THE INFLUENCE OF A LEARNING STRATEGIES PROGRAMME ON LOW ACHIEVING BLACK SECONDARY SCHOOL STUDENTS' ACADEMIC ACHIEVEMENT

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Proverbs 3: 5,6

ZELBIA SPRANG

DECLARATION

I declare that the influence of a learning strategies programme on low achieving Black Secondary School students' academic achievement is my own work. It is being submitted for the MAGISTER EDUCATIONIS degree to the University of Potchefstroom for Christian Higher Education, Potchefstroom. It has not been submitted before, for any degree or examination in any other university.

ZELBIA SPRANG

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DEDICATION

In memory of my father, PETER DUNCAN RUITERS

1930 - 2000

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

SUMMARY

THE INFLUENCE OF A LEARNING STRATEGIES PROGRAMME ON LOW ACHIEVING BLACK SECONDARY SCHOOL STUDENTS' ACADEMIC ACHIEVEMENT.

The purpose of this study was to determine, by means of a review of literature and an empirical investigation, the influence of a learning strategies programme on low achieving Black Secondary School students' academic achievement.

From the review of literature and the empirical study it was concluded that the effective use of learning strategies have an influence on academic achievement defined as Grade Point Average (GPA). It was also concluded that the effective use of learning strategies can make learning more efficient and effective.

It was concluded from the literature review that variables such as self-efficacy, intrinsic values, test anxiety, strategy use and self-regulation have an influence on cognitive development and a subsequent influence on the efficient use of learning strategies, which in turn influence academic achievement. The literature review indicated that learning strategies involve three types of strategies, namely cognitive (such as elaboration and organisation); metacognitive (strategies used to monitor learning) and resource management strategies (such as time management, management of one's environment, exertion of effort and help seeking).

Motivation is also important for effective learning. Motivation processes such as expectancy, self-efficacy and attributions affect the learner's thoughts positively (when a learner is highly motivated) or negatively (when the learner lacks motivation).

Expectancy (the individual's belief that what he/she desires will follow his/her involvement in a particular task) motivates the learner to participate in learning tasks when it is at a high level. A low expectancy level, on the other hand, causes less involvement as a learner will opt for non-participation rather than being labelled a failure. The more successful a learner is, the higher his/her self-efficacy becomes.

Self-efficacy is a learner's personal beliefs relating to his/her capability of performing a learning task successfully. High self-efficacy stimulates effort and persistence when problems are encountered and is thus a determinant of learning involvement and high achievement. Learners become involved in particular learning activities because they regard themselves capable of performing such activities and they tend to avoid activities perceived as beyond their capabilities. High achievement level associated with high self-efficacy, is characterised by learning strategy use as the learner will do everything possible to aid his/her learning so that success is achieved. High achievers develop a positive outlook in their learning experiences and this affects their attributions.

Attributions, which are defined as the learner's interpretation of the causes of his/her successes or failures, determine future performance. A highly motivated learner attributes his/her failures to controllable, internal and unstable causes such as effort, which enable the learner to work towards improvement. A less motivated learner attributes his/her failures to stable causes such as aptitude and thus limits the learner's chances for improvement as aptitude is fixed.

The empirical study indicated that learning strategies influence academic achievement. The learning strategies (memory, summary and test-taking) which were taught to the subjects during the experimental treatment are good predictors of academic achievement as these variables contributed significantly to academic achievement.

OPSOMMING

Die doel van hierdie studie was om deur middel van 'n literatuur- en empiriese studie aan te toon wat die invloed van leerstrategieë is op die akademiese prestasie van swak presterende hoërskoolleerders in die vak Engels tweede taal.

Uit beide die literatuur- en empiriese studies, blyk dit dat leerstrategieë wel 'n invloed uitoefen op die akademiese prestasie van leerders. Dit blyk ook dat die effektiewe gebruik van leerstrategieë 'n beduidende bydrae maak tot effektiewe leer.

