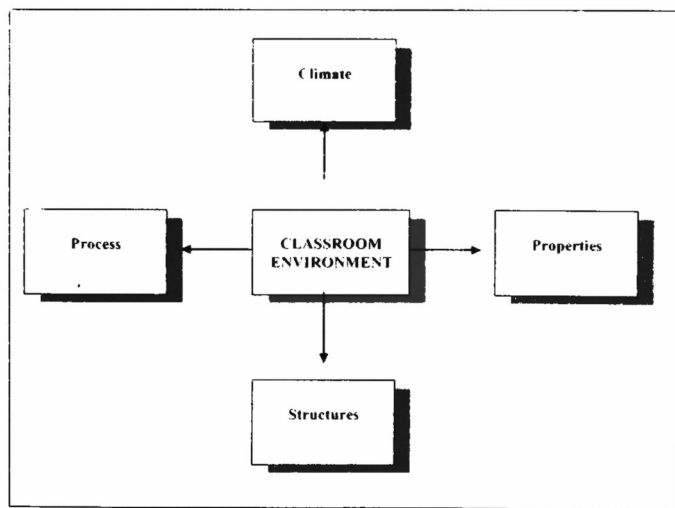
To understand what happens in the classroom one needs to acquire conceptual “lenses” with which to interpret what is observed. A number of scholars have come to describe and understand what happens in the classrooms in four basic ideas:

- Classroom climate,
- Classroom properties,
- Classroom process, and
- Classroom structures

(Arends, 1997:104)

The following diagram (Figure 10 below) illustrates the four dimensions of classroom environment:

Figure 10: The Dimensions of Classroom Environment



Source: Arends (1997: 104)

2.10.1.1 Classroom Climate

Kurt Lewin and his colleagues in Arends (1997:104) showed in their work how interactions between individuals' needs and environmental conditions were key factors in explaining human behaviour.

They describe broadly the following characteristics of classroom groups:

- d. A group that comes together for the purpose of learning;
- e. A group when the participants are, for the most part, randomly selected and required to be group members; and
- f. A group where formal leadership is given by law, one group member, the educator.

Behaviour in the classroom is determined as a result of individual needs, motives, and attitudes, regardless of the institutional role.

2.10.1.2 Classroom Properties

Doyle (1986: 394-395) has studied and described the nature of classroom groups. He has come up with six properties that shape behaviour, regardless of how students are organised for learning, or what approach an educator is using. These properties are described as follows:

- i. Multidimensionality – The class is a crowded place in which many people with preferences and abilities compete for scarce resources, hence many events must be planned and orchestrated. For example, records must be kept, schedules met, supplies organised, and student work collected and evaluated.

- ii. **Simultaneity** - Many things happen at once in classrooms. While helping an individual learner during classwork, an educator must monitor the rest of the class, handle interruptions, and keep track of time.
- iii. **Immediacy** – Classroom events proceed at a rapid pace. Educators have many exchanges with their learners every day. They are continuously praising and reprimanding, therefore the educators have little leisure time to reflect before acting.
- iv. **Unpredictability** – Classroom events often take unexpected turns. Distractions and interruptions are frequent, and it is often difficult to anticipate how an activity will go on a particular day with a particular group of learners.
- v. **Publicness** - The classroom is a public place, and events, especially those involving the educator, are always witnessed by a large portion of the learners.
- vi. **History** – Classes meet five days a week for several months, therefore a common set of experiences, routines, and norms accumulate.

Doyle's six properties directly affect the overall classroom environment and shape the behaviours of both educators and learners.

2.10.1.3 Classroom Processes

Richard and Patricia Schmuck (1988: 24) made a unique contribution in the way they view interpersonal and group processes. They define a positive climate as follows:

A positive climate is one in which the students expect one another to do their intellectual best and to support one another, where the students share high amounts of potential influence – both with one another and with the teacher; in which high levels of attraction exist for the group as a whole and between classmates; where norms are

supportive for getting academic work done, as well as for maximizing individual differences; where communication is open and featured by dialogue; and where the processes of working and developing together as a group are considered relevant in themselves for study.

According to Schmuck and Schmuck (1988), positive classroom climates are created by educators when they teach learners important interpersonal and group process skills and when they help the classroom develop as a group. Schmuck and Schmuck (1988) identify six group processes, which produce a positive classroom climate, when working in relation to one another.

- i. Expectations - How expectations become patterned over time and how they influence classroom climate and learning.
- ii. Leadership – How the power and influence are exerted in classrooms and their impact on group interaction and cohesiveness. The Schmucks believe that leadership is an interpersonal process rather than a characteristic of a person, and it should be shared in classroom groups.
- iii. Attraction – The degree to which people in the classroom have respect for one another and how friendship patterns within classrooms affect climate and learning.
- iv. Norms – Norms are the shared expectations students and teachers have for classroom behaviour. The Schmucks support classrooms with norms that support high student involvement in academic work but at the same time encourage positive interpersonal relationships and shared goals.
- v. Communication – Most classroom interaction is characterized by verbal and non-verbal communication. The Schmucks argue for communication processes that are

- vi. open and lively and have a high degree of participant involvement.
- vii. Cohesiveness – Refers to the feelings and commitments learners and educators have to the classroom group as a whole. The Schmucks advocate peer group cohesiveness, which supports academic work and the well being of the member.

These processes, unlike the properties, are highly influenced by the educator's actions and can be altered to build productive classroom environments.

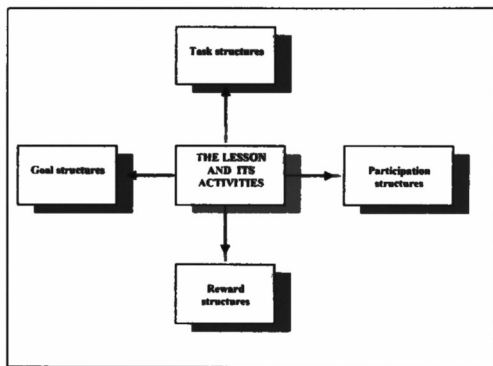
2.10.1.4 Classroom Structures

Researchers, such as Gump, Korni, Doyle and Doyle, and Carter in Arends (1997:106) believe that behaviour in classrooms is partially a response to the structures and demands of the classroom environment.

The following diagram shows how the lesson and its activities can vary in four important ways:

- o The nature of the learning task,
- o The structures for participation,
- o The structures for establishing goals, and
- o Providing rewards.

Figure 11: Variation of the Lesson and its Activities



Source: Arends (1997: 106)

Unlike the classroom properties mentioned earlier, which are mostly fixed, or the classroom processes, which are highly alterable, the four structures above are sometimes fixed or altered. Below is a brief description of these structures:

2.10.1.4.1 Classroom Task Structures

Classroom tasks refer to what is expected of learners and the cognitive as well as social demands placed upon them according to the task.

Classroom activities are the things learners can be observed doing, participating in a discussion, working with other learners in small groups, doing written work, listening to a lesson, and so forth.

Task structures differ according to the various activities required of a particular teaching strategy or model used by the educators.

2.10.1.4.2 Classroom Goal Structures

A classroom goal structure specifies the type of interdependence sought among students. It specifies the ways in which learners relate to each other and to the educator while working towards instructional goals.

Johnson and Johnson (1984: 5) define an instructional goal “as a desired state of future affairs.” They define three types of goal structures:

- Cooperative goal structures – require the coordination of behaviour necessary to achieve the mutual goal.
- Competitive goal structures – exist when students perceive that they can obtain their goal if, and only if, the other students can.
- Individualistic goal structures – exists when the achievement of the goal by one student is unrelated to the achievement of the goal by other students. Usually, there is no student interaction in an individualistic situation (Johnson & Johnson, 1984:5-7).

2.10.1.4.3 Classroom Reward Structures

Arends (1997) states that competitive reward structures are those that reward students for their own individual efforts in comparison with others. Reward structures influence classroom environments and behaviours. Classroom goal and reward structures are at the core of life in classrooms and influence greatly both the behaviour and learning of students.

Regardless of the educator’s personal philosophy toward the use of rewards, the current reality is that student’s motivation centres around the dispensation of grades. Doyle (1979) argues that the primary features of classroom life are the way students engage in academic work and how they exchange their performance for grades. The way the

educators organize goal and reward structures determine which types of goals are accomplished and how the exchange occurs (Arends, 1997).

2.10.1.4.4 Classroom Participation Structures

Teaching and learning are influenced by classroom participation structures. Participation structures determine “who can say what, when, and to whom” (Arends, 1997: 108). These structures include the way learners take turns during group work and the way they ask questions.

2.11. EFFECTS OF CLASSROOM ENVIRONMENT ON STUDENT MOTIVATION

It is not easy to motivate students to persist at learning tasks in mapwork. Some students persist longer than others, and some tasks appear to be more interesting than others. Nevertheless, the general finding by researchers has been that environments characterized by mutual respect, high standards, and a caring attitude are more conducive to student persistence in learning mapwork than other environments (Arends, 1997; Pierangelo & Guilian, 2002). A unique study by Santrock (1970) revealed that persistence at a task in mapwork for a student is not simply a function of the child’s self-control or interest, but can be influenced by the environment and by aspects of the environment under the teacher’s control, that is, room décor and happy moods.

Therefore, it is evident that what teachers do in class influence what their students do. Likewise, students also influence each other and can even influence the behaviour of the teachers. For example, peer group influences show that many students conform to peer group norms and that in most cases; these norms are in contradiction to those held by educators and parents. Today, peer group pressure is used often to explain high dropout rates and low achievement of many inner city youth in American high schools (Arends, 1997).

Finally, building productive learning environments – places where students have positive attitudes towards themselves and their classroom group and where they display a high

degree of achievement motivation and involvement in academic tasks – is a difficult and complex process for most educators, especially, the beginning teachers.

This condition is rather simple to prescribe; yet teachers find the task of getting students engaged in academic work among the most difficult of the leadership functions of teaching. It is not easy to motivate learners who are “turned off” to school, just as it is not easy to create learning activities that will challenge the able learners and at the same time sustain the interest of the less able (Kubiszyn, 1996).

Arends (1997) is of the opinion that the strategies educators use to motivate individual learners and the work they do to help the classroom develop as a group are the ingredients for building productive learning environments.

2.12 STUDENT MOTIVATION

Motivation is an abstract concept that is not easy to define. It is internal to the person and this cannot be observed. However, experienced educators know that it is one of the important forces that guide students’ actions. There are three major ideas that guide contemporary thinking on motivation:

- Need Disposition Theory,
- Attribution Theory, and
- Flow Experiences

2.12.1. Need Disposition Theory

This theory’s view point is that people are motivated to one action and invest energy in pursuit of three outcomes: achievement, affiliation, and influence. The desire for achievement is evident when learners are trying hard to learn a particular learning area or when they are striving to reach the objectives of a particular teacher.

Achievement motives manifest in educators as they strive to provide good instruction and act as competent professionals. Affiliative motives become important when students and teachers come to value the support and friendship of their peers.

The motivation toward influence is seen in students who strive to have more control over their own learning and in educators who strive to have a larger say in the way schools are run. Students' feelings of self-esteem are related to feelings they have about their competence, affiliation, and influence. When these emotional states are frustrated by the activities in a classroom or a school, students may become less involved in the school. When these states are frustrated for teachers they are likely to feel incompetent, lonely, and powerless.

Achievement motivation or the student's "interest to learn" is the most important aspect of this theory of motivation for classroom teaching and has been the focus of other theorists and researchers, such as Biggs & Telfer (1987:108), and Pretorius (1997), among others.

2. 12.2. Attribution Theory

Early research on achievement motivation found strong relationships between the child-rearing practices of parents and a child's achievement motivation (Arends 1997). Parents who encourage their children to try new things and who reward them for high performance establish in their children a need to achieve and a willingness to take risks. On the other hand, parents who overly protect their children and punish them for failure tend to raise children with low achievement motivation.

The attribution theory states that people come to perceive and to interpret the causes of their successes or failures as the major determinants of their achievement motivation, rather than fixed early experiences.

According to Mwamwenda, (1995) and Arends (1997), success or failure can be attributed to four causes: ability, effort, luck, and the difficulty of the learning task. Some people tend to associate their success with their abilities and their failures with their lack of effort. On the other hand, others attribute their success to luck and their failures to their lack of ability. People with high achievement motivation seem to fall mostly in the first category while those with low achievement motivation in the second. Attribution theory offers hope for educators because they can do things to change

learners' perceptions of themselves and the things around them, and this in turn can lead to a corresponding increase in students' effort.

In conclusion, Biggs and Telfer (1987) rightly state that people do things well or poorly according to the image or concept they have of themselves and according to their self-esteem.

In forming efficacy beliefs, the individuals attribute the success or failure of previous performance to causes that will positively motivate future performance, and not the ones that will discourage further involvement.

2.12.3. Flow Experiences

For over two decades, Sikszenmihalyi (1990:127) has studied what he calls "states of optimal experience" defined as times in persons' lives when they are experiencing total involvement and concentration as well as strong feelings of enjoyment. These experiences are called "flow experiences".

When a person is experiencing flow, he/she becomes totally absorbed and concentrates on the ability alone even to the point of losing track of time. Actor and action become one and participation is sustained because of intrinsic rather than extrinsic motivation.

The concept of flow has implications for education and teaching. Sikszenmihalyi (1990:127) concludes that the main obstacles to student learning do not stem from cognitive abilities of learners but instead from the way the schools are structured and from learning experiences that inhibit intrinsic motivation and corresponding flow experiences.

Firstly, flow experiences require that the challenge of a particular learning activity correspond to the learner's level of skill. All the learner's skill is required, yet the activity should not be so difficult that the participant becomes frustrated (Kelly, 1989: 111).

Secondly, there should be clear and unambiguous goals of learning experiences to produce flow. Finally, there must be relevant and meaningful feedback about their

activity as they are doing it for learners to have flow experiences (Arends, 1997). Feedback on good performance provides intrinsic motivation, while feedback on poor performance gives the learner needed information to improve.

In summary, the concept of flow as a theory of motivation emphasizes the importance of designing learning experiences that learners will find enjoyable and appropriately challenging. This type of learning will be intrinsically rather than extrinsically motivating and will be characterized by activity with clear goals and opportunities for feedback.

2.13. WHAT THEN CAN EDUCATORS DO TO FACILITATE INTRINSIC MOTIVATION?

Intrinsic motivation encourages learners to learn because they want to. There is no outside trapping necessary to make the learner feel good. Intrinsic motivation takes place when individuals are placed in a slightly 'difficult' situation involving conflict between what they know already, and what they are currently learning. In other words, the challenge of a learning activity in mapwork in Geography should correspond to the individual's level of skill. The activity should not be too easy as to bore the participant, or so difficult that the participant becomes frustrated and gives up (Biggs & Tefler, 1987:114).

Intrinsic motivation signals high – quality involvement. It has emotional or affective accompaniments. It is self-maintaining, or self-terminating if negative. External reasons (rewards) are not necessary to explain the behaviour. Therefore, the educator needs to make sure that the learners are involved in the task until learning takes place.

Involvement requires:

- *Attending to the task in the first instance;*
- *Having or obtaining the sufficient background knowledge (or existing codes) to permit involvement;*
- *Having the freedom to pursue involvement at the learner's own pace (and not that of the teacher); and*

- *Being sufficiently 'motivated' to want to become more involved.*
(Biggs & Telfer 1987:114)

2.13.1. Conditions Affecting Intrinsic Motivation

There are positive and negative conditions that affect intrinsic motivation (Biggs & Telfer 1987: 121).

2.13.1.1. Positive intrinsic motivation include:

- Positive association of pleasure (enjoyment);
- Social reinforcement (praise) and modeling;
- Freedom to make own choice of an activity;
- Freedom to proceed at own pace; and
- Reward, under certain conditions: when the activity is disliked to start with, and when the reward is used subtly, with no implication that the person is being 'bought', but is an index of competence.

2.13.1.2 Negative intrinsic motivation includes:

- Negative reinforcement (threats or punishment);
- Surveillance (supervising the learner);
- Unpleasant associations; and
- Reward, when it is diminished by poor performance or failure, it is unrelated to the task and at a rate set by an outsider, or the task is already well liked.

Depressing intrinsic motivation may lead learners to develop low self-concept and low self-esteem, which will eventually decrease achievement motivation in mapwork, Geography. People do things well or poorly according to the image or concept they have of themselves, and according to their self-esteem.

Therefore, educators need to continuously try to find out the motives of achievement in their learners. Are the learners motivated to achieve success or to avoid failure in mapwork? There are two major motives involved:

1. The motive to achieve success, i.e. the ego enhancement that success brings; and
2. The motive to avoid failure, which involves the fear of losing

face, for example, test anxiety is an example of fear of failure.

Biggs & Telfer (1987) state that students may learn in order to enhance their egos by competing against other students and beating them. It makes them feel good about themselves and the task. There is more involvement with the task, but the main aim is mainly on ego and not on the task.

Biggs & Telfer (1987:108) are concerned with situations in which people:

- i. See themselves as responsible for the outcome; and
- ii. Know that they will be evaluated on their performance.

The motivational pay-off, whether positive or negative, is a matter of whether the person's self-concept is enhanced or diminished by the outcome.