Die literatuur toon aan dat veranderlikes soos selfdoeltreffendheid, interne waardes, eksamenvrees, die gebruik van leerstrategieë en selfregulering 'n invloed het op kognitiewe ontwikkeling en uiteindelik ook op die doeltreffende gebruik van leerstrategieë. Laasgenoemde beïnvloed dan akademiese prestasie. Die literatuur toon aan dat leerstrategieë drie tipes van strategieë kan insluit, naamlik: kognitiewe strategieë (soos organisering en uitbreiding); metakognisie (strategieë om die proses van leer te monitor); en bestuur van bronne (strategieë om 'n effektiewe leeromgewing te skep, tydsbestuur, leerpoging en die aanvra van hulp).

Motivering is 'n belangrike veranderlike wat leer beïnvloed. Motivering omvat prosesse soos verwagtinge, selfdoeltreffendheid en attribusies. Motiveringsprosesse beïnvloed die leerder se denkprosesse positief of negatief. Hoë verwagtinge (wat die individu se oortuiging is dat strewes gekoppel word aan die individu se betrokkenheid by 'n spesifieke taak) motiveer die leerder om betrokke te raak by leertake terwyl lae verwagtinge van leerders aanleiding gee tot 'n lae vlak van betrokkenheid. Hoe meer suksesvol die individu is, hoe groter word sy/haar selfdoeltreffendheid om take uit te voer.

'n Leerder met positiewe selfdoeltreffendsoortuige kan bepaal of 'n leertaak suksesvol

uitgevoer is aldan nie. Hoë vlakke van selfdoeltreffendheid word bereik deur betrokke te raak by leeraktiwiteite en prestasie daarin te behaal. Leerders raak betrokke by spesifieke leeraktiwiteite omdat hulle hulself bevoeg ag om sekere leertake binne hulle vermoë te bemeester en hulle vermy sekere leeraktiwiteite omdat hulle dié aktiwiteite as bo hulle vermoë ervaar. Die vlakke van selfdoeltreffendheid by leerders beïnvloed die redes wat bygedra het vir leersukses en mislukkings.

Bydraende faktore wat as redes vir sukses of mislukking aangetoon word, is bepalend vir toekomstige akademiese prestasie. 'n Hoogs gemotiveerde leerder skryf mislukkings toe aan beheerbare, interne en onstabiele faktore wat in die pad gestaan het van verbetering. Daarteenoor skryf 'n minder gemotiveerde leerder mislukking toe aan stabiele faktore soos vermoë en beperkte geleenthede vir verbetering.

Die empiriese studie toon aan dat leerstrategieë 'n invloed uitoefen op die akademiese prestasie van leerders. Leerstrategieë soos geheue, opsomming en die skrywe van eksamen lewer 'n beduidende bydrae tot akademiese skoolprestasie.

CHAPTER 1

THE PROBLEM AND OVERVIEW OF THE STUDY

1.1. Introduction, statement of the problem and motivation

Education in South Africa is currently changing rapidly (Nixon, Martin, Ranson, & McKeown, 1996: 9).The term democracy has engulfed this country and with it came the challenge of introducing different approaches to education to ensure participation in a democratic society and improved performance at school level (Nolte, Heyns & Venter, 1997: 167). Cognitive potential, cognitive skills, thinking ability, and a well developed intellect are important aspects connected, not only with the participation in a democratic society, but also with achievement (Psi Monitor, 1990: 5).

Cognitive aspects are essentially important to strengthen children's orientation towards academic work, since cognitive processes are the means by which they make sense of their environment or process information into knowledge (Psi Monitor, 1990: 5). These cognitive aspects include, inter alia, intelligence, thinking skills and learning strategies. It is imperative that the cognitive potential of every child should be realised, but more so that of the child whose potential is underdeveloped due to cultural and educational deprivation, low socio-economic status as well as the ineffective or non-use of proper learning strategies.