The theory of achievement motivation, therefore, has important implications for teaching and evaluation strategy in Geography. The high need-achievers, whose motive is to achieve success, will not see any need of trying to succeed if the probability of success is low (e.g. 10%). The low need-achievers, whose motive is to avoid failure, will try to do well if that success is rewarded.

Tasks with high success rates bore high need-achievers, but are suitable for low need-achievers, if that success is rewarded. Here, the difference reflects people's motives, and not their ability.

Many studies have reported non-existent or very low correlations between the Intelligence Quotient (IQ) and achievement motivation (Biggs & Telfer, 1987:108). High need-achievers tend to be encouraged after failure, while low need-achievers give up after failure, even though they may have succeeded in some task which seemed to be more difficult.

Therefore, the OBE principle of "success breeds success" becomes very meaningful in this context if educators have to facilitate the intrinsic motivation of learners to achieve in their given tasks in any learning area, including mapwork in Geography.

2.14 CONCLUSION

Classrooms can be viewed as social and ecological systems that include and influence the needs and motives of individuals, institutional roles and the interaction between members needs and group norms.

A productive learning environment is characterized by an overall climate where students feel positive about themselves and their peers, where individual needs are satisfied so they persist in academic tasks and work cooperatively with the teacher, and where students have the requisite interpersonal and group skills to meet the demands of classroom life. Effective teachers create productive-learning environments by focusing on things that can be altered, such as increasing student motivation and encouraging group development.

Factors associated with motivation that teachers can modify and control include students' level of concerns, feeling tones, task difficulty and success rates, students' interests, knowledge of results, classroom goal and reward structures, and students' achievement, influence, and affiliation motives (Arends 1997:121).

Heacox (1991:25-28) has listed about thirteen positive tips for educators to support achievement in their classrooms. All these are useful in improving the learners' performance in mapwork, Geography. He advises educators to:

Focus on the positive – Educators should accentuate the positive by keeping their comments on the learners' work as positive as possible; by recognizing good thinking or creative approach; by thinking of ways to recognize individuals in their classrooms who have improved in particular subjects or activities, and by using positive incentives for good work skills rather than punishments for not meeting requirements.

Keep problems private – Educators should hold private conferences with learners who are experiencing problems or difficulties in school or their learning area. Public classroom encounters should be replaced with personal, one-on-one conversations.

Get them involved – Students' motivation and interest will be higher if educators involve them in the learning process. Educators should tailor the learning units to the needs, interests and knowledge of their learners. They should also be able to recognize the learners' knowledge and encourage them to get actively involved in their own learning, this also building up their self-esteem.

Provide variety – Predictable daily or weekly routines are boring for students and teachers. Educators should vary lessons and learning activities so that each learner has some opportunities to learn in the way he or she prefers. Not all learners learn in the same way: some need hands – on activities; others learn best by seeing or hearing; some prefer a step-by-step approach, and others are more self-directed and favour activities that give them choices.

Give them tools for success – Some learners have no clue on how to organize their work and keep track of assignments and due dates. Learners need to be helped in tracking their work (e.g. portfolios), and should be given opportunities to learn how to learn. They should also be taught study skills, regardless of their ability and current success at school.

Make learning real – Educators should give real examples showing how school learning relates to the real world. They should motivate learners by involving them in activities that they perceive as worth learning.

Adjust the curriculum – The educator's lessons should directly reflect what the individual learner needs to learn.

Get them interested – The educators should show the importance and relevance of new learning, how it applies to earlier information, or how it can be used.

Make learning appropriate – The educators should make abstract information more concrete by showing objects or pictures, etc.

Let them in on the objectives – The educators need to explain to learners what they are going to learn and why they are going to learn it.

Minimize evaluation – Educators need to plan most of their activities to focus on learning rather than evaluation. The learners need to be allowed to do self-evaluation projects.

Build success – Educators should watch for opportunities to recognize success without forgetting to note improvement. They need to set up opportunities for all of their learners to be successful.

Promote positive self-esteem – Learners should be encouraged to express their feelings and concerns whenever possible with little or no inhibition.

In a nutshell, research on academic motivation has identified two major factors that critically influence a child's ability to be successful in school: the child's **self-esteem**, and how well the learning in the school **matches** what the child is capable of learning (Whitmore 1980; Heacox, 1990; Arends, 1997; Van der Horst & McDonald, 2003).

Both of these factors can be addressed within the classroom setting by the educator. The environment of the educator's classroom can support the development of self-esteem, or it can slowly erode it. Whether the curriculum meets the learner's needs is also under the educator's direct control (Mwamwenda, 1995).

Generally, classroom-learning activities in mapwork should not be so low-level that they provide insufficient challenge; neither should they be so difficult that students never experience success.

In the next chapter, the research methodology and research procedures are discussed.

CHAPTER 3

RESEARCH METHODOLOGY

3.1. INTRODUCTION

This chapter deals with the research procedures that have been used to address the research questions stated in Chapter 1 of this study. These procedures include: research design, target population, sample and sampling procedures, data collection techniques and data analysis. Issues related to quality and relevance of research results, the reliability and validity of the research instruments used are also discussed.

3.2. THE RESEARCH DESIGN

Qualitative and quantitative research methods were used: Qualitative in the sense that survey instruments such as questionnaires, interviews and observation were used to collect data; and quantitative in the sense that some data collected were analyzed in percentages, with the help of the computerized programme of Statistical Package of Social Sciences (SPSS) available at the university.

A research design represents a scheme or plan that facilitates inquiry. It is a plan of action which involves the selection of the population, the research area in which the research is to take place and the description of the data collection and recording procedures that are to be used during the research (Borg & Gall, 1989; Schumacher & McMillan, 1993; Johnson & Wichern, 1998; Gozo, 2000 and Magwenzi, 2000).

The implication of this definition for this study is that the following issues were addressed first:

- A strategy for choosing the participants or the population for the study
- The area where the research was conducted, and
- The techniques that were used in collecting and recording data.

3.2.1. Target Population

A target population is the actual population to whom the researcher would like to generalize. In this study, the population consisted of Grade 12 Geography educators, Grade 12 learners and the Geography Heads of Department and / or Subject Heads and Site Managers of the selected senior high schools in Mafikeng District, Central Region, in North West Province of the Republic of South Africa (See Appendix VII). A sample of twenty-four schools was purposively selected out of twenty-seven schools which offer Geography. The twenty-four high schools selected were all former historically disadvantaged schools and the three left out were former historically advantaged schools (See item 1.6.14). The African schools were the least-resourced schools and are sometimes referred to as the historically disadvantaged schools. These schools are still under- resourced and the student and educator population is homogeneous, that is, they are Africans with similar social, economic and educational background. All schools are easily accessible. The present Model C schools are multi-racial with mostly White educators and very few educators of other races. These are the schools which were excluded from this study because they are not homogeneous but multi-racial.

Out of the twenty-four homogeneous high schools that offer Geography, ten schools were randomly selected to participate in this study. The participants were taken from the ten schools in the following school circuits: Botshabelo, Dithakong, Makgobistad, Mmabatho, Montshiwa and Stadt (See Table 5, pg. 104).

3.2.2. Sample Size and Sampling Procedure

The schools were at first purposively selected, then randomly selected by a list of random numbers of the population. The learners from the selected sample schools were also randomly selected.

All educators of geography at Grade 12 level and the Heads of Department (HODs) and /or Subject Heads and School Managers were taken from the selected sample of high schools. About 30% of the total sample population of Grade 12 learners and 30% of all high schools offering Geography at Grade 12 level were selected. Samples should be as

large as a researcher can obtain with a reasonable expenditure of time and energy. If the sample is big, it is the best way to obtain a sample representative of the population from which it has been selected. Fraenkel and Wallen (2000), state that the larger a random sample is in size, the more representative it is of the population. Any differences that exist between the sample and the population should be small and unsystematic. It is therefore believed that any differences that would occur would be the results of chance rather than bias.

3.2.2.1. Sample Size

The size of the sample is determined by the researcher's intentions, the nature of the population, time and the resources available to the researcher (Gozo, 2000: 82). The population of this study is quite homogeneous, therefore a sample of ten schools out of a total population of twenty-four was found to be adequate and representative for this study. From the ten schools, there were six hundred and seventy learners taking Geography at Matric level, and out of these, two hundred and fifty learners (about 37%) were randomly selected for the study. Adams and Schvaneveldt (1991:183) have stated that "the more homogeneous the population under study, the smaller the sample needs to be, to accurately reflect the characteristics of that population, assuming random selection procedures." Therefore the sample size selected was large enough and a good compromise between representativeness, financial costs and the time available. Fraenkel and Wallen (2000) are of the opinion that samples should be as large as a researcher can obtain with a reasonable expenditure of time and energy.

Sampling refers to the act of selecting a smaller group from a larger one with a view of representing a larger group adequately (Sebego, 2003). There are several techniques that can be employed to select participants for a research. In this study, purposeful sampling was first used to identify the high schools that offer Geography at Grade 12 level, and then simple random selection was applied to select the final sample. The sample finally chosen cannot necessarily be taken to represent the entire population but only that which offers Geography in the Mafikeng District, Central Region.

3.2.2.2. Sampling Procedures

Random sampling guarantees respondents an equal chance to be involved in the study. There are no specific rules on how to obtain an adequate sample, although a sample of ten to twenty percent of the population is often used. The important thing in choosing a sample size is that it should be sufficient to assure the researcher that the sample will be representative of the population from which it is drawn. Names of high schools offering Geography at Grade 12 level were requested from the Chief Director, Professional Support Services, in the North West Provincial Department of Education. The high schools were arranged alphabetically and each given a number in ascending order, for example, 001, 002, 003, and so on. Every fifth number was selected until the target number of ten schools was reached, irrespective of school circuits they fall under. Finally, the ten schools were arranged according to their circuits as illustrated in Table 5 below. The learners from the selected sample schools were also randomly selected from an alphabetical list of Grade 12 learners provided by the educators in those schools.

Table 5: Number of Sampled High Schools and Respondents According to Circuits

CIRCUIT	NO. OF SCHOOLS	EDUCATORS / HODS	LEARNERS	TOTAL
Botshabelo	1	1	25	27
Dithakong	2	2	50	54
Makgobistad	1	1	25	27
Mmabatho	2	2	50	54
Montshiwa	2	2	50	54
Stadt	2	2	50	54
TOTAL	10	10	250	270

Sample: $N = 270$ (i.e. $250 + 10 + 10$ HODs)

All Grade 12 educators offering Geography in the selected schools were interviewed and responded to the questionnaire, but only 8 of the educators were observed in the classroom situation. This was so because of the timing in which the field research was done (July-September, 2004). Most educators were very busy preparing their learners for Mock Exams and also working on the Continuous Assessment (CASS) which they had to

submit on a specified date without fail. The original intention was to observe all the Grade 12 educators of Geography in the selected schools. Therefore, this rendered a short fall in the triangulation of data in some schools, but the problem was alleviated by using the observations' schedules the HODs had used to observe educators during the course of the year. Relevant information was extracted from the HODs' Reports to match the pre-determined checklist of the Observation Schedule for this study (See Appendix VI).

The samples for the target groups were identified as follows:

- Target Group 1: 10 Grade 12 Educators of Geography
- Target Group 2: 250 Grade 12 Learners of Geography
- Target Group 3: 10 HODs / Subject Heads of Geography and
10 Site Managers

3.2.2.3. The Grade 12 Educators of Geography

As already stated in the Research Assumptions (item 1.7 pg.16), it is assumed that the educators teaching Geography to Grade 12 learners are senior teachers who are experienced and also professionally qualified. It is also assumed that they have the relevant working knowledge, personality, proper social relations with learners, have sufficient background knowledge of learners and are able to motivate the learners to learn (Nance & Fawns, 1993: 168). These educators are also in daily contact with the learners, so it was found fit to include them in this study.

3.2.2.4. The Grade 12 Learners of Geography

The assumption that all learners at Grade 12 level have all been exposed to map reading in Geography at both the junior and senior levels has already been mentioned in the Research Assumptions (item 1.7 pg. 16). As active participants in the classroom, it is hoped that information on their learning styles and abilities, their interests, academic skills, work and study habits, and personal issues such as self-esteem and stress were collected. Therefore, the learners are an important target group for this study.

3.2.2.5. The HODs / or Subject Heads / Site Managers

This target group was very important in this study because of the participants' responsibility over the educators, the learners and the administrative work at the selected schools. All the HODs /Subject Heads were interviewed and they also responded to the questionnaire. They also participated in observing other educators if they themselves were not teaching a Grade 12 class. In most schools, the Grade 12 educator was also the HOD.

3.3 DATA COLLECTION AND INSTRUMENTATION

3.3.1. Methodology and Research Instruments

3.3.1.1. Literature Review

Primary and secondary sources were used to collect data. These included published and unpublished materials, books, educational journals, magazines and reports related to factors responsible for performance of Grade 12 learners in the section of map work in Geography at Matriculation Examinations (Matric Exams).

The literature provided the researcher with what had been done in the field, pointing to problems and difficulties both the learners and educators face, the strategies, methods and techniques used to help improve the achievement of learners in map work. These sources of information were supplemented with the data obtained through the use of instruments based on qualitative approach. The general approach was a series of systematic approaches including the identification of the population, sampling techniques, research instruments, data collection and data analysis techniques.

3.3.1.2. Research Instruments

The data was collected using three types of instruments:

- Questionnaires
- Interviews

- Observations

3.3.1.2.1. Questionnaires

Two questionnaires were designed, one for educators and the other, for learners.

A. Questionnaire for Educators

The questionnaire for educators was used to collect data from the selected Grade 12 educators and Heads of Department (HODs) for Geography. In all the schools that were visited, with the exception of one, the Grade 12 educators were also the HODs or subject Heads.

This questionnaire consists of structured and open-ended items. The format of the instrument reflected two main sections (See Appendix II):

Section A

- Personal data, and
- Attitudes to the teaching of map work

Section B

- Classroom environment
- Instructional strategies, methods and techniques, and
- Aspects of map work difficult to teach

B. Questionnaire for Learners

This questionnaire consists of structured items, which reflect the following areas, (See Appendix III):

- Learning problems
- Study habits
- Managing school work
- Personal issues
- Difficult aspects of map work
- Teaching strategies, methods and techniques

- Resources for learning map work

Under each of these categories of items there were detailed sub-items included as indicators of the main major items. Both close-ended and open-ended questions were designed to get specific information on a variety of topics relevant for this study.

Ethical Considerations

The questionnaires were suitable for this study because they offer a reliable and consistent presentation of items. They are said to allow the researcher to collect information and opinion from respondents which might not be possible to collect with ease (Ranko-Ramaili, 2003: 51). As a data collection technique, questionnaires have been heavily criticized; however, they allow individuals to maintain anonymity for fear of victimization, especially in a school situation. Maintaining the confidentiality of the respondents enables the individuals to more likely provide the real facts, rather than telling the researcher lies. In this study, confidentiality was maintained by asking the respondents not to write their names on the completed questionnaires.

The questionnaires were also used for the purpose of data triangulation to check the trustworthiness of the information given on items such as the teaching methods used and the challenges faced, and also to collect the opinions from respondents on what needs to be done to alleviate some of the challenges they encounter.

In addition to the questionnaires, interviews and observations were used for collecting data. The researcher also collected information from Site Managers through face - to - face interactions and observation, and from school reports and records.

3.3.1.2.2. Interviews

Interview questions for educators and learners were both structured and unstructured to reflect the learners' achievement, school problems and how the learners' performance can be improved.

Interviews can be used for probing deeply and producing relevant and reliable information if they are well designed. Open-ended questions were designed to get specific information on a variety of topics relevant to this study (See Appendix IV & V).

All ten educators and HODs were interviewed. The same questions were asked and the researcher wrote down the information as the interviewees responded. Only sixty learners were interviewed in groups of tens and the responses given were written down and categorized according to majority responses.

3.3.1.2.3. Observation

Both participant and non-participant observation of the selected high schools were conducted. The researcher and a few fourth year Geography Methodology Students were the official observers. Heads of Department and/or Subject Heads also participated in the observation of the educators by extracting relevant information from previously observed lessons to match the checklist of the observation schedule (See Appendix VI) for this study. Both the researcher and the Fourth Year Geography Methodology students took part in the non-participant observation. Non-participant observation was more informal than formal and was mainly directed at the physical school environment, the general discipline of learners and educators, the learning culture of each school and the resources available.

The classroom observation schedule was structured with a pre-determined checklist (See Appendix VI). Each major statement had sub-items from which the observer had to identify as the lesson was in progress. These observations were undertaken during the June - August, 2004 teaching practice and the months of September to October, 2004. They served two purposes:

- To establish the teaching strategies/methods used in the classroom, and
- To establish the classroom interaction between educators and learners.

These observations were used to validate some of the information received through the questionnaires, and also for triangulation purposes.

Observation, as a data collecting technique, was quite useful as greater insight was gained into classroom successes and problems that are experienced at various schools.

3.3.2. Piloting the Questionnaires and Interviews

The questionnaires and interviews were piloted at one high school, which was not part of the randomly selected high schools. One Grade 12 class, one educator and one HOD/or Subject Head and School Manager were involved. The reason to pilot the questionnaires was to check the clarity of all questions and instructions, and that if any problems of comprehension or confusion or ambiguity arose, they might be eliminated by the researcher. Also, any items that were found not to yield useful data were removed.

According to Fraenkel and Wallen (2000), this exercise is useful because it might reveal ambiguities in the questionnaire. It also might reveal whether instructions given are clear to respondents or not. The final copies of the questionnaires were produced after piloting (See Appendices II & III at the end of this report).

3.3.3. Administration of the Questionnaires

The researcher personally distributed the questionnaires to the educators and the student teachers administered them to the learners during their teaching periods when all learners were in class. The completed questionnaires from educators were collected after one day of distribution. Two educators from two schools were unable to return the completed questionnaires.

Distributing the questionnaires personally was quite advantageous because the researcher was in a position to explain the purpose of the study clearly before the respondents attempted the questions.

In schools where student teachers were not assigned to, the questionnaires for learners were left with the HOD or the Subject Head for distribution to them and were collected within two to five days after distribution. However, at two schools, the questionnaires for both the educators and learners were not returned until school closed for the autumn holiday in September. This situation literally reduced the target group of ten schools to eight.

The researcher made three trips to these schools to follow up the questionnaires, but the educators were either not there or gave excuses for having not completed them. The researcher also followed up telephonically, but the response was still negative, so the two schools were eliminated from the target group. The final list of respondents is shown in Table 6 below.

Table 6: Final List of Sampled High Schools and Respondents According to Circuits

CIRCUIT	NO. OF SCHOOLS	EDUCATORS	HOBS	LEARNERS	TOTAL
Botshabelo	1	1	1	25	27
Dithakong	2	2	2	50	54
Makgobistad	1	1	1	25	27
Mmabatho	1	1	1	25	27
Montshiwa	1	1	1	25	27
Stadt	2	2	2	50	54
TOTAL	8	8	8	200	216

Total Number of Respondents = 216

3.4. RELIABILITY AND VALIDITY

Triangulation of methods of collecting data was used in this study to enhance objectivity and social relevance. Triangulation of respondents was also used for validity and reliability. In addition, the researcher believes that administering interviews and observations herself, with the help of some Fourth Year Geography Methodology students, and the teachers in the sample would:

- save a lot of time and money;
- be easily managed;
- allow uniformity; and
- ensure that answers are more comparable as the respondents get the same set of questions.

The questionnaires were completed and a broader spectrum of views was obtained. Data collection was carried out during the students' teaching practice period in July/August/September, 2004.

Reliability and validity in Social Sciences present more problems than in quantifiable Natural Sciences (Cates, 1985: 124; Anderson, 1990, 12; Sebege, 2003:74). This is because there are some conditions in social sciences associated with administration of any approach, which make achievement of reliability and validity difficult. For this study, originally, 250 Grade 12 learners were randomly selected from a total of 670 Grade 12 students of Geography, slightly more than the required percentage of 30 % as indicated earlier in this chapter. When the questionnaires were administered to these 250 students, only 200 answered questionnaires were received, but this figure did not affect the representativeness of the study as only 30% of the total number of students was required. Krefting (1991: 214) maintains that the terms reliability and validity in qualitative research should be explained in terms of "trustworthiness and credibility."

3.4.1. Trustworthiness

In this study, the Guba (1981) model of trustworthiness of qualitative research was adopted. This model is based on four aspects:

- Truth-value
- Applicability
- Consistency, and
- Neutrality, but not all aspects would be implemented.

Krefting (1991: 215) maintains that Guba's model of trustworthiness of qualitative research is well developed conceptually and has been used by qualitative researchers for a number of years.

3.4.1.1. Truth -Value

The truth - value aspect is defined as the extent to which the researcher has established confidence in the truth of the findings for the informants and the context of the study (Krefting, 1991: 215). Several strategies can be used to establish the truth - value and/or credibility of a research. In this study, the researcher used triangulation, amongst others.

3.5. TRIANGULATION

Different authors define triangulation differently, but one thing that is common is that it is a technique used to increase confidence and/or trustworthiness of a research (Cohen & Manion, 1989: 269; Krefting, 1991: 215; Sebege, 2003: 75).

Krefting (1991: 215) mentions four types of triangulation, namely: methods triangulation, data triangulation, triangulation through multi-analysts, and theory triangulation. Borg and Gall (1989: 393-394) and Sebege (2003: 75) collectively define all these types as a “strategy of using several different kinds of data-collection instruments such as tests, direct observation, interview and content analysis to explore a single problem or issue.”

In this study, three types of triangulation, namely: methods triangulation, data triangulation and theory triangulation were used. The manner in which they were used is explained as follows:

3.5.1. Methods Triangulation

Cohen and Manion (1989:269) define this type of triangulation as “the use of two or more methods of data collection in the study of some aspect of human behaviour”. In this study, this was achieved by using questionnaires, observation and interview to collect data on teaching methods, classroom environment and interaction, study habits and personal problems. This is confirmed by Borg and Gall (1989) who define triangulation of methodology as “using several methods to study the same object”.

3.5.2. Data Triangulation

Hopkins (1993: 152) states that data triangulation involves contrasting the perceptions of one actor in a specific situation against those of others in the same situation. In this research, the use of educators and learners as sources of data enabled the researcher to triangulate the data. Borg and Gall (1989: 393) also add that triangulation can also be achieved by collecting essentially the same data from different samples, at different times in different places. To this end, some degree of authenticity was achieved in this study.

3.5.3. Theory Triangulation

This type refers to the use of expert information from literature to validate data. In this study, the use of literature and reports to obtain relevant information with regards to learner achievement in Geography helped the researcher to understand and analyze data from the questionnaires, observation and interviews (Guba, 1985: 314-316; Sebego, 2003: 76).

3.6. PROCESS OF DATA PRESENTATION AND ANALYSIS

The responses from the questionnaires, interviews and observation were categorically analyzed and interpreted. Descriptive statistical analysis techniques were used in analyzing the data gathered. The descriptive statistical analysis techniques were used for the purpose of clarifying the structure of the data to obtain a simple descriptive summary of the data using either, tables, bar graphs, bar charts or pie charts. Usually, descriptive analysis is carried out before making inferences to findings and making inappropriate recommendations there of (Ranko-Ramaili, 2003: 56). The frequency data analysis (FDA) was used as a descriptive statistical analysis technique in this study.

The following chapter deals with data presentation and analysis.

CHAPTER 4

DATA PRESENTATION AND ANALYSIS

4.1. INTRODUCTION

The main purpose of this study was to investigate the factors that lead to learner achievement in mapwork in geography, and therefore use the findings to develop a framework to help improve learners' achievement in mapwork. Questionnaires, interview schedules and observation checklist were administered to 200 Grade 12 learners taking Geography in eight schools and to eight Grade 12 educators of Geography and eight Heads of Department / Subject Heads.

Apart from identifying useful factors that influence learner achievement in mapwork, the study was also an attempt to find out the teaching strategies that educators in the North West Province of South Africa use. In addition, this study was also useful in identifying those teaching strategies that are considered helpful in boosting learner achievement in mapwork skills and concepts.

In this chapter, a full description and analysis of the findings are discussed. Descriptive statistical analysis techniques are used.

Descriptive or exploratory statistical analysis techniques were used in analyzing data for the purpose of clarifying the structure of the data and then obtaining a simple descriptive summary of the data using either tables, bar graphs, line graphs or pie charts. The descriptive data analysis was carried out before the researcher made inferences to findings and making any recommendations thereafter. The frequency data analysis (FDA) technique was used as a descriptive statistical technique.

The four objectives mentioned in Chapter 1 formed the four themes under which the findings from the guiding research questions are discussed.

The research questions are discussed under the following schemes:

- Learner and Educator Experiences with Mapwork in Mafikeng High Schools (Q.1, 2 & 3).
- Influence of Instructional Strategies, Methods and Techniques on Learner Performance in Mapwork (Q.4& 5).
- Influence of Learner and Educator Attitudes on Performance in Mapwork(Q.6 & 7).
- Influence of Home and School Environments on Learner Performance in Mapwork (Q.8).

4.2. DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

The study sample was originally drawn from ten schools in six circuits in Mafikeng District, Central Region in North West Province (See Table 5). However, only eight valid responses were obtained from the Educator Questionnaire, and two hundred valid responses from Learner Questionnaire (See Table 6). Ten educators were interviewed, but only eight were observed in the classroom. Sixty learners out of the two hundred were selected for group interviews.

Table 7: Breakdown of Sample by Gender

GENDER	FREQUENCY	VALID PERCENTAGE
Male Educators	3	37.5%
Female Educators	5	62.5%
Total	8	100%
Male Learners	112	56%
Female Learners	88	44%
Total	200	100%

Table 7 above illustrates the total number of respondents used in the Educator and Learner Questionnaire samples according to gender. Three male and five female educators represented the Grade 12 educators of Geography in high schools in Mafikeng District. The sample represented a higher population of females than males which is a reflection of population and gender demographics in the country. The findings are similar to the study done by Magwenzi (2000:109) where the female educators were more than the male educators in secondary schools.

One hundred and twelve male learners and eighty-eight female learners represented the Grade 12 Geography learners. The sample, unlike that of the educators, represented a higher population of males than females which is a reflection of choices of learning areas learners have to make at Grade 10 level. Most learners do not choose Geography because of Paper 1 which deals with mapwork and mathematical calculations, a repellant factor to most learners, especially the females (See Graphs 1&3 below). Again, most of those who take Geography do so because they have no other alternative to make six learning areas which they are required to take to qualify for Matric entry.

Table 8: Breakdown of Educator Sample by Academic and Professional Qualifications

PROFESSIONAL	FREQUENCY	PERCENTAGE
1. Secondary Teachers Diploma	1	12.5%
2. Bachelor of Arts Degree	1	12.5%
3. Bachelor of Arts with Education	3	37.5%
4. Bachelor of Education	1	12.5%
5. Master of Education	1	12.5%
6. Other	1	12.5%
ACADEMIC		
1. Geography at College Level	1	12.5%
2. University Course 3	6	75%
3. Other	1	12.5%
TOTAL	8	100%

Table 8 above indicates that **twelve and a half percent (12.5%)** of the educators in the sample were professionally unqualified but had a university degree. **Twelve and a half percent (12.5%)** indicated 'other' which could mean professionally untrained and

without a junior degree or honours. **Twelve and a half percent (12.5%)** of educators are also reflected as having academic qualification of Geography at College level and not University level. **Seventy-five percent (75%)** of the educators have University Course 3 Geography and are professionally qualified. An overall analysis of these figures indicates that the majority of Grade 12 educators of Geography are relatively well qualified in terms of academic and professional qualifications.

Table 9: Teaching Experience of Educator (years teaching geography)

TEACHING EXPERIENCE	FREQUENCY	PERCENTAGE
3 - 5 years	1	12.5%
6 - 8 years	1	12.5%
9 - 11 years	2	25%
12 - 15 years	2	25%
Over 15 years	2	25%
TOTAL	8	100%

According to Table 9 above, **twelve and a half percent (12.5%)** of the educators have a teaching experience of three to eight years teaching geography. **Twenty-five percent (25%)** between nine and over fifteen years of experience teaching Geography. Overall, **over fifty percent (50%)** of the educators of Geography at Grade 12 level have a teaching experience of over ten years, therefore they are quite experienced.

4.3. RESEARCH RESULTS ACCORDING TO THE OBJECTIVES AND GUIDING RESEARCH QUESTIONS.

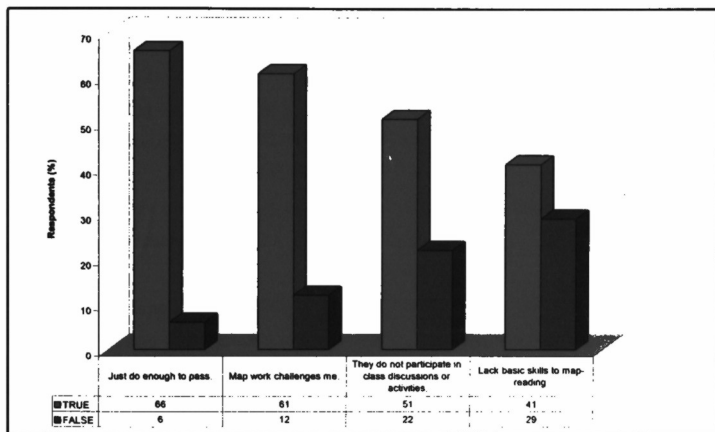
4.3.1. Learner and Educator Experiences with Mapwork in Mafikeng High Schools.

4.3.1.1. Reasons Why Learners Find Mapwork Difficult to Master

Findings from the learners' questionnaire on *learning mapwork* (Graph 1 below) reveal that **sixty-six percent (66%)** of learners 'just do enough to pass', **sixty- one percent**

(61%) 'find mapwork challenging', fifty-one percent (51%) 'do not participate in class discussions or activities', and forty- one (41%) 'lack basic skills to map-reading'. This shows that most learners lack *motivation* in doing mapwork either because of the difficulty of the learning task/s or because the educators, especially the beginning educators, fail to build productive learning environments.

Graph 1: Reasons Why Learners Find Mapwork Difficult to Master



Kubiszyn and Guilian(1996) state that for most teachers, especially the beginning teachers, motivating and involving learners in academic tasks is a difficult and complex process. Teachers find the task of getting learners engaged in mapwork activities the most difficult because they themselves find it difficult to explain, (See Graph 3 & 4 below). The desire for achievement is evident when learners are trying hard to learn, but if they are just “doing enough to pass”, or “do not participate in class discussions or activities”, that alone indicates lack of motivation in mapwork activities. To add on to this, lack of basic skills in mapwork and engaging in challenging work which educators fail to explain clearly can also demotivate learners to learn mapwork. It becomes difficult to motivate learners who are “turned off” to mapwork because they do not understand, just as it is difficult to create learning activities in mapwork that will challenge the able learners and

at the same time sustain the interest of the less able. (Kubiszyn and Guilian, 1996; Arends, 1997).

For any learning to occur, learners need to be motivated either internally or externally. Motivation is the force that determines how much effort an individual puts into his/her learning. Human behaviour is purposeful in that it has cause and effect. Human behaviour is motivated either externally or internally. This motivation can either be positive or negative. For example, motivation may be used to make a learner complete an assignment, listen to directions or complete a practical activity and eventually perform the desired activity on his/her own. The educators' duty therefore, is to find ways and means of making learners attend and respond to learning tasks so that learning itself becomes a source of motivation (Mwamwenda, 1995 : 259). Farrant (1980 : 113) states that the 'engine' of human motivation is 'interest and desire'. It is therefore in the educator's interest to see to it that the learners' interest and appropriate desire is aroused before trying to teach them.

Findings on learners' study habits in Table 10 below reveal that thirty-nine percent (39%) of learners rarely produce quality work in mapwork because they do not study. Lack of study in a subject can be a result of lack of interest and desire to learn the subject. If a learner is motivated enough he/she can be influenced to study and forgo some of

Table 10: Learners' Study Habits

RESPONSES	TRUE	%	FALSE	%
I do proof read or check over my work	132	66	36	18
I have a regular schedule and time for study	115	58	27	14
I have a study method to help me remember information	101	51	40	20
I am over committed, therefore I have competition for study time	93	47	48	24
I have a place to study away from distractions	81	41	32	16
I rarely produce quality work in mapwork	78	39	53	27

His/her leisure time activities such as socializing and participating in sport. A learner who is motivated to learn may concentrate all his/her efforts and energy on his/her studies in order to achieve excellent results, even sacrificing time for other activities (Mwamwenda, 1995: 260).

Findings on managing school work in Table 11 below reveal that only **nineteen (19%)** of learners ask for help from the educator. The rest do not ask for help because they do not understand the material taught. From the learners' interview (Table 12 below), **forty-two (42%)** of the learners indicated that they do not understand the mapwork material taught, yet they don't ask for help from the educator. This scenario points to the nature of the environment the educator creates, and the way a lesson is presented.

Table 11: Managing School Work

RESPONSES	TRUE	%	FALSE	%
I have a method of keeping track of assignments and deadlines	88	44	48	24
I know how to do mathematical calculations in mapwork	71	36	49	25
I leave work until the last minute	48	24	90	45
I always ask for help from the educator	37	19	104	52

Table 12: Understanding the Material Taught

RESPONSES	FREQUENCY	%
1. No	25	42
2. Yes	21	35
3. Sometimes	7	12
4. Some topics	7	12

The teaching-learning strategy a teacher uses plays an important role in helping learners set goals and achieve those goals, be it short-term or long-term goals. Goal-setting can be a powerful way of motivating learners. This will necessitate some form of commitment on the part of learners. Learners need to receive feedback on how they are progressing and reinforcement for successful performance. Feedback should incorporate information on both errors made and how such errors can be avoided, and comment on the positive aspects of their achievement.

The extent to which motivation is or is not stimulated depends on the nature of the environment - whether it is exciting or dull. A lesson may be perceived as interesting or dull and boring depending on how the teacher presents it. A teacher therefore has considerable influence in classroom situations of temporary motivation. He/she can influence the motivation of learners through the material he/she uses for teaching and the methods he adapts in communicating the learning content and learning activities. In this

respect, the teacher can use motivation as a trait to influence his/her learners' attitudes towards learning and other aspects of life, raise their educational and occupational aspirations, and build on their self - concepts.

Motivation can also be viewed in terms of energy and direction. The degree to which a person is ambitious will influence the intensity with which he/she pursues his/her objectives. For example, if a learner is moderately ambitious, he/she will study just enough to pass, but not to the extent that he/she has to forgo some of his/her leisure time activities such as socializing and participating in sport. A student who is ambitious may concentrate all his/her efforts and energy on his studies in order to achieve excellent results, even sacrificing time for other activities (Mwamwenda, 1995: 260).