The South African education system (particularly traditionally black schools) is sadly inadequate in its endeavour to promote thinking in learners and, eventually, autonomous learners. To a large extent this is due to socio-economic reasons.

The effective use of learning strategies can make learning more efficient and effective. This can be achieved through the combined use of cognitive strategies, such as rehearsal, elaboration and organization as well as metacognitive strategies, such as

planning, monitoring, evaluation and revision. Both Weinstein, Goetz & Alexander (1988: 316-325) and Pintrich (1989: 118) maintain that monitoring of working methods and organisation of learning help learners in the planning of their work which subsequently helps them to retrieve information rapidly. As a result learners also learn effectively which in turn influences their level of motivation and academic achievement.

Schunk (1991: 100) states that a learning strategy is a step-by-step plan that helps to improve the encoding process and consequently task performance. According to Derry (1990: 349) a learner could have a quantitative conception of learning where memorization takes place, or on the other hand, learn and come to an understanding of the subject matter. In either case, encoding is imperative. As increasing attention has been focussed on the role of the learner as an active participant in the teaching-learning situation, it is important that the learner be aware of his/her use of learning strategies of which the main goal is to affect the way in which the learner selects, acquires, organises, or integrates new knowledge as well as the learner's motivational state. It is clear that teachers rank learner motivation as one of the two main factors influencing the encoding processes (Winne & Marx, 1989: 223).

Since learning is viewed as an active process that occurs within the learner and which can be influenced by the learner, proper learning strategies should be used by the learner (Weinstein, 1987: 590). These learning strategies influence the encoding process as well as learner motivation and the learning outcome. In turn the learner can make effective judgements as to the task appropriateness of different strategies (Willouhby, Wood and Khan, 1994: 287).

How learning occurs has important implications for education (Schunk,1991: 7). Richards (1990: 43) found that many learners are either unaware of the use of learning strategies and/or don't know how to use them.

Although many extrinsic variables influence learning like the family, school environment socio-cultural factors and psychological disturbances, amongst others, (Mwamwenda,

1995: 516; Van den Aardweg & Van den Aardweg, 1988: 85) this study focusses on intrinsic variables situated in the learner himself/herself and on learning and motivational strategies in particular. These variables have been selected since research done (Schunk, 1991: 7; Mathebula, 1992: 34; Scott, 1991: 12; Richards, 1990: 43) has proven that these two variables can be manipulated in classroom learning to promote more effective learning and consequently also better academic achievement.

On the basis of the above argument the following question was addressed:
Is there a relation between learning strategies, motivation and academic achievement in Secondary School learners?

1.2. AIM OF THE STUDY

It was the purpose of this study to:

(i) determine the relationship between learning strategy use, motivation and the academic achievement of low achieving Black Secondary School learners;

(ii) determine the influence of a learning strategies programme on:
- the academic achievement and
- motivational level of low achieving Black Secondary School learners.

1.3. RESEARCH HYPOTHESES

To achieve the aims set in paragraph 1.2, the following hypotheses were investigated:

(i) Improved learning strategy usage will improve achievement in general, and in English in particular of low achieving Black Secondary learners.

(ii) There is a relationship between the level of learning strategy use, level of motivation and achievement in terms of Grade Point Average (GPA) of low achieving Black Secondary School learners.

(iii) A learning strategies programme has an influence on the academic achievement and motivational level of low achieving Black Secondary School learners.

(iv) Improved learning strategy usage will raise the level of motivation in low achieving Black Secondary School learners.

1.4. METHOD OF RESEARCH

A literature study and empirical investigation form the two sections of the research.

A DIALOG- search was performed with the following keywords: cognitive education, learning strategies, cognitive strategies, metacognitive strategies, motivation, self-efficacy and academic achievement.

A literature study was undertaken to come to grips with previous research done on learning strategies and motivation, as related areas that both influence academic achievement at Secondary School level.

An empirical investigation was undertaken to determine whether a learning strategies programme has an influence on low achieving Black Secondary School learners' motivation and Grade Point Average (GPA).

1.5. COURSE OF THE STUDY

Seeing that the aim of this study was to determine the level of influence of a learning strategies programme on learners' motivation and academic achievement, CHAPTER TWO discusses learning and learning strategies, as well as the influence of proper learning strategy use on motivation and academic achievement. In CHAPTER THREE motivation and the influence of motivation on learning as well as the relation between motivation, learning and academic achievement are discussed. To show exactly to what

extent a learning strategies programme influence low achieving learners' motivation and academic achievement, an empirical investigation was completed and is discussed in CHAPTER FOUR.

CHAPTER FIVE deals with the results of the empirical research, while CHAPTER SIX deals with the summary, deductions, implications and limitations.

CHAPTER 2

2. LEARNING AND INFORMATION PROCESSING

2.1 INTRODUCTION

There is no doubt that many students' academic problems may be reduced to problems with learning strategies and motivation (Lens, 1994: 3936), cognitive aspects like intelligence, aptitude and previous performance, self-regulated learning and metacognition, amongst others (Monteith, 1988: 23-26). Learning strategies and motivation are two of the most important variables which affect academic achievement (Monteith, 1994: 90; Brackney & Karabenick, 1995: 456, 460; Ames & Archer, 1988: 265).

According to Pintrich and Schunk (1996: 163) learning is mainly an information-processing activity whereby information of, for example, environmental events are transformed into symbolic representations. It is important to discuss learning and information processing since learners are viewed as active, constructive seekers and processors of information rather than as passive recipients of information (Pintrich & Schunk, 1996: v).

For learning to be effective the learner not only needs to know and understand which variables influence learning (Monteith, 1994: 90), but also has to know how to apply such knowledge. For independent and effective learning to take place the learner needs to have sufficient knowledge regarding metacognition, learning strategies, motivation as well as good management of that knowledge (Monteith, 1994: 90).

According to Brackney and Karabenick (1995: 456) there are two different approaches one can follow when dealing with learning: the product approach, which deals with WHAT to learn, and the process approach which focuses on HOW learners learn. The

process approach, amongst others, stresses the strategies learners can use to accomplish learning and is based on cognitive and information-processing models which in turn are based on the premise that learning is dependent on students' effective use of learning strategies (Brackney & Karabenick, 1995: 456). The choice for the more process oriented approach lies in the fact that learning is viewed as an active process that takes place within the learner and which can be influenced by the learner (Brackney & Karabenick, 1995: 456).

In the context of this study it is important to discuss learning and information processing since learners' inability to focus their attention on their work can cause them to struggle to learn (Purdie, Hattie & Douglas, 1996: 87). In other words, the three steps for the basis of all learning are the learner's ability to pay attention to a situation, storing detail in the short term memory (STM) and comparing the information in the STM with already existing information (Purdie *et al.*, 1996: 87).

If learners cannot remember what they see or hear for a relatively short period of time, they will also not remember it over a long period of time. In addition, they will find it difficult to understand information in any deeper way due to their inability to compare it with what they already know. In other words, without attention, memory and perception, learning will not be possible (Purdie *et al.*, 1998: 63).

In this chapter learning (par.2.2) will be discussed in terms of how it relates to information processing (par. 2.4), the role cognitive skills play in information processing and therefore also in learning. In addition components of the teaching-learning situation (par. 2.3) and the relationship between information processing, cognitive skills and learning strategies will also be discussed. Finally, what learning strategies entail (par 2.5), how metacognition relates to learning strategies and information processing (par. 2.5.2.2), how motivation relates to learning strategies and information processing (par. 2.6) and lastly the relation between learning strategies, motivation and academic achievement (par . 2.5.3) will also be discussed.

2.2 DEFINITION AND DESCRIPTION OF LEARNING

2.2.1 Definition of learning

According to Iran-Nejad (1990: 577) learning is defined as an increase in knowledge and the acquisition of facts and procedures which can be used in practice. A common feature to this view of learning is that it is essentially reproductive.