Thorndike (Mwamwenda, 1995: 201) made the following observations:

- How hard pupils work on a given task is determined by their level of interest. The greater their interest, the harder they will work, and the lower their interest the less hard they will work.
- Pupils' interest in improving their performance is reflected in the number of trials and errors they will engage in before arriving at the correct solution.
- Wherever possible what is being taught should be related to pupils' needs and everyday experience.
- Education should foster problem - solving skills. Children have an immense interest in problems with a level of difficulty which matches their capability.
- Attention and being attentive are vital to effective learning.

Thorndike's views are very relevant to motivating learner competency. There is an inherent tendency among children to wish to perform competently or gain mastery over their environment or a certain body of skills or knowledge. Educators must provide learners with opportunities to do things for themselves in fulfillment of their inherent competent motivation. Parents and educators tend to assume that children are inexperienced and therefore rather helpless, and feel it is their duty to do most things for them (Mwamwenda, 1995: 261). Assistance should be provided where needed, but learners should be left to do most of the work on their own.

Every learner's desire is to achieve in school and his/her concern is to avoid failure (Mwamwenda, 1995: 262). A learner's need to do well at school is a motivating factor influencing his/her behaviour and he/she must be encouraged by being given tasks of which he/she is intellectually capable. Goal - setting can be a powerful way of motivating students. The need to be successful directs and activates learners' behaviour as they work at achieving their goals. Through goal-setting, each student has an opportunity of measuring success in terms of how well he/she achieves his goals.

A learner who experiences success in a particular activity is likely to develop an interest and continue to participate in the activity. On the other hand, failure in an activity is likely to result in a decline of interest in and avoidance of the activity. A learner may absent himself/herself from a particular activity either physically or psychologically. However, for some learners, failure may not be the end of it all, but a motivation to improve their performance. Past experience plays a very important role in motivation.

Those who have experienced success in the past expect to experience success in subsequent exercises, where as those who have experienced failure expect more failure, and therefore may resort to undesirable behaviour such as cheating or faking illness when tests are written.

Some learners may enter the mapwork-geography class with joy, while others do so with sorrow, resentment and disappointment, because of their past experience with mapwork-geography.

Those who have been reinforced will be delighted to pursue their study of mapwork-geography while those who had an unpleasant experience will be apprehensive and regard the subject as a torture and waste of time.

Achievement at school strengthens self-concept, and self-concept can be a motivation for the learner to achieve. Educators should foster the self-concepts of learners by being as positive as they can in their interaction with learners (Mwamwenda, 1995: 262; Lumsden, 1994; Brophy, 1986). If a learner has special regard for a particular educator, he/she will work hard in that educator's subject for two reasons: first, to please and receive the approval of the teacher; and second in order to identify with the teacher.

Also, a learner who sees the attention, love and approval of his/her siblings or classmates received from parents or teachers or peers for outstanding or simply good performance at school will imitate such behaviour in order to receive it himself/herself (Brophy, 1986). Cognitively, a learner's behaviour is motivated by curiosity, the urge to explore, the need to maintain a state of equilibrium and the need to establish a sense of competence.

Rewards are also a powerful source of motivation for most people, irrespective of age or social status. Some of the rewards given in schools to promote learning are gold stars, sweets, prizes, high marks and certificates. Whatever reinforcement (extrinsic motivation) learners are given should lead them to discover that the task in which they are engaged can become a source of reinforcement (intrinsic motivation) in itself, so that external or extrinsic reinforcement becomes less important. Storm and Bernard (1982: 374) state that rewards for learning should be so engineered that after serving their introductory roles they lead learners to independent learning activities.

Chronological and cognitive maturity must be taken into account when motivating learners. According to Maslow's theory, young children respond to physical and safety rewards, while older children respond more to peer pressure and the expectations of parents and educators.

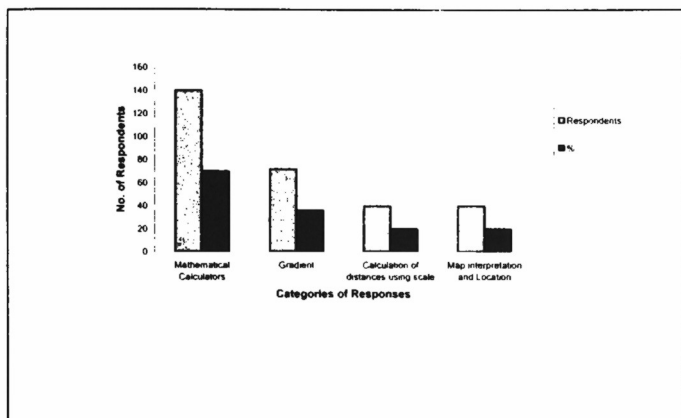
For learning to occur in response to motivation, the following should be borne in mind:

- The reward given should be related to the learner's age and cultural background.
- Knowledge of result is vital if the task is relatively hard.
- Feedback enhances subsequent performance if the learner is told how he or she can improve his or her performance (Mwamwenda, 1995: 264).

4.3.1.2. Aspects of Mapwork Learners find Difficult to Understand

From the educators' responses (Graph 2 below), the findings reveal the following as the aspects of mapwork that the learners find difficult to understand: Mathematical calculations related to mapwork, such as calculations of gradient, distances, and true bearings, map interpretation and location of place, in descending order.

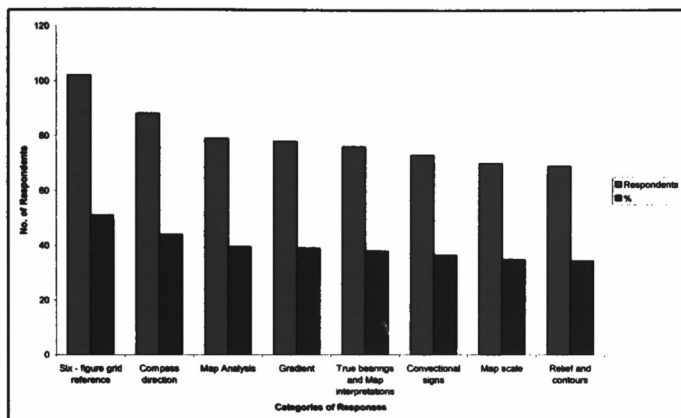
Graph 2: Aspects of Mapwork Learners Find Difficult to Understand - Educators' View



From the learners' questionnaire (Graph 3 below) the following aspects were revealed: six-figure grid reference, compass direction, map analysis, gradient, true bearing, conventional signs, map scale, relief and contours.

From the two different responses, the common aspects of mapwork that learners find difficult to understand are: calculation of gradient, calculation of true bearings, map interpretation, location of places (six-figure grid reference) and calculation of distances using map scale.

**Graph 3: Aspects of Mapwork Learners Find Difficult to Understand -
Learners' View**



Most of these aspects of mapwork in Graph 3 above demand that learners are conversant with mathematical literacy, yet most learners taking Geography do not do mathematics. Those who do mathematics are the ones who do better in mapwork, Geography, even though they indicated that mathematics was the most difficult subject that they take, seconded by Geography and followed by Biology.

Common aspects from the learners' responses in the questionnaire and interview are map analysis and compass direction. Other aspects mentioned by learners are conventional signs, relief and contours.

From the above analysis, it can be concluded that lack of basic mathematical skills (or numeracy illiteracy) contribute greatly to poor performance in mapwork, second only to lack of motivation because Geography is perceived by learners as a difficult subject, second to Mathematics. Mapwork is seen as difficult because of mathematical calculations involved in certain aspects of it, such as calculations of gradient, true

bearings, six-figure grid references and distances using map scales. These calculations need some higher order cognitive thinking to work them through.

Map interpretation is another aspect that learners find difficult because learners are required to operate at a higher order cognitive level. If learners are not trained to think critically, they will fail to analyze and interpret the information presented and/or implied on the topographical map.

These mapwork aspects carry much higher marks than others in the tests and exams that learners write which contribute to the final mark in Geography as a whole.

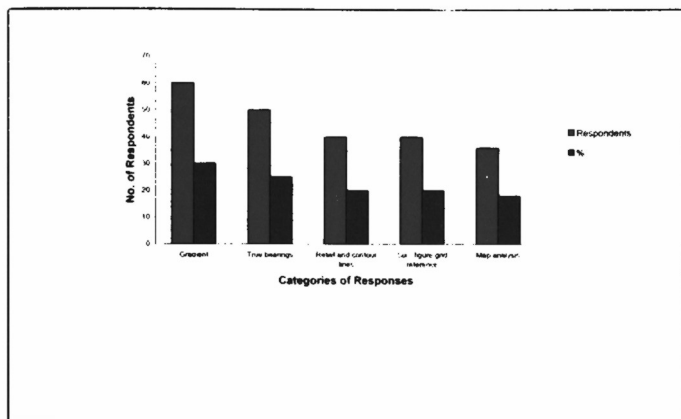
The use of whole class teaching and lecture methods by the educators do not help learners to think critically and operate at a higher cognitive level. Therefore, it is time for educators to use other methods and techniques that will help learners to think for themselves, solve problems and find information for themselves.

4.3.1.3. Aspects of Mapwork Educators Find Difficult to Explain to Learners

The findings in Graph 4 below reveal that **thirty percent (30%)** of educators find teaching gradients difficult, **twenty-five percent (25%)**, true bearings, **twenty percent (20%)**, relief and contour lines, six-figure grid reference, and **eighteen percent (18%)** map analysis.

The aspects of mapwork that educators find difficult to explain to learners are the same ones that learners find difficult to understand (Graph 3 above), and eventually they perform poorly in them. From the above, it can be generally concluded that educators, though the majority of them are relatively well qualified academically, they cannot explain mapwork concepts because they are not professionally trained. Over **fifty percent (50%)** of the educators have a teaching experience of **over ten years** but are not professionally trained in the new methods of teaching to catch up with the new changes that are taking place in the education system in South Africa. They are still teaching in the old traditional way and the learners do not understand, hence they fail.

Graph 4: Aspects of Mapwork Educators Find Difficult to Explain to Learners - Educators' View



4.3.2. Influence of Instructional Strategies, Methods and Techniques on Learner Performance in Mapwork

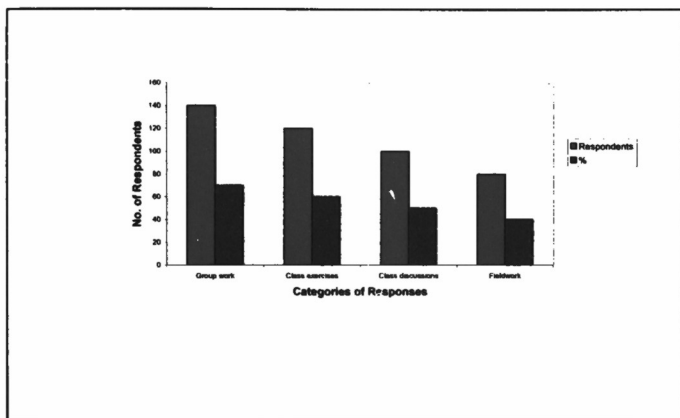
4.3.2.1. Instructional Strategies, Methods and Techniques Educators in North West Province Prefer to Use

Responses from **educators** shown in Graph 5 below reveal that **seventy percent (70%)** use groupwork, **sixty percent (60%)** use class exercises, **fifty percent (50%)** use class discussions and **forty percent (40%)** use fieldwork.

Responses from **learners** (Graph 6 below) reveal that **eighty-eight (88%)** use maps and graphics, **eighty-one percent (81%)** use whole class discussions, **seventy-nine percent (79%)**, co-operative work, **seventy-seven (77%)**, groupwork method, **sixty-four percent (64%)** lecture/exposition methods, **sixty-two percent (62%)** practical work and **sixty-one percent (61%)**, individual work.

Opinions from the **observers** (Graph 7 below) reveal that **sixty percent (60%)** of educators use co-operative group learning, **fifty percent (50%)** use whole class/practical work methods and **forty percent (40%)**, lecture method and drill on past papers.

Graph 5: Teaching Strategies, Methods and Techniques Preferred in North West Province - Educators' View



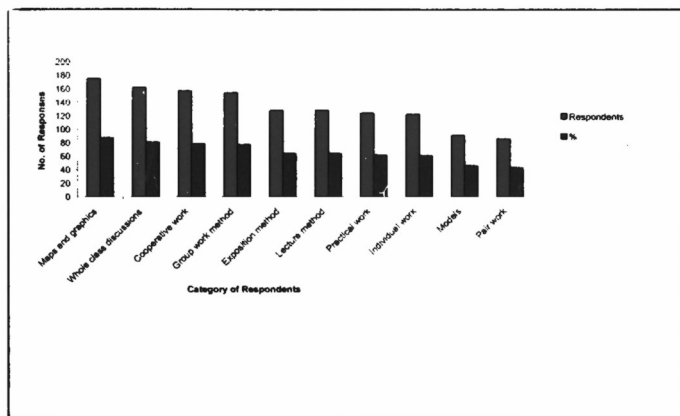
Of all the teaching strategies, methods and techniques revealed from the respondents' responses, the following stand out: whole class discussions, group work method, practical/class exercises, co-operative group learning and lecture method.

Although fieldwork is mentioned by educators as one of the methods they use, the reality is that fieldwork is almost non-existent at Grade 12 level. Most educators do not use this method because it is costly, time-consuming and the relevant sites to be visited are far.

Maps and graphics, though omitted by educators, are widely used by them. The educators cannot teach mapwork without using topographical maps and graphics to illustrate some aspects of mapwork.

Generally, the educators are more orientated to the old ways of teaching rather than the new ways. Effective methods such as **problem-solving, enquiry method, simulation and games and use of co-operative learning models** are not used by nearly all experienced educators, except by those who recently graduated from the university within the last five years, and these are very few (See Table 9 above).

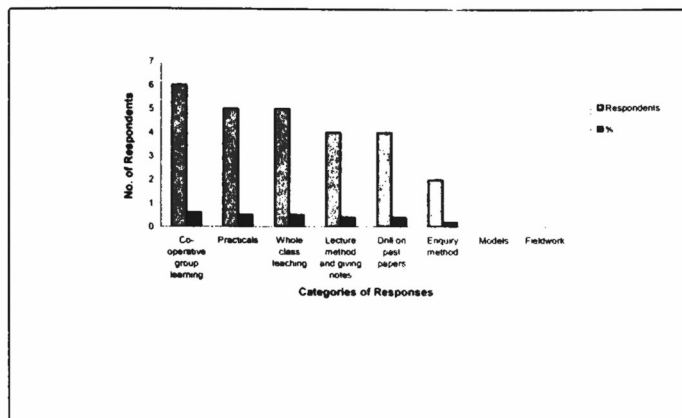
Graph 6: Teaching Strategies, Methods and Techniques Educators in North West Prefer to Use - Learners' View:



Co-operative learning and group learning are just the same to most educators, but there's a difference between the two. Co-operative learning is more than just working together in a group because learners have to share the resources available in the class.

The learners' result on teaching strategies, methods and techniques used (Graph 6 above) reveal that **eighty-seven and a half (87.5%)** of educators use maps and graphics, **eighty-one percent (81%)** use whole class discussions, **seventy-eight and a half percent (78.5%)** use co-operative learning strategy, **seventy-seven percent (77%)** group work method, **sixty-four percent (64%)**, lecture method, **sixty-two percent (62%)**, practical work, **sixty-one (61%)**, individual work, **forty-six percent (46%)**, models and **forty-three percent (43%)** use pair work method.

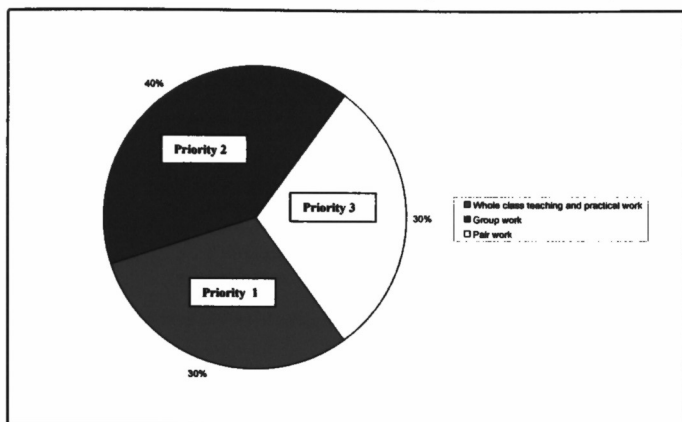
Graph 7: Teaching Strategies, Methods and Techniques - Observation:



From the educators' results on teaching strategies, methods and techniques used in order of priority, the following were revealed (See Graph 8 below):

Of the total number of educators, **30%** chose whole class teaching and practical work as their **first priority**, **40%** chose group work as their **second priority**, and **30%** chose pair work as their **third priority**.

Graph 8: Teaching Strategies, Methods and Techniques in order of Priority



1. **Whole class teaching and practical work (30% of respondents)**
2. **Group work (40% of respondents)**
3. **Pair work (30% of respondents)**

There's no mention of the use of **maps and graphics, lecture method, individual work and models**. However, looking at the findings from classroom observation (Graph 7 above) on methods and techniques educators use in the classroom especially when teaching mapwork, the following is revealed: **Sixty percent (60%)** of educators use co-operative group learning, **fifty percent (50%)** use whole class teaching and practicals, **forty percent (40%)** use lecture method and giving notes, and drill learners on past papers (rote teaching) and **twenty percent (20%)** use enquiry method.