Learning is also defined as a process that involves not only the acquisition and modification of knowledge, but also strategies, skills, beliefs and behaviour at various stages of complexity (Schunk, 1991: 1). Additionally, learning involves behavioural change whereby the learner develops new behaviours or modifies existing ones through learning. Furthermore, the behavioural change takes place through practice or experience and endures over time (Schunk, 1991: 1-2).

Shuell (1988: 277; 1990a: 3) views learning as an active, constructive, cumulative and goal-oriented process. This implies that a learner has to process information actively. In Shuell's (1988: 278; 1990a: 4) description of the characteristics of learning, the active nature thereof has to do with the learners' involvement in activities such as goal-setting, planning and organisation of material, while at the same time processing incoming information in order to learn material in a meaningful way.

The constructive nature of learning means that new information must be elaborated and related to old or other information to enable the learners to retain simple information and understand complex material (Shuell, 1990a: 4).

The cumulative aspect of learning determines what and how much is learned in that new learning builds upon the learner's prior knowledge (Mofokeng, 1996: 23). According to Shuell (1990a: 4) the goal-oriented nature of learning has to do with the learner's awareness of the goal towards which he/she is working.

In summary, Iran-Nejad's view of learning relates to the product-oriented approach while Shuell and Schunk's views relate to the process-oriented approach (Iran-Nejad, 1990: 577; Shuell, 1990a: 3).

2.2.2 Approaches to learning

Two approaches to learning are distinguished namely a product-oriented and a process-oriented approach . While a product-oriented approach emphasises content, a process-oriented approach emphasises learning as an active, constructive, cumulative and goal-oriented process. Since learning is viewed in terms of a process-oriented approach, the learner's role changes from that of a passive recipient and memoriser of information to that of an active processor of information.

Learners very often show characteristics of both the product- (performance-oriented) and process- (learning-oriented) approaches even though differences between the two are noticeable. It is necessary and normal to show characteristics of both approaches since the approach will vary according to the learning task as well as the learning goal. For example, a learner will be more engaged in a task (approach to learning) such as making research notes for a science examination paper, if he/she has the goal of wanting to be admitted for further studies at an institution. The approach to learning will be systematic with a series of subgoals due to the type of learning task and learning goal. Learners with a goal tend to experience a sense of self-efficacy for attaining it and engage in activities they believe will lead to attainment (Pintrich & Schunk, 1996: 176). These activities include attending to instruction, rehearsing information to be remembered, expending effort, and persisting (Pintrich & Schunk, 1996: 176).

2.2.2.1 Bases for differentiating between learning approaches.

Two levels of information processing can be distinguished, namely surface and deep processing.

Shuell and Moran (1994: 3341) emphasise that surface processing of information and memorisation are stimulated by content-relevant goals and deep processing and understanding are stimulated by process-relevant goals. Furthermore, the learner's goal orientation directs his/her cognitive strategies and processes and subsequently stipulates how information is acquired, accessed, processed and organised. In addition, goal orientation also determines what the learning outcomes will be and how these outcomes will be used in performances (Shuell & Moran, 1994: 3341).

According to Monteith (1997: 35) the learner's learning approach stems from an interaction between the general orientations he/she displays across a particular learning situation on the one hand, and the task and situational demands on the other. For example, learning a list of vocabulary can be done at speed by means of a surface (product) approach. The learning outcome therefore becomes a complete reproduction of information (Monteith, 1997: 37). On the other hand, learners can, for example, use organisational strategies to organise information, and thus internalise large quantities of new word meanings, concepts and propositions with relatively little effort and few repetitions resulting in a deeper level of processing (Shuell & Moran, 1994: 3341).

A learner can, therefore, be both learning- and performance-oriented. This implies that he/she can sometimes apply surface processing and at other times deep processing.