In summary, from the **educators'** point of view (Graph 8 above), the most used teaching strategies, methods and techniques in descending order are:-

- **Whole class teaching and practical work**
- **Group work**
- **Pair work**

From the **learners'** point of view (Graph 6 above) the seven most used teaching strategies, methods and techniques in descending order are :-

- **Maps and graphics - 87.5%**
- **Whole class discussion - 81%**
- **Co-operative learning - 78.5%**
- **Group work - 77%**
- **Lecture method - 64**
- **Practical work - 62%**
- **Individual work - 61%**

Less than **fifty percent (50%)** of educators use models and pair work in their teaching.

From the **classroom observation (Graph 7 above)**, the most used teaching strategies, methods and techniques in descending order are:-

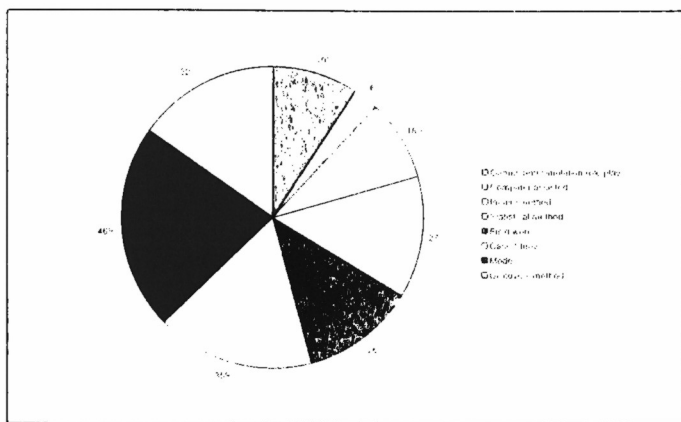
- **Co-operative group learning**
- **Whole class teaching and practical work**
- **Lecture method, giving notes and drill on past papers**
- **Enquiry method**

The use of **maps and graphics** appears top on the list of findings from the **learners**. This might be because the teachers mostly use topographical maps and textbooks when teaching mapwork, especially at Grade 12 level. The use of co-operative group learning is equated to group work where learners work in groups as they share maps and textbooks.

The **least** used instructional strategies, methods and techniques in descending order are shown in Graph-9 below as follows:

- **Models -46%**
- **Case study - 35%**
- **Discovery method - 32%**
- **Statistical method - 27%**
- **Field work - 26%**
- **Games and simulation role play - 19%**
- **Enquiry method - 18%**
- **Computer- assisted - 06% (almost non - existent)**

Graph 9: The Least Used Teaching Strategies, Methods and Techniques



4.3.2.2. Teaching Strategies, Methods and Techniques that Enhance Learner Attainment in Mapwork

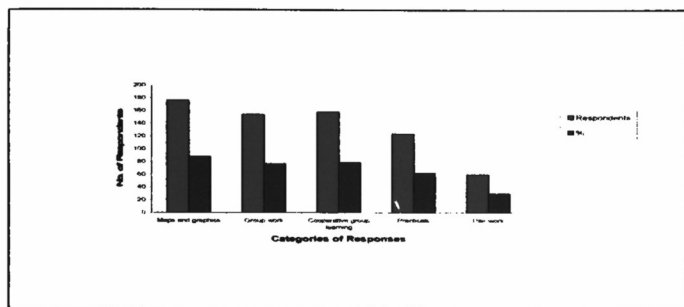
Graph 10 below contains a summary of the responses related to teaching strategies, methods and techniques used for Geography. The findings reveal that the following teaching strategies, methods and techniques enhance learner attainment in mapwork: Maps and graphics (83%), Co-operative group learning (80%), Group work (79%), Practicals (62%) and Pair work (30%).

From the literature review, the following have been identified as the most effective methods in teaching Geography:-

- **Direct observation** method including field work or 'outdoor' work and weather studies (See Chapter 2; item 2.6.2.1).
- **Indirect observation** method including the use of maps, books, pictures, films, etc. (See Chapter 2; item 2.6.2.2).
- **Sample studies or case studies** including photographs and statistical information that the learners can use to gather facts about the relief and climate of an area.
- **Co-operative learning**, commonly known as group work or interactive learning (See Chapter 2; item 2.6.2.3).

- **Enquiry/ problem solving method** (See Chapter 2, item 2.6.2.4).
- **Discovery method** (See Chapter 2, item 2.6.2.5).
- **Practical method**, including practical exercises on mapwork aspects (See Chapter 2, item 2.6.2.6).

Graph 10: Teaching Strategies, Methods and Techniques that Enhance Learner Attainment in Mapwork



Two methods that are commonly used by the educators but are absent from the list of the most effective methods in teaching Geography are: Whole class teaching and lecture methods. Both methods are teacher-centred hence the learners are usually passive, exam-driven, textbook/worksheet-bound. Educators are responsible for learning, and motivation is dependent on the personality of the educator. The emphasis is on what the educator hopes to achieve, and not on outcomes, that is what the learner becomes and understands. The learners do not take responsibility for their own learning and usually the teachers do not care much whether the learners understand or not. This is confirmed by about **forty-two percent (42%)** of learners who were interviewed, that they do not understand some mapwork concepts and **thirty-three percent (33%)** do not ask the educators for help (See Tables 13 & 14 below).

Can you tell me what caused your grade in the subject where you performed most poorly?

Table 13: Causes of Poor Performance

RESPONSES	FREQUENCY	%
1. Don't study	20	33.3
2. Lack of understanding -	14	23.3
3. How teacher teaches	8	13.3
4. Negative attitude	3	5
5. Other	15	25
TOTAL	60	100

Do you understand the material taught in your most difficult subject?

Table 14: Understanding Material Taught in Mapwork, Geography

RESPONSES	FREQUENCY	%
1. No	25	41.6
2. Yes	21	35
3. Sometimes	7	11.7
4. Some topics	7	11.7
5. Other	60	100

Learners understand better when working in small groups and when they share information with their peers. Unfortunately, **about sixty-four percent (64%)** of the educators use the lecture method despite its non-effectiveness.

Two other methods that are very effective in teaching Geography but absent from the educator's list are: Enquiry/ problem-solving method and discovery method.

Other factors that contribute to learners finding mapwork difficult to master, in addition to lack of motivation, illiteracy in mathematical calculations and the way the educator teaches are:

- **Learners' perception of mapwork as being difficult**
- **Lack of interest**
- **Lack of resources**
- **Negative attitude, and**
- **Too much work.**

In conclusion, the following (in descending order) were found to be the contributing factors to learners finding mapwork difficult to master and eventually leading to poor performance in mapwork, Geography as a whole:-

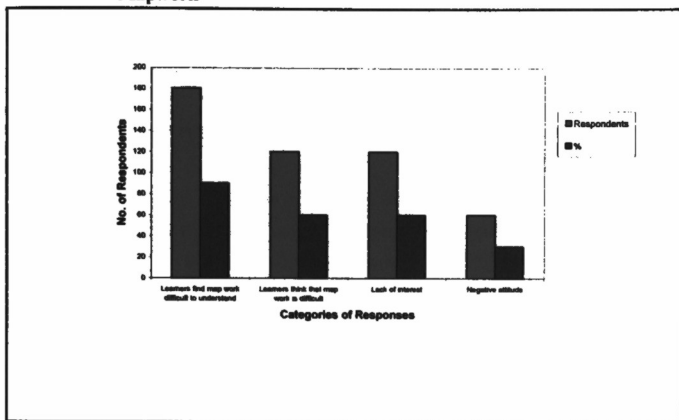
- **They lack motivation;**
- **They do not study;**
- **They do not understand the material taught;**
- **The nature of the environment the teacher creates;**
- **Illiteracy in mathematical calculations related to mapwork, Geography;**
- **Learners' perception of mapwork as being difficult;**
- **Lack of interest;**
The way teachers teach (Teaching strategies, methods and techniques);
- **Lack of resources;**
- **Negative attitude; and**
- **Too much work.**

4.3.3. Influence of Learner and Educator Attitudes on Performance in Mapwork

4.3.3.1. Learner Attitude towards Learner Attainment in Mapwork

According to the findings in Graph 11 below, **ninety percent (90%)** of learners find mapwork 'difficult to understand,' **sixty percent (60%)** think that 'mapwork is difficult,' **sixty percent (60%)** 'lack interest in mapwork' and **thirty percent (30%)** have 'a negative attitude towards mapwork'. These findings are self explanatory as to why many learners do not perform well in mapwork, and Geography as a whole.

Graph 11: Contribution of Learner Attitude towards Learner Attainment in Mapwork



If learners are given tasks which are too difficult for their level of understanding, they will lose interest in the subject. The same applies to their perception that the subject is difficult. The learners will lose interest and develop a negative attitude towards the subject. Whenever students lose interest in a given task, they will not work hard, and eventually they will fail, or work just enough to pass. This has already been supported in this study by Thorndike's observation how hard learners work on a given task is determined by their level of interest. The greater their interest, the harder they will work, and the lower their interest the less hard they will work. It is therefore in the educator's interest to see to it that the learner's interest and appropriate desire is aroused before trying to teach them.

Most teachers, according to this study, have indicated that they are still traditionally-orientated in their teaching; therefore most learners are not motivated at all because the educators are concerned with finishing the syllabus and not how the learners perform. Some educators are so strict in class that the learners are afraid to ask them questions where they do not understand. An educator, therefore, has considerable influence in classroom situations of temporary motivation. He/She can influence the motivation of learners through the material he uses for teaching and the methods he adapts in

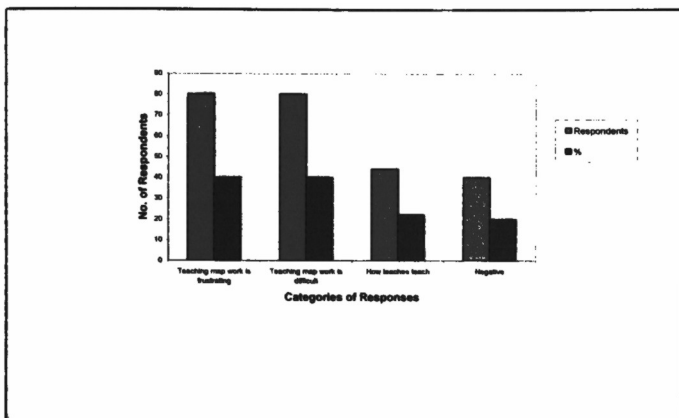
communicating the learning content and learning activities. In retrospect, the teacher can use motivation as a trait to positively influence his/her learners' attitudes towards learner's attainment in mapwork.

4.3.3.2. Educator Attitude towards Learner Achievement

The findings in Graph 12 below reveal that **forty percent (40%)** of educators find teaching mapwork 'difficult and frustrating', **twenty-two percent (22%)** have a problem in 'presenting it to the learners', and **twenty percent (20%)** have a 'negative attitude'towards teaching mapwork. In a nutshell, four out of ten teachers find teaching mapwork 'difficult and frustrating' either because they are ill-trained and have not mastered the subject matter or because of lack of a variety of teaching methods used in presenting mapwork to learners so that they can understand.

Table 9 above shows that over **fifty percent (50%)** of the educators have a teaching experience of over ten years, which means that most of them were ill-trained during the apartheid regime, and therefore cannot cope with the new changes and demands that are taking place in the education system now, hence the difficulty and frustration in teaching mapwork, which contribute negatively to learner achievement. Educators with a negative attitude towards the subject will definitely have a negative impact on learner achievement. Even the way the educator presents the topic will not be appealing to learners if he/she is frustrated and finds it difficult to teach.

Graph 12: Educator Attitude Towards Learner Achievement



An educator's attitude and personality play a role in motivation in the classroom. Educators who have a positive attitude toward their subjects and learners are more motivating than those who have a less positive attitude and personality.

Educator's personality characteristics which are motivating and which an educator should bear in mind as he/she interacts with learners are democratic attitudes, wide interests, pleasant personal appearance, pleasant manners, fairness, impartiality, sense of humour, flexibility, patience, interesting pupils, well being, consistent behaviour, efficiency, kindness and use of recognition and praise. The teacher can also motivate his/her learners by showing interest and enthusiasm for the subject matter he/she is presenting. This will arouse pupils' interest and attention.

The subject matter should be related to the learners' concerns, needs and life experience, and where feasible, practical activities based on the lesson and involving as many pupils as possible should be organized.

Alternatively, educators can motivate learners by telling them why what they are studying is important. Other factors that a teacher can use to motivate pupils are curiosity, threat of failure, the desire to know, change of voice, mastery of subject matter, good presentation, jokes, visual aids and field trips (Mwamwenda, 1995: 264).

4.3.4. Influence of Home and School Environments on Learner Performance in Mapwork

4.3.4.1. Home Environment

Abosi and Kandjii-Muranji (1995: 87) have conceptualized the relationship between the family and the school in terms of 'continuity' and 'discontinuity'. If the behaviours and values instilled by the school mirror those instilled by the home, it is 'continuity'. If the two sets of values are in conflict with each other, then it creates a situation of 'discontinuity'. The school and the home working together in 'continuity' enables the child to aspire higher, achieve better academically and behave with respect to the school's norms, whereas a child put in the 'discontinuity' situation is less likely to perform well.

Abosi and Kandjii-Muranji (1995) have pointed out six significant variables as relevant to educational achievement in mapwork at school:

- Achievement pressure
- Language models in the home
- Academic guidance provided in the home
- The stimulation in the home to explore various aspects of the larger environment.
- The intellectual interests and activities in the home,
- The work habit emphasized in the home.

If a child is born and bred within parameters of the six variables, the child is likely to behave the same like the environment in which he or she grows. Eggen and Word (2002) have stated that in western countries, there's a direct relationship of socio-economic status with exam performance in secondary schools. Other influences include poverty and parental/adult supervision. On the other hand, Heyneman (1976) states that in

African countries, intelligence, sex and the teacher's proficiency in English affected variations in performance more than the social background and birthplace. He/She also adds that the sons of the illiterate do better than the elite children. The only thing they need is high motivation.

In this study, it has been found that high motivation of students is needed for them to perform well at school. Other influences such as poverty and parental supervisions are minimal. The learning content should also be relevant to their needs and future plans. All they need are motivation and a role model for achievement,

The social learning theory cites identification and imitation as powerful motivators. If a learner has special regard for a particular teacher, he/she will work hard in that teacher's subject for two reasons: first, to please and receive the approval of the teacher; and second in order to identify with the teacher.

A learner who sees the attention, love and approval his/her siblings or classmates receive from parents or teachers or peers for outstanding or simply good performance at school will imitate such behaviour in order to receive it himself/herself.

4.3.4.2. School Environment

The responses of educators on the items on classroom environment (**Table 15 below**) reveal the following:

- **One hundred percent (100%)** of educators indicated:
 1. Most of the lessons involve the presentation of information or skills
 2. Give the learners opportunities to share what they know about the topic
 8. Recognize the success of individual learners.

Table 15: School Environment that Supports Learner Achievement

ITEMS	CHARACTERISTICS OF CLASSROOM ENVIRONMENTS	TRUE %	FALSE %
1	Most of my lessons involve my presentation of information or skills.	100	0
2	I give my learners opportunities to share what they know about a topic.	100	0
3	I design a single set of learning goals for all of my learners	40	50
4	I pretest my learners so I understand what each of them knows and needs to learn	60	40
5	I have a specific and unchanging daily or weekly routine in my classroom	20	70
6	I have a system to help my learners keep track of their assignments and deadlines.	80	20
7	Learners who complete their work are allowed to participate in certain activities or opportunities e.g. excursion.	70	20
8	I recognize the success of individual learners	100	0
9	The majority of my remarks on my learner's papers are positive	80	20
10	I have individual or private conferences with learners who are having problems in class.	80	20
11	I use contracts with learners who are having school problems	40	60
12	I give my learners examples of how their learning is used in the "real world"	80	20
13	I tell my learners why a topic or skill is important to learn	100	0
14	I get learners interested in a topic by posing questions or providing unique information that will get them curious	100	0
15	My teaching techniques tend to stay the same	20	80
16	The objectives I develop are for my own planning and use; I don't share them with my learners	10	90
17	I grade most learning activities so my learners understand that their assignments are important	100	0
18	I recognize learners when they improve in a subject or learning activity. I compliment them on their achievements, special talents, and abilities	100	0
19	I regularly plan activities designed to develop my learners' positive self-esteem	90	10
20	Learners feel secure and free from threat in my classroom	90	10

13. Tell the learners why a topic or skill is important to learn.
14. Get learners interested in a topic by posing questions or providing unique information that will get them curious.
17. Grade most learning activities so the learners understand that their assignments are important
18. Recognize learners when they improve in a subject or learning activity. Compliment them on their achievements, special talents and abilities.

Items 2, 8, 13, 14 and 18 support learner achievement in the classroom, while items 1 and 17 do not. Item 1 is very much teacher-centred, and grading every learning activity can be discouraging to learners especially in a learning content which is challenging to students because of several unsuccessful attempts.

➤ **Ninety percent (90 %)** educators indicated the following:

19. Regularly plan activities designed to develop learners' positive self-esteem.
20. Learners feel secure and free from threat in the classroom.

Both Items 19 and 20 support learner achievement in the classroom.

➤ **Eighty percent (80%)** of Educators revealed the following (See Table 15 above).

6. Have a system to help the learners keep track of their assignments and deadlines.
9. Majority of remarks on the learner's papers are positive.
10. Have individual or private conferences with learners who are having problems in class.
12. Give the learners examples of how their learning is used in the 'real world.'

All the items above (Items 6,9,10 & 12) **support learner achievement** in the classroom.

➤ **Seventy percent (70%)** of educators said that:

7. Learners who complete their work are allowed to participate in certain activities or opportunities, e.g. excursions.

Item 7 does not support learner achievement but class competition. Slow learners may never have any chance of participating in other school activities or opportunities.

➤ **Sixty percent (60 %)** of educators:

4. Pretest the learners so I could understand what each of them knows and needs to learn.

Item 4 also supports learner achievement in the classroom. Pre-testing learners will help the educator prepare learning material at the level and capability of the learners to help them succeed.

➤ **Forty percent(40%) of educators:**

3. Design a single set of learning goals for all of my learners.
11. Use contracts with learners who are having school problems

Item 17 supports learner achievement in the classroom, but **item 16 does not**. **Forty percent (40%)** of educators do not consider the learning styles of learners; therefore not every learner is catered for.

➤ **Twenty percent (20%) of educators:**

5. Have a specific and unchanging daily or weekly routine in my class room.
15. Their teaching techniques tend to stay the same

Both items 5 and 15 do not support learner achievement in the classroom. This reveals that **twenty percent (20)** of educators are not flexible at all, and their teaching techniques are the same day in and day out. This tendency of attitude will have a negative impact on the learners' performance.

- **Ten percent (10%) of educators** do not help learners raise their expectation for the lesson or theme. The learners' needs and interests are ignored as the educator develops outcomes for himself and not for the learners to achieve at the end of the lesson.

4.3.4.3. Self - Concept and Achievement

Self-concept is a person's way of perceiving himself/herself and may be either positive or negative. How a person perceives himself/herself is a function of both his/her perception of himself/herself independent of others and his/her interpretation of how he/she is perceived by others (Mwamwenda, 1995: 363).

Self-concept develops from childhood through adulthood as a result of a person's interaction with his/her environment, which includes his/her peers, his/her parents, his/her teachers and the various tasks and responsibilities he/she is assigned and how he/she copes with them. Mwamwenda and Mwamwenda (1987) proposed that the self-concept was one of the variables contributing to quality education. The research in Botswana was to establish whether a pupil's self-concept could be used as a predictor of his or her academic achievement at the end of the seven year period of primary education. The relationship between the two variables was to be examined on the basis of a pupil's performance overall as well as his or her performance in Mathematics, English, Science and Social Studies.

The results indicated that there was relationship between a learner's self-concept and his or her performance in the final set of examinations. This was true for both good and poor self-concepts, learners with good self-concept performed significantly better than pupils with poor self-concepts. This held true not only for overall performance, but also for the individual subjects examined (Mathematics, English, Science and Social Studies). It was therefore concluded that a learner's self-concept can serve as a *reliable* predictor of his or her academic achievement.

From the evidence in the literature review (Curtis & Shave; Mwamwenda, 1987, 1995; Maqsd, 1993), a learner's self-concept does affect his/her performance at school. The evidence indicates that the learner with a positive self-concept stands a better chance of performing better than a learner with a negative self-concept. It is therefore imperative that educators should enhance student self-concept, either as a means to the end of the academic achievement or as an educational end in itself (Mwamwenda, 1995 : 365). A positive self-concept is viewed as a hallmark not only of academic achievement but, more broadly, of the healthy person.

A number of studies have linked self-concept and academic achievement in subjects such as Language and Mathematics and examination performance in Africa and elsewhere (Mwamwenda, 1995: 366). For example, Heyneman (1979:181) hold the view that in Uganda academic performance will suffer due to pupils' lack of confidence and not due to their impoverished backgrounds. Maqsd (1993) in Mwamwenda, 1995 observed that the self-concept was significantly related to better performance in Mathematics and

English. He/She also observed that a change in self-concept precipitated a similar change in academic performance. Therefore it is argued that a learner's academic performance can enhance his/her self-concept.

Outside the home, the responsibility for improving learners' self-concepts (self-esteem) is largely the educator's. The educator with high self-esteem is likely to produce students with high self-esteem. The way in which he/she interacts with his/her learners will determine the improvement in their self-concepts.

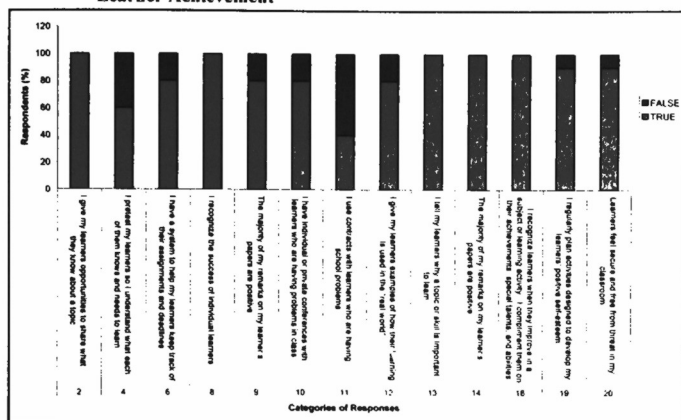
Curtis and Shave's (1981) findings also show that self-concept can be facilitated within the classroom setting by allowing learners with poor self-concepts to experience success and by challenging the learners intellectually. This is achievable if learners are given tasks which they are able to complete successfully. Any learner can experience success if the instruction or test is structured in such a way that it matches his/her mental ability.

In conclusion, there are seven items that do not support learning environment in the classroom (See Table 15, bold items), and out of these, seventy to one hundred percent (70% - 100%) of educators indicated that three of these describe their classrooms, that is, items **17,1 and 7**. Twenty to forty percent (20 - 40 %) indicated items **3,5,15 and 16** as representing their classrooms.

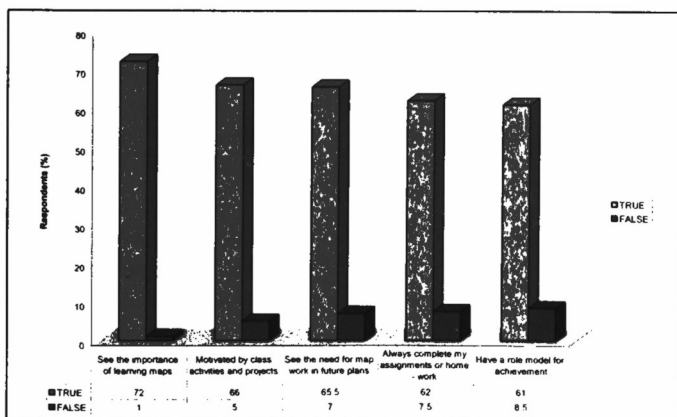
4.3.4.4. Conclusion

From the analysis in Table 16 below, it is clear that more than **sixty percent (60%)** of the educators provide conducive classroom environment which supports learner achievement.

Graph 13: Characteristics of Classroom Environment that Supports Learner Achievement



Graph 14: Items that Contribute to Success in Mapwork



Classroom climate is important (See Table 15). If learners experience the classroom as a caring, supportive place where there is a sense of belonging and everyone is valued and respected, they will tend to participate more fully in the process of learning. However, this will depend on the tasks that the learners are given, whether they are challenging but achievable, and whether they are relevant to learners' needs and experience. In this study, it has been found that most learners find mapwork difficult; they do not understand the material taught and they are numerically illiterate. This, therefore, points to the way educators teach. If the classroom environment is conducive to learning but the educators continue to use strategies and methods which are ineffective, such as lecture and whole class methods, the learners will be passive and will not be responsible for their own learning. They will not understand the learning content; therefore, they will not perform well.

Learners can be motivated by success and failure as well as by achievement and competence needs. The educators should impress upon the learners that it is possible for them to succeed in their mapwork and in life as a whole. They should therefore, see to it that in whatever they do, learners are able to experience some success, sense of achievement and level of competence.

Educators can motivate learners by maintaining a positive attitude toward themselves, their colleagues, their learners and their profession. In addition, educators' personality characteristics can serve as a source of motivation. Some of these characteristics are kindness, flexibility, impartiality, efficiency, patience, solicitude and consistency (Mwamwenda, 1995: 269).

According to Maslow's theory (1971) of a hierarchy of needs, children can be motivated by the fulfillment of their physiological and psychological needs. Physiological needs must be satisfied before psychological needs can be gratified.

Finally, learners must be sufficiently motivated to attend school and to pay attention to what is going on in the classroom if schooling is to have any effect on them. Child (1998: 32) states that left to themselves, most learners would not achieve much without the promptings from adults. It is therefore imperative that all educators study the importance

of motivation. An educator's success in the classroom depends on how well he/she applies the principles of motivation in his/her teaching.

4.4. SUMMARY OF CHAPTER 4

From the demographic characteristics of respondents, it is revealed that over 50% of the educators of Geography at Grade 12 level are relatively well qualified in terms of academic and professional qualifications. They are also quite experienced in teaching at that level. However, for any learning to take place, learners need to be motivated to actively participate in mapwork activities. The educator also needs to create learning activities in mapwork that would challenge the able learners so that they will not lose interest and become under-achievers. The classroom environment that the educator creates should be exciting. This could be achieved by motivating learners through the material he/she uses for teaching, by varying the methods he/she uses in communicating the learning content and learning activities, by raising their educational and occupational aspirations, and also by building their self-concepts.

There are many ways in which motivation can facilitate learning at school. By definition, motivation is a concept which can account for why people behave the way they do. Man's behaviour is purposeful in the sense that for every cause there is an effect.

Motivation is either extrinsic or intrinsic. A person can be extrinsically motivated if what he/she does is in expectation of his/her approval, praise, a certificate and a reward. A person is intrinsically motivated if he/she engages in a given behaviour because derives personal satisfaction from that behaviour, or because it satisfies his/her curiosity or need for achievement or competency, or helps him/her in maintaining a state of equilibrium.

While extrinsic motivation is more commonly used in schools, a teacher's objective should be to see to it that his/her learners become intrinsically motivated, so that what they do in terms of learning becomes a source of reinforcement instead of being dependent on external motivation. For example, rewards given for learning should lead pupils to independent learning activities.

Learners can be motivated by success and failure as well as by achievement and competence needs. The educators should impress upon the learners that it is possible for them to succeed in their mapwork and in life as a whole. They should therefore, see to it that in whatever they do, learners are able to experience some success, sense of achievement and level of competence.

Success breeds success. A learner who experiences success in Geography mapwork is likely to develop an interest and continue to participate in the activity. Success also strengthens self-concept, and self-concept can be a motivation for the learner to achieve. Rewards are also a powerful source of motivation. However, rewards for learning should be so engineered that they lead the learners to independent learning activities.

Educators can also motivate learners by maintaining a positive attitude toward themselves, their colleagues, their learners and their profession. In addition, educators' personality characteristics can serve as a source of motivation. Some of these characteristics are kindness, flexibility, impartiality, efficiency, patience, solicitude and consistency (Mwamwenda, 1995; 269).

Aspects of mapwork that learners find difficult to understand are mathematically orientated, for example, calculations of gradient, distances and true bearings, map interpretation and location of place. These mathematical aspects demand that learners are conversant with mathematical literacy, yet most students taking Geography do not do mathematics. The aspects that educators find difficult to explain to learners are the same ones that learners find difficult to understand, and consequently, the learners perform poorly in them.

Of all the teaching strategies, methods and techniques revealed from the respondents' responses, the following stand out as being commonly used by educators in the Mafikeng District: whole class discussions, group work method, practical/class exercises, co-operative learning and lecture method. Strategies that enhance learner attainment in mapwork include maps and graphics, co-operative group learning, group work, practical work and pair work.

Most educators in the Mafikeng District have indicated that they are still traditionally-orientated in their teaching because Outcomes-Based Education has not yet been introduced in Grade 12. Another reason is that the educators are mainly concerned with finishing the syllabus for Matric examination and not how the learners perform.

The relationship between the school and the home need to be encouraged. The school and the home working together in continuity enable the learner to aspire higher achieve better academically and behave with respect to the school's norms. The opposite would be the case if the learner is put in the discontinuity situation. Other influences such as poverty and parental/adult supervision are minimal at Grade 12 level in the African context, but intelligence, gender and teacher's proficiency in English influence variations in performance more than the social background and birthplace.

According to Maslow's theory (1971) of a hierarchy of needs, children can be motivated by the fulfillment of their physiological and psychological needs. Physiological needs must be satisfied before psychological needs can be gratified.

Finally, learners must be sufficiently motivated to attend school and to pay attention to what is going on in the classroom if schooling is to have any effect on them. Child (1998: 32) states that left to themselves, most learners would not achieve much without the promptings from adults. It is therefore imperative that all educators study the importance of motivation. An educator's success in the classroom depends on how well s/he applies the principles of motivation in his/her teaching.

The following chapter gives an overall summary of the findings, concludes and makes recommendations for further studies.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1. INTRODUCTION

The purpose of this chapter is to give a summary of the results from the research study, relate such results to the research questions, draw conclusion and make the necessary recommendations based on the findings.

5.2. SUMMARY OF LITERATURE REVIEW

It is the view of many geographers that the knowledge of maps lies at the heart of Geography (Khupe and Khupe, 1995, Liebenberg, 1998). However, these maps seem to present learners with greater learning problems than is generally realized (Bailey, 1974; Lambert and Balderstone, 2003). It is therefore imperative that learners in lower phases, for example Intermediate and Senior Phases be given a thorough grounding in mapwork which includes as much practical work as possible.

In teaching Geography, an understanding of key concepts such as direction, distance, scale, spatial location, spatial distribution, spatial variation, spatial association and spatial differentiation can best be tested by means of maps. It is therefore very important that Geography learners should be taught using different types of strategies, methods and techniques which are effective for enhancing learner achievement in different aspects of map reading, map analysis and map interpretation. This appears to be a major challenge in mapwork (both teaching and learning) in the schools surveyed in North West Province.

In addition to the basic teaching learning situation that exists in most schools, teaching models (See Figure 2) could be incorporated to improve learners' results, especially in the most difficult aspects of mapwork. For example, the use of a deductive model would be useful if a definition of concepts needs to be understood, while an inductive strategy requires learners to discover answers by themselves through observation of reality that is

presented. The Concept Attainment Model, for example, requires learners to be involved in observing similarities in objects or features, forming categories on the basis of similarities and generalizing or abstracting from the categories.

The Relationship Acquisition Model (RAM) is based on the Ausubel model of advance organizers. It is particularly suitable for organizing large bodies of information and for teaching interrelated bodies of context containing concepts, generalizations and relationships.

The Training/Demonstration Model (TDM) is particularly useful for teaching geographical skills such as interpretation of photographs, models and sketches, interpretation and understanding of maps, especially topographical maps. It includes simple and complex skills such as psychomotor skills, problem-solving strategies and interpersonal competencies.

The Suchman Inquiry Development Model (IDM) is useful when learners need to acquire skills of inquiry through involvement in a simulated scientific experiment. The goal of this model is to help learners improve their ability to relate data to their explanations they have formed (Arjun, 1990: 146).

From the literature review and the findings of the study, it has come out clearly that motivation, success, and achievement are closely linked (Mwamwenda, 1995; Lumsden, 1994; Maehr, Martin & Midgley, 1991; Lepper, 1988; Stipek, 1988).

Learners are more likely to succeed if they put in their best effort. They can put in their best effort if their interest and desire to learn are aroused (See Figure 13 pg. 158). Once successful, the learners are motivated towards their goal. Eventually, they come to believe that they are capable, they expect positive results for their own efforts and they become achievers.

Building a productive learning environment is a difficult and complex process for most educators especially, the beginning teachers. Most educators find the task of getting students engaged in academic work among the most difficult of leadership functions of teaching (Kubiszyn & Guilian, 1996).

Arends (1997: 114) is of the opinion that the strategies and models that educators use to motivate individual learners and the work they do to help the classroom develop as a group, are the two major ingredients for building productive learning environments.

5.3. SUMMARY OF FINDINGS

This section summarizes the results as obtained through the questionnaires, the interviews and class observation as related to research questions.

5.3.1. Learner and Educator experiences with Mapwork in Mafikeng High Schools.

Findings in Graph 1 reveal that most learners find mapwork difficult to master because they lack motivation in doing mapwork, and also lack basic skills to map-reading. This is evidenced by the fact that 66% of learners just do enough to pass, 61% find mapwork challenging and 51% of learners do not participate in class discussions or activities.

The learners also find the following aspects of mapwork difficult to understand: the six-figure grid reference, the calculation of gradient, true bearings, map interpretation and calculation of distances using map scale. All these aspects are mathematically orientated, yet most students taking Geography do not do mathematics.

Even those who take mathematics find mapwork the most difficult section of Geography to understand. Lack of basic mathematical skills, therefore is another major contributing factor to poor performance in mapwork.

In addition to these reasons above, the learners also perceive Geography as a difficult subject, and this has a negative impact on their performance. To make it worse, the aspects of mapwork that the learners do not understand (Graph 3), are the same ones that the educators find difficult to explain (Graph 4), therefore, the learners do not understand and consequently they perform poorly in those aspects. The problem seems to emanate from educators rather than learners.