2.2.2.2 A product-oriented approach to learning and motivation

A product-oriented approach leads to surface processing of information (Iran-Nejad, 1990: 577). It involves rehearsal designed to hold information in memory for immediate use (Hattie & Watkins, 1988: 345). Surface processing of information does not allow deep processing whereby the information may become part of the permanent store of information (Mofokeng, 1996: 27). Learners who hold a surface conception of learning believe that content should be memorised by paying attention to specific details so that detailed reproduction can occur at a later stage (Purdie, Hattie & Douglas, 1996: 88). On the same note, Scott (1991: 16) states that a product approach to learning essentially

concentrates on the memorising of learning content.

With a surface approach to learning, the learner is a passive receiver of information since teaching is aimed at the efficient transfer and evaluation of a set body of ready-made knowledge (Purdie *et al.*, 1996: 88). The learner is capable of absorbing and responding to the knowledge imparted by the teacher, but not capable of starting and sustaining learning without outside aid and control.(Scott, 1991: 16; Purdie *et al.*, 1996: 88).

One of the problems of a product-oriented approach is when the learner refers to the content of the learning tasks and links it to the type of questions likely to be asked by the teacher during task evaluation. The learner's level of performance would be determined by this. This results in verbatim memorisation of techniques and content, as well as selective learning and surface encoding or processing. In turn this leads to retention without understanding.

A product-oriented approach to learning can eventually lead to a fixed performance-orientation and a lack of development of critical thinking (Schmeck, 1988: 15-16). A product-oriented approach to learning therefore has limited value (Bullock, 1989: 159). It very often leads to retention of learning content which is a mere compilation of unrelated facts, principles and theories.

2.2.2.3 A process-oriented approach to learning and motivation

According to Monteith (1997: 26, 27) a process-oriented approach to learning and motivation is characterised by an active and constructivistic nature. The learner's cognitive processes of guided and independent inquiry result in knowledge formation. The selection, organisation, and integration of prior knowledge and new information give an indication of the level of processing (Mayer, 1989: 46). This is referred to as the HOW of learning. Miller, Alway and McKinley (1987: 399) state that deep processing of information results in better and more durable learning. Apart from the fact that deep processing determines how effectively the learner learns, it also determines how much

he/she learns and transfers to related problem-solving situations (Mayer, 1988: 53).

According to Scott (1991: 30) a social-cognitive approach to motivation is in agreement with a process-oriented approach to learning. On the same note, a process-oriented approach leads not only to cognitive, metacognitive and resource management strategies, but also to the evaluation of task value and difficulty level of a task, self-efficacy, attributions, social interactions and feedback which all relate to intrinsic motivation (Scott, 1991: 30).

The learner must become aware of his/her potential to interpret and evaluate his/her abilities. This is important since self-evaluation does not occur spontaneously. A process-oriented approach to learning also asks of the learner to have metacognitive knowledge and skills that he/she can use to analyse, structure, monitor, and sustain his/her mental and motivational processes (Monteith, 1997: 39).

In-depth processed information is likely to be retained more accurately than information processed in a shallow fashion (Monteith, 1997: 38). For example, in a recall test, items in a semantic condition (i.e. deep-processed items) can be recalled more accurately than items in a structural condition (i.e. shallow-processed items) (Monteith, 1997: 38).

A process-oriented approach to learning and motivation focuses on how the learner acquires and constructs knowledge through conceptual and procedural skills, learning strategies and motivational processes (Snow, 1989: 9). Learning and motivation are therefore both under the intrinsic control of the learner (Snow, 1989: 8-10). Snow (1989: 8-10) further states that the product of learning is influenced by aspects such as cognition and the integration of conative, affective and cognitive processes. Additionally, since the motivational orientation of the learner determines the self-initiated and motivated mastery of the learning task, motivation forms an intrinsic part of learning (Scott, 1991: 18).