5.3.2. Influence of Instructional Strategies, Methods and Techniques

Graph 5 reveals that most educators in Mafikeng prefer to use whole class discussions, group work method, practical class exercise, co-operative group learning and lecture method in descending order, as the teaching strategies, methods and techniques in their classes (Graph 5 & 6).

Effective methods in teaching Geography, especially map reading, such as fieldwork, problem-solving, enquiry method, simulation and games and the use of co-operative learning models are not used at all. The educators are more prone to using the old ways of teaching rather than the new ways (O.B.E methods). Two methods that are commonly used by educators but are absent from the list of the most effective methods in teaching Geography (Graph 10) are whole class teaching and lecture methods. These methods are teacher-centred and do not help learners to perform well because they make them to be passive, exam-driven and textbook/worksheet bound.

Learners understand and perform better when working in small groups and when they share information with their peers. Unfortunately, 64% and 81% of educators use the lecture method and whole class method discussions respectively despite their non-effectiveness (Graph 6). Less than 50% of educators use models and pair work (Graph 6).

5.3.3. Influence of Learner and Educator Attitudes on Performance in Mapwork.

Graph 11 above reveals the negative attributes of learner attitude towards learner attainment in Mapwork in Geography: 90% of learners find mapwork difficult to understand, 60% lack interest in mapwork, another 60% perceive mapwork as difficult and 30% have a negative attitude towards mapwork. These findings reveal why many learners do not perform well in mapwork in Geography.

If learners are given tasks which are too difficult for their level of understanding, or they perceive the subject as being difficult, they will lose interest and develop a negative attitude towards the subject. Whenever learners lose interest in a given task or learning area, they will not work hard and eventually they will fail, or work just enough to pass.

Most educators in this study have indicated that they are still traditionally orientated in their teaching; therefore, most learners are not motivated at all. In addition, some educators are so strict in class that the Learners are afraid to ask them questions where they do not understand.

Graph 12 reveals that 40% of educators find teaching mapwork difficult and frustrating hence contribute negatively to learner achievement. Educators with a negative attitude towards the subject will have a negative impact on learner achievement.

An educator's attitude and personality play a role in motivation in the classroom. Educators with a positive attitude towards their subjects and learners are more motivating than those who have a less positive attitude and personality.

5.3.4. Influence of Home and School Environments on Learner Performance in Mapwork

The school and the home working together in continuity enable the child to aspire higher achieve better academically and behave with respect to the school's norms. A child put in the discontinuity situation is less likely to perform well (Abosi and Kandjii – Muranji, 1995: 87).

In this study, it has been found that high motivation of students is needed for them to perform well at school. Other influences such as poverty and parental supervision are minimal. What is very essential, therefore, is that the learning content should also be relevant to their needs and future plans.

Classroom environment is important for learners to perform well. In a caring supportive classroom where there's a sense of belonging and everyone is valued and respected, learners will perform well. This, however, would depend on the tasks the learners are given, whether they are challenging but achievable, and whether they are relevant to the learner's needs and experience.

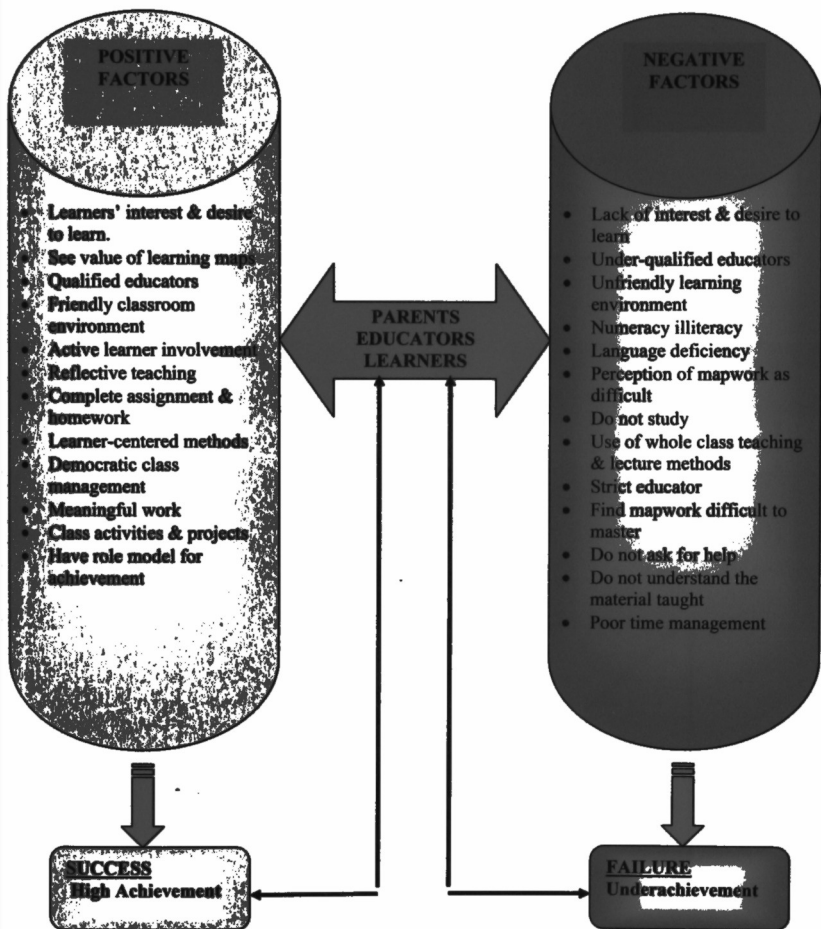
It has also been found that most learners find mapwork difficult; they do not understand the material taught and they are numerically illiterate, yet 60% of educators confess providing conducive classroom environment, which supports learner achievement (Table 16). This therefore points to the way educators teach. If the classroom environment is positive but the educators continue to use non-effective strategies and methods, such as lecture and whole class methods, the learners will be passive, will not be responsible for their own learning, will not understand the learning content and therefore will not perform well.

5.4. CONCLUSION

In this study, possible factors influencing learner achievement in Geography mapwork at Grade 12 level were investigated. The main purpose was to investigate why learner achievement in Geography mapwork is generally poor. To get to the root of the problem, research questions were formulated (See item 1.2.1) which, together with the specific objectives of the study (See item 1.3.), contributed to the achievement of the above main purpose.

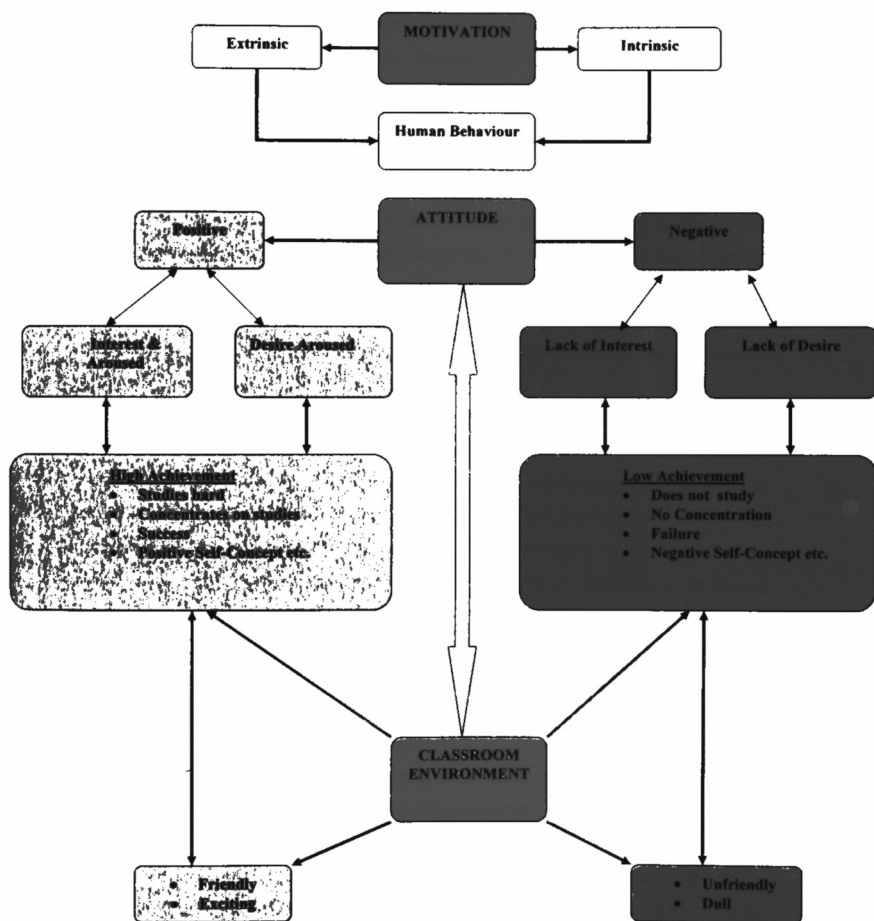
Both positive and negative factors influencing learner achievement in Geography mapwork at Grade 12 level were identified (See Figure 12 below) in this study. Positive factors such as arousing learners' interest and desire to learn, friendly classroom environment, active learner involvement and the school and the home working together in 'continuity', just to mention a few, lead to success and high achievement in Geography mapwork. All these factors are embedded in Outcomes-Based Education, and if properly implemented by all educators of Geography, learner achievement in mapwork would greatly improve. On the other hand, negative factors such as lack of interest to learn, numeracy illiteracy and perception of mapwork as difficult, greatly hinder learners' progress and achievement in Geography mapwork. These factors contribute greatly to the failure in Geography mapwork. However, a positive collaboration between parents, educators and learners need to be encouraged and emphasized as this relationship would boost the learners' performance.

Figure 12: Positive and Negative Factors Influencing Learner Achievement in Map Work



Source: Author's own Construct

Figure 13: Linking Motivation, Learner Achievement and Classroom Environment



Source: Author's own Construct

Of all the factors identified as influencing learner achievement in Geography mapwork, lack of motivation topped the list. Motivation, whether extrinsic or intrinsic can help a learner develop a positive attitude towards learning and this would boost his/her interest and desire to learn and consequently, improve his/her achievement in Geography mapwork. The relationship between motivation, learner achievement and classroom environment is illustrated in Figure 13 above, constructed by this researcher. Lack of motivation leads learners to develop a negative attitude whereby they lose interest and desire to learn, and consequently, perform poorly in Geography mapwork. A friendly and exciting classroom environment leads learners to positive self-concept and this would boost learner achievement in Geography mapwork. An unfriendly and dull classroom environment would lead to low self-esteem and this would not boost learner achievement in Geography mapwork. Learners would be bored and unwilling to actively participate in the learning process. During their leisure time, they would rather do sports and other activities than do some practical exercises in mapwork.

In conclusion, the results obtained through the questionnaire, the interviews, class observation and the literature review are categorized into two major groups: Positive and Negative factors that influence learner achievement. The diagram above (Figure 12) illustrates the two major groups of positive and negative factors that influence learner achievement. The negative factors, such as lack of motivation, numeracy illiteracy and perception of mapwork as difficult lead to poor performance in Geography mapwork, while the positive factors, such as learners' interest and desire to learn, active learner involvement and friendly classroom environment lead to higher achievement in Geography mapwork.

In Figure 13 above, the linkage between motivation, learner achievement and classroom environment is illustrated. Highly motivated learners develop a positive attitude towards learning, their interest and desire to learn is aroused and this leads to high achievement in Geography mapwork. The opposite would take place if the learners are highly demotivated to learn Geography mapwork. They develop a negative attitude towards mapwork, they lose interest and desire to learn and this leads to low achievement. The classroom environment of high achievers is usually friendly and exciting, while that of

low achievers is unfriendly and dull. It is therefore, every educator's duty to make sure that in whatever they do, learners are able to experience some success, some sense of achievement and some level of competence in Geography mapwork for them to achieve higher.

5.5. RECOMMENDATIONS

5.5.1. Lack of Motivation

Lack of motivation among learners in nearly all the schools visited for this study ranked first among other factors that influence learner achievement in mapwork in Geography.

It is therefore imperative that all educators study the importance of motivation. An educator's success in the classroom depends on how well s/he applies the principles of motivation in his/her teaching (Child, 1998: 32).

5.5.2 Quantitative Phobia

Quantitative phobia is another problem that needs to be tackled by both the educators and the learners. Since mathematical literacy will be compulsory for every learner from year 2006, this might help in improving the learners' basic mathematical skills. However, there is need for teachers to be retrained or re-skilled in mapwork and mathematical aspects of Geography. Short courses should be offered at higher institutions to re-skill educators in mapwork and mathematical skills to help improve learner achievement in mapwork.

5.5.3. Further Investigations

There is need for further investigations on the following statements/questions as a follow-up to some of the findings in this study:

- Those who do mathematics are the ones who do better in mapwork. How significantly better do these students perform in comparison to those without math background?

- Does professional training of educators in mapwork have an influence on learner performance?
- How motivated are the learners taught by educators who have no difficulty with mathematical aspects of mapwork?
- A comparative study on learner achievement in Geography mapwork between learners from historically disadvantaged schools and those from historically advantaged schools.

5.5.4. GUIDELINES FOR MOTIVATING LEARNERS TO LEARN

(Lumsden, 1994):

The following are some guidelines for helping learners improve their academic achievement in Geography mapwork. These guidelines could be applied in other learning areas as well:

- Learners need to be primarily intrinsically rather than extrinsically motivated towards learning Geography mapwork.
- Classroom climate is important. Learners need to experience the classroom as a caring, supportive place where there is a sense of belonging and everyone is valued and respected, regardless of who they are. This will help them participate more fully in the process of learning and in practical exercises in mapwork.
- Tasks in mapwork should be challenging but achievable.
- Tasks in mapwork should be relevant to learners' needs and experience.
- Learning Geography should be contextualized to help learners see how skills can be applied in the real world (Lepper, 1988).
- Tasks in mapwork should involve a moderate amount of discrepancy or incongruity to stimulate learners' curiosity, an intrinsic motivator.

- Tasks in mapwork should be defined in terms of specific, short-term goals to assist learners to associate effort with success (Stipek, 1988).
- Verbally note the purposes of specific tasks in mapwork when introducing them to learners.
- Extrinsic rewards should be used with caution, for they have the potential for decreasing existing intrinsic motivation.
- Overall school-level policies and practices should stress 'learning, task mastery and effort' rather than relative performance and competition (Maehr & Midgley, 1991).
- Protect the learner's sense of self-worth even if s/he uses strategies that are self-defeating, such as cheating, especially for a demotivated learner.
- Exercise attribution retraining, which involves modeling, socialization and practice exercises for discouraged learners (Brophy, 1986).
- Portray effort as investment rather than risk.
- Portray skill development in mapwork as incremental and domain-specific, and focus on mastery (Brophy, 1986).

Having learners who value learning for its own sake is priceless. It is therefore, very crucial for parents, educators and school leaders to devote themselves fully to engendering, maintaining, and rekindling learners' motivation to learn.

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APPENDICES

APPENDIX 1A

A Letter to the Superintendent General

P.O. Box 5728
Mmabatho
2735

10th May, 2004

The Superintendent General
Department of Education
P/Bag
MMABATHO
2735

Dear Sir:

THE COMPLETION OF QUESTIONNAIRES BY EDUCATORS AND LEARNERS IN HIGH SCHOOLS IN MAFIKENG DISTRICT

I hereby apply for permission to conduct a research in the teaching of mapwork in Geography in high schools in Mafikeng District, N. W. Province.

The title of my dissertation is: **Factors that Influence Learner Achievement in the Section of Mapwork in Geography at Grade 12 Level in Mafikeng District.** I am a doctoral student at the North-West University and my supervisors are Prof. A.S.Awudetsey (North-West University) and Prof. R. Chanda (University of Botswana).

The Following information is provided:

- Only Grade 12 learners taking geography will be requested to fill in the questionnaire.
- Only Grade 12 educators will fill in the questionnaire.
- Only schools, which offer Geography at Grade 12 level, will be visited.
- The questionnaire will take 10-15 minutes to complete.
- The questionnaire will be forwarded to you on request before any research is conducted.
- The research will be conducted in June-September, 2004.

Furthermore, I also seek permission to collect Matric result statistics from the year of 1999 to 2003.

I shall also seek the necessary permission from the principals of the high schools to be visited.

Sincerely yours

E. Mwenesongole (Mrs)

APPENDIX 1B

A Letter from the Superintendent General



North West Department of Education

Office of the Superintendent General

Enquiries:
Telephone: V. Mahana
Email: (018) 3673432
DDGedu@mpp.gov.za

To: Mrs Elsie Mhwensongole
From: Dr A M Karodia
Superintendent General
Date: 30 June 2004
Subject: REQUEST TO CONDUCT RESEARCH AT SCHOOLS IN THE NORTH WEST PROVINCE

Dear Mrs Mhwensongole

My correspondence dated 17 June 2004 in response to your request for permission to conduct research at schools in the North West Province refers. Permission is hereby granted with the following provisos:

1. It is incumbent upon you to inform the Executive Regional Manager for the Central Region of your intention to conduct research at schools in her region
2. There should at no time be any disruption of the teaching learning process
3. The results of your research must be shared with the Department and no results should be published without the permission of the Department
4. A copy of your thesis must be forwarded to my office upon completion

I take this opportunity to wish you well with your endeavours.