Bullock (1989: 160) emphasises that a learner does not automatically develop a mastery-

orientation to learning. A learner must be taught to responsibly, actively and independently construct meaning from what he/she learns. Bandura (1989: 729) reiterates Bullock's (1989: 160) view that a learner must be helped to acquire a range of general and task-specific learning and motivational strategies which he/she, in turn, will use to search for, interpret, master, remember, and use new capabilities and knowledge.

According to Shuell and Moran (1994: 3341) the aim of a process-oriented approach is to develop those traits of the learner that will help him/her to become capable of inventive thought. The two approaches, namely the product- and process-oriented approaches, are therefore also related to the four components of learning, namely the instructional situation (which includes interactions between the teacher and his/her methods, and the learners and his/her learning and motivational characteristics), the learning process (i.e. information processing, learning strategies, metacognition and motivation), learning outcomes (including skills and knowledge) and learning performance in terms of achievement (Mayer, 1988: 14).

2.3 COMPONENTS OF THE TEACHING-LEARNING SITUATION

For learners to acquire and integrate most cognitive processing skills (including learning strategies), they need guided practice and feedback (Weinstein, Ridley, Dahl and Weber, 1988: 17). This acquisition and integration of skills take place during the teaching-learning situation which consists of components such as teacher-learner interaction, the learning task and learning outcomes. A brief description of these components will be given.

2.3.1 The instructional situation as it relates to teacher-learner interaction

2.3.1.1 Instruction and the teacher

Mayer (1988: 14) states that instruction refers to any sequence of events of which the

main aim is to help a person learn something.

The teacher's teaching approach has a profound influence on learning in that he/she constantly gives information (structuring), ask questions (soliciting), and provide feedback (reacting) (Bliss, Askew & Macrae, 1996: 41). The teaching method or instruction of the teacher and his/her general conduct or view or orientation to teaching are interrelated and is influenced by his/her level of self-efficacy. Without high self-efficacy and the tendency to attribute success and failure to their level of effort, both teachers and learners are unlikely to start or persist at strategic activities (Garner, 1990: 521). However, Schunk (1991: 8) states that instructional features alone cannot fully account for students' learning. The way learners mentally process information determines the *what* and *how* of learning (see par. 2.2.2).

2.3.1.2 Learner characteristics

Learner characteristics such as locus of control, self-efficacy and epistemological beliefs can affect the learner's motivation, behaviour and learning. These characteristics will be explained briefly to show how they influence learning outcomes.

2.3.1.2.1 Locus of control

According to Woolfolk (1995: 347) and Pintrich and Schunk (1996: 130) locus of control has to do with whether a cause of a learning outcome is perceived as being internal or external to the individual . External causes include task difficulty and luck whereas ability and effort are classified as internal causes (Woolfolk, 1995: 347). In a classroom setting, learners with an internal locus of control believe that their performance and grade depend on their own skills, effort and stability, whereas external control learners believe their grades are just a function of luck or other external factor (Pintrich & Schunk, 1996: 130). A learner's locus of control can influence or affect his/her motivation and subsequently learning (Pintrich & Schunk, 1996: 266). In other words,

learners are more motivated to exert effort and persist longer on academic tasks if they believe that they have control over their success or failure. On the other hand, learners who believe their actions have little effect on outcomes are less motivated (Pintrich & Schunk, 1996: 266).

2.3.1.2.2 Self-efficacy

Self-efficacy refers to an individual's judgments of his/her capability to organise and execute tasks (Monteith, 1988: 29; Bandalos, Yates & Thorndike-Christ, 1995: 612). Self-efficacy affects choice of activities, effort, and persistence (Pintrich & Schunk, 1996: 177), for example, learners who hold low self-efficacy for accomplishing a task may avoid it, while those who believe they are capable are likely to participate. In difficult circumstances those learners who are efficacious work harder and persist longer than those with doubts (Pintrich & Schunk, 1996: 177).

Cues and messages from parents, teachers and peers as well as levels of emotional arousal all contribute to judgments about one's efficacy. As learners observe goal progress, their self-efficacy is substantiated. This implies that they are becoming skilful (Pintrich & Schunk, 1996: 176).