Thanking you.

Yours sincerely


DR A M KARODIA
SUPERINTENDENT GENERAL



1st Floor, Go-Rena Building, Private Bag X2044, Mmabatho 2735, Republic of South Africa
Tel.: +27 (18) 367-3430 Fax: +27 (18) 367-3430 E-mail: DDGedu@mpp.gov.za

APPENDIX 1C

A Letter to the Manager of Examination Results

Contact Numbers:

Telephone: (018) 3892529

Cell: 082 351 4737

E-mail: mwenesongolec@uniwest.ac.za

To: Dr Mybury

From: Mrs Elbie Mwenesongole

Date: 13 July 2004

**Subject: REQUEST TO ACCESS GEOGRAPHY MATRIC RESULTS FOR
THE PAST FIVE YEARS**

Dear Sir

I am a doctoral student doing research in Geography at North West University. My topic is: **A Model Towards Learner Achievement in Mapwork, geography.**

I need to study the results in Geography from year 1999 to 2003 to get an overall picture of learner performance in this learning area, as part of the research.

Therefore, I seek permission from your office to have access to these results.

Attached is a letter of permission granted from the Office of the Superintendent General for your reference.

I take this opportunity to thank you in advance for your assistance.

Yours sincerely

Elbie Mwenesongole (Mrs)
Lecturer: Geography Methodologies

APPENDIX II

QUESTIONNAIRE SCHEDULE A FOR EDUCATORS

A questionnaire on Influential Factors for Learner Achievement in the Section of Mapwork in Geography at Grade 12 level.

The aim of this questionnaire is to find out the factors that influence learner achievement in mapwork, Geography at Grade 12 level. The information gathered will be used to develop a guideline for teaching mapwork at Grade 12 level, which could also be applied at lower levels.

All Grade 12 educators offering Geography are kindly requested to answer this questionnaire.

Please answer all the questions. Your name is not required, and all the information given will be kept confidential. Feel free to answer honestly and to give your true responses to all the questions.

Some questions will require you to answer by ticking (✓) the appropriate block. Others will need you to express your opinion in the space provided.

Thank you for your time in completing this questionnaire.

EDUCATORS' QUESTIONNAIRE

SECTION A : PERSONAL DATA

Kindly Tick (✓) the chosen answer.

1. Gender

Male	
Female	
Total	

2. Academic Qualifications

Matriculation	
SSTD	
STD	
B.A.	
B.A.Ed	
B.Sc	
B.Ped	
B.Sc.Ed	
B.Ed	
M.A.	
M.Ed	
D.Ed/PhD	
Other	

3. Highest course attended in geography

None	
College	
University Course 1	
University Course 2	
University Course 3	
Honours	
Masters	
Other	

4. Present teaching post

First year educator	
Educator	
Senior educator	
HOD	
Deputy site manager	
Site manager	
Other	

5. Highest geography grade taught in 2003

Grade 8	
Grade 9	
Grade 10	
Grade 11	
Grade 12	

6. Years teaching geography

0-2 Years	
3-5 Years	
6-8 Years	
9-11 Years	
12-15 Years	
Over 15 Years	

7. On appointment to your present school were you interested in

Teaching geography only	
Teaching geography and one other subject	
Teaching geography and more than one other subject	

8. If you had the choice, would you prefer to teach geography

Yes	
No	

SECTION B : ATTITUDES TO TEACHING OF MAPWORK

9. Which of the following sections of geography do you like teaching most? Kindly rank them in order of your preference. Write one (1) next to the one you like most, and two (2) next to your second choice etc.

Climatology	
Geomorphology	
Mapwork	
Settlement geography	
Regional geography	
Other	

10. Rate the following ideas by ticking the one which best describes your feelings about the following:

- i. Teaching mapwork is

Very easy	
Easy	
Of average difficulty	
Difficult	
Very difficult	

- ii. Your learners find mapwork

Very interesting	
Interesting	
Uninteresting	
Very uninteresting	

- iii. Your learners find mapwork

Very easy to understand	
Easy to understand	
Difficult to understand	
Very difficult to understand	
Most difficult to understand	

11. "Your learners perform better in mapwork than their average performance in other section of geography". Do you agree? Tick your choice below

Strongly agree	
Agree	
Undecided	
Disagree	
Strongly disagree	

12. "Teaching mapwork is frustrating". Do you agree? Tick your choice below

Strongly agree	
Agree	
Undecided	
Disagree	
Strongly disagree	

13. When learners enter the FET Phase, in your experience are they adequately prepared to study mapwork?

Yes	
No	

14. What do you think is necessary to help learners do well in mapwork?

1. **More practice is needed**
2. **They need good basic foundation in mapwork from the intermediate phase**
3. **Field trips should be included in the curriculum**
4. **Need resources and change of negative attitude**

15. From which Grade do you think mapwork should be taught?

Grade 6	
Grade 7	
Grade 8	
Grade 9	
Grade 10	
Grade 11	
Grade 12	
Other	

16. In which school term do you teach mapwork most?

First term	
Second term	
Third term	
Fourth term	
Throughout the year	

17. Is there sufficient time for you to teach mapwork?

Yes	
No	

18. How much time, do you think, is needed to teach mapwork sufficiently?

1. Two periods weekly
2. Throughout the year

SECTION C: CLASSROOM ENVIRONMENT

How well is achievement supported in your Geography classroom? Please tick items 'True' if they describe your classroom, 'False' if they do not. Be aware that some of the characteristics listed are positive, and some are negative.

ITEMS	CLASSROOM CHARACTERISTICS	TRUE	FALSE
1	Most of my lessons involve my presentation of information or skills		
2	I give my learners opportunities to share what they know about a topic		
3	I design a single set of learning goals for all of my learners		
4	I pretest my learners so I understand what each of them knows and needs to learn		
5	I have a specific and unchanging daily or weekly routine in my classroom		
6	I have a system to help my learners keep track of their assignments and deadlines		
7	Learners who complete their work are allowed to participate in certain activities or opportunities e.g. excursion		
8	I recognise the success of individual learners		
9	The majority of my remarks on my learner's papers are positive		
10	I have individual or private conferences with learners who are having problems in class		
11	I use contracts with learners who are having school problems		
12	I give my learners examples of how their learning is used in the "real world"		
13	I tell my learners why a topic or skill is important to learn		
14	I get learners interested in a topic by posing questions or providing unique information that will get them curious		
15	My teaching techniques tend to stay the same		
16	The objectives I develop are for my own planning and use; I don't share them with my learners		
17	I grade most learning activities so my learners understand that their assignments are important		
18	I recognise learners when they improve in a subject or learning activity. I compliment them on their achievements, special talents, and abilities		
19	I regularly plan activities designed to develop my learners' positive self-esteem		
20	Learners feel secure and free from threat in my classroom		

SECTION D: INSTRUCTIONAL STRATEGIES, METHODS AND TECHNIQUES

Please read the list of instructional strategies, methods and techniques and number the three most used in teaching mapwork in Geography, 1,2,3 in their order of priority, in the boxes provided.

INSTRUCTIONAL STRATEGY/ METHOD/ TECHNIQUE	
Exposition	
Group work	
Co-operative work	
Field work	
Discovery	
Lecture	
Pair work	
Whole class	
Inquiry method	
Games and simulation	
Models	
Practical work	
Computer assisted teaching method	
Statistical method	
Case study	
Maps and graphicacy	
Discussion	
Problem-solving	

SECTION E: ASPECTS OF MAPWORK

Please indicate by numbering 1,2,3 in the appropriate column, aspects of mapwork you find the most difficult to teach.

Scale	
Compass direction	
True bearings	
Relief and contours	
Map reading	
Map analysis	
Map interpretation	
Gradient	
Six figure grid reference	
Conventional signs	
Other	

THANK YOU FOR YOUR TIME AND COOPERATION

APPENDIX III

QUESTIONNAIRE SCHEDULE B FOR LEARNERS

A questionnaire on a Model for Learner Achievement in the Section of Mapwork in Geography at Grade 12 level.

The aim of this questionnaire is to find out a model for teaching mapwork in Geography at Grade 12 level to improve learner achievement in mapwork. The information gathered will be used to develop a model for teaching mapwork at Grade 12 level, which could also be applied at lower levels.

All Grade 12 learners taking Geography are kindly requested to answer this questionnaire.

Please answer all the questions. Your name is not required, and all the information given will be kept confidential. Feel free to answer honestly and to give your true responses to all the questions.

Some questions will require you to answer by ticking (✓) the appropriate block. Others will need you to express your opinion in the space provided.

Thank you for your time in completing this questionnaire.

B. QUESTIONNAIRE FOR LEARNERS

SECTION A: GENERAL INFORMATION

Tick (✓) the item in the appropriate block that applies to you.

GENDER	AGE	SCHOOL
Male	Under 16	Urban
Female	Above 16	Rural

Tick (✓) the items below 'True or False', in the appropriate block that you believe contribute to your success in mapwork, Geography. The items are grouped by problem area.

SECTION B: LEARNING

ITEMS CONTRIBUTING TO SUCCESS	TRUE	FALSE
I see the importance of learning maps		
Mapwork challenges me		
Mapwork is too difficult for me		
I lack basic skills to map-reading		
I have learning disabilities that affect my ability to learn		
I easily give up when work is too hard		
I usually day dream and do not pay attention in class		
I rarely participate in class discussions or activities		
I am often bored in class		
I am passive in class, and have no enthusiasm for learning		
I am often distracted during learning		
I always complete my assignments or homework		
I just do enough to pass		
I am motivated by class activities and projects		
I see the need for mapwork in future plans		
I have a role model for achievement		
Other		

SECTION C: STUDY HABITS

	TRUE	FALSE
I do proofread or check over my work		
I rarely produce quality work in mapwork		
I have a study method to help me remember information		
I have a regular schedule and time for study		
I have an efficient and effective way to take notes		
I have enough time to study at home		
I have a place to study away from distractions		
I am over committed, therefore I have competition for study time		
Other		

SECTION D: MANAGING SCHOOL WORK

	TRUE	FALSE
I have a method of keeping track of assignments and deadlines		
I know how to do mathematical calculations in mapwork		
I leave work until the last minute		
I always ask for help from the educator		
Other		

SECTION E: PERSONAL ISSUES

	TRUE	FALSE
I have pressure from friends not to do well		
I have a low self-esteem; I don't believe it is possible for me to pass mapwork		
I have respect for my teacher and/or parent		
I am a perfectionist who can't settle for less than the best		
My parents and/or teachers expect too much from me		
I am stressed and anxious		
I lack confidence in my academic skills		
I am a poor risk taker		
I like being 'the best' in class		
I have family problems		
I have health problems		
I have alcohol and/or chemical dependency problems		
Other		

SECTION F : ASPECTS OF MAPWORK I FIND DIFFICULT

	TRUE	FALSE
Map scale		
Compass direction		
True bearings		
Relief and contours		
Map reading		
Map analysis		
Map interpretation		
Gradient		
Six-figure grid reference		
Conventional signs		
Other		

SECTION G: TEACHING STRATEGIES, METHODS AND TECHNIQUES

Please read the list of teaching strategies, methods and techniques and put a tick (✓) next to those your geography teacher uses during mapwork lessons.

Lecture method – Educator presents all information or skills to learners	
Exposition method – Educator talks most of the time	
Groupwork method – Educator divides learners into groups	
Cooperative work – Learners share knowledge and teach each other	
Fieldwork/fieldtrip- Educator takes learners out to learn	
Discovery method – Learners find information by themselves	
Pair work – Learners work in twos	
Individual work – Learner does work alone	
Whole class discussion – The whole class is involved	
Inquiry method – Scientific method of collecting data and analyzing it	
Games and simulation – Role play	
Models – Educator uses representations of real things	
Practical work- Learners do a lot of calculations	
Computer – assisted teaching method – Educator uses a computer to teach	
Statistical method – Educator uses statistics to teach	
Case study method – Educator teaches about a small area and generalizes	
Maps and graphicacy – Educator uses maps and graphs to teach	
Other	

SECTION H : RESOURCES FOR LEARNING MAPWORK

Tick (✓) the resources that you use in class during mapwork lessons.

Topographical maps 1:50000	
Textbooks	
Protractors	
Stereoscope	
Pencil/rulers/calculators	

APPENDIX IV

INTERVIEW SCHEDULE A FOR EDUCATORS

Performance

1. What are your expectations for the learners in your class this year?
2. What do you think the learners need to do to improve their grades and learning in your class?

Causes of Learners' Failure

3. What seems to be the main cause of the learners' failure in mapwork, geography?
4. Which areas of mapwork do most learners find difficult to grasp?

Teaching Strategies

5. How do you usually teach mapwork in your class?
6. What strategies do you use when teaching mapwork? e.g. group work, class discussion, fieldwork, class exercises?
7. When using a 1:50,000 O.S map of your local area do you take your learners out for fieldwork?

Resources

8. What resources do you use when teaching mapwork?
9. Which maps do you commonly use to teach mapwork? e.g. 1:50,000 O.S/textbook?
10. How do you use textbook maps?

Problems of teaching mapwork

11. What do you think are the main reasons for learners' difficulties in understanding mapwork?
12. What do you think would help to reduce these difficulties?

THANK YOU FOR YOUR TIME AND COOPERATION

APPENDIX V

INTERVIEW SCHEDULE B FOR LEARNERS

LEARNING

1. What subject are you best in?
2. What subject is the most difficult for you?
3. What do you like most about your best subject?
4. What makes your most difficult subject so hard for you?
5. What is the hardest thing for you to do: your daily work, the end-of-chapter tests, or independent projects?
6. Can you tell me what caused your grade in the subject where you performed most poorly?
7. Do you understand the material taught in your most difficult subject?
8. What school activities or projects do you enjoy the most?
9. Of all your subjects, which one do you think you could improve in? How could you improve your grade in that subject?
10. If you feel you are behind in that subject, do you think you could catch up? What extra help might you need?
11. What keeps you from being successful in that subject? What could you do about it?

DEVELOPING STUDY HABITS

1. How much time do you typically spend each day studying or doing homework at home?
2. Do you spend a specific amount of time studying and doing homework, or do you just work until you finish your assignments?
3. Do you have a particular place where you study at home? Describe it to me.
4. Do you have a set time to begin studying each night?

5. If you need to remember something for a test, how do you memorize it?
6. Tell me about your way of taking notes
7. Can you usually predict what might be on a test? If yes, how can you tell?
8. Do you check over your work before you turn it in?
9. Do you sometimes get distracted during your home study time? If yes, what kinds of things distract you?
10. How long can you study in one stretch? Do you give yourself a break during your study time?
11. Do you reward yourself when your study time is over?

MANAGING SCHOOL WORK

1. Are there any particular days of the week when it is more difficult to find time to study at home?
2. Is there a particular time of the school year when it is more difficult to study? (Examples: school play, athletic season).
3. Do you keep an assignment notebook, folder, or calendar? Do you use it regularly? Does it work for you?
4. How do you organize your work for a big project that takes a long time to do? Can you break the project down into small steps?
5. If you have several deadlines at the same time, how do you decide what work to do each evening?
6. Each evening, when you start your study time, do you know what work needs to be done and what deadlines you have coming up?

SETTING GOALS

1. Where do you want to be and what do you want to be doing when you have completed school (or 5 to 10 years from now)?
2. What is the most important thing about school for you? What makes you (or could make you) want to come to school each day?

DEALING WITH PERSONAL ISSUES

1. If you could change one thing about yourself, what would it be?
2. What do you do to handle stress?
3. Do you believe you are a perfectionist? - Does it bother you if things are not just right? Do you have problems getting your work in on time because it doesn't seem quite finished yet?

APPENDIX VI

OBSERVATION SCHEDULE A

INSTRUCTIONS TO THE OBSERVER:

- Please make prior arrangement with the resident educator to be observed.
- Assure him/her that whatever is observed will not be used against him/her in any way.
- This is done for research purpose only.

1. Put a tick (✓) against the ways in which geography educators try to motivate learners in class.

Warmth	
Enthusiasm	
Use of visual aids	
Pupil-teacher interaction	
Use of voice, gestures and eye-contact	
Positive feedback	
Respect	

2. Reflect on the lessons you have observed. Tick any aspect of the teaching-learning situation, which contributed to a lack of learner motivation.

Strict teacher	
Negative feedback	
No feedback	
Teacher-centered learning	
Same teaching method throughout the lesson	
Lack of essential learning materials	
Students' negative attitude	

3. Does the teacher have adequate subject knowledge?

Yes	
No	

4. What methods/techniques does the teacher use in the classroom, especially when teaching mapwork?

Practicals	
Models	
Fieldwork	
Co-operative group learning	
Enquiry method	
Lecture method and giving notes	
Whole class teaching	
Drill on past papers	

5. Is learners' interaction with each other, as well as with the teacher, high or low?

High teacher to learner interaction	
Low teacher to learner interaction	
High learner to learner interaction	
Low learner to learner interaction	
Verbal interaction dominated by teacher talk	

6. Learners use a geography room for Geography lessons.

Yes	
No	

7. Learners ask for help in class when they don't understand.

Yes	
No	

8. Learners follow the teacher's directions for class activities and written work.

Yes	
No	

THANK YOU FOR YOUR TIME AND ASSISTANCE

MAP OF SOUTH AFRICA