A strong sense of self-efficacy, self-confidence and self-control influence the learner's motivation to learn positively and enable him/her to persist longer on tasks while low self-efficacy, self-confidence and self-control lead to doubts, avoidance techniques and lack of effort (Schunk, 1991: 121; Monteith, 1988: 29).

The learner's characteristics such as self-efficacy and control link to his/her motivation. Learners differ in their self-efficacy to acquire the knowledge and skills at the start of a learning activity (Pintrich & Schunk, 1996: 1770). While learners are working they are affected by personal factors (i.e. goal setting and information processing) and environmental factors (i.e. classroom rewards and teacher feedback). These factors

signal to learners how well they are learning and are also used by learners to appraise their self-efficacy for continued learning (Pintrich & Schunk, 1996: 177).

2.3.1.2.3 Epistemological beliefs

A learner's epistemological beliefs is an important variable that influences learning and more particularly, self-regulated learning (Monteith & Nieuwoudt, 2000:1). A learner-centred approach to learning implies that learners have to take responsibility for their own learning and make appropriate decisions regarding their own learning activities. Learners thus have to be more strategic and self-regulated in their own learning (Monteith & Nieuwoudt, 2000: 1).

Epistemological beliefs refer to students' beliefs about how knowledge is acquired, their theories and beliefs of knowledge and the way such epistemological beliefs influence their thinking and reasoning (Hofer & Pintrich, 1997: 88; Schommer, 1997: 153).

Students' epistemological beliefs can be differentiated into five dimensions of beliefs, namely certain knowledge (knowledge is unchanging), fixed ability (the ability to learn is unchangeable), simple knowledge (knowledge is best characterised as isolated facts), quick learning (learning occurs in a short amount of time or not-at-all) and omniscient authority (don't criticise authority) (Schommer & Dunnel, 1994: 208).

According to Schommer and Dunnel (1994: 207) one's beliefs about the nature of knowledge may influence the way in which one learns, solves problems, and makes inferences. For example, if students believe that problems are solved in only one way, they are unlikely to seek alternative solutions. If students believe knowledge is characterised as isolated facts, they are likely to memorise facts and neglect integrating information. Not only do a learner's beliefs about knowledge and learning affect his/her approach to learning, but also ultimately what will be learned and how it will be learned (Monteith & Nieuwoudt, 2000: 2). A learner's epistemological beliefs can thus be linked to the learner's perspective on the nature of and approach to learning.

2.3.2 The Learning Task

The learner evaluates his/her competence and skills in terms of the difficulty level and type of task to be performed. The difficulty level of the task is compared to the goal the learner wishes to achieve as well as the competence needed to master the task (Scott, 1991: 58). A decrease in motivation will result in feelings of hopelessness in terms of task performance.

2.3.3 Learning Outcomes

Different approaches to learning (see par. 2.2.2) lead to different learning outcomes (Watkins, 1988: 159). Mayer (1988: 16) states that differences in the learner's cognitive processing during learning can affect what is learned. The outcome of learning depends jointly on what information is presented and on how the learner processes that information.

How much is learned is affected by the amount of attention paid, the amount of rehearsal, and the strength of encoding (Mayer, 1988: 16). Internal connections that are built within the new information that was selected can be affected by rehearsal processes, which can in turn also influence the integration of new information with existing knowledge (Mayer, 1988: 16).The type of outcomes (knowledge and skills versus mere gathering of information), and consequently also academic achievement, are influenced by deep versus surface processing (compare paragraphs 2.2.2.2 and 2.2.2.3).

2.4 INFORMATION PROCESSING

Information processing influences learning in that learning is facilitated by making new information more meaningful to learners and relating it to what they already know (Schunk, 1991: 160). Information processing consists of, amongst others, the actual processing that occurs (cognitive learning strategies are used), and the controlling of the

processing (the so-called control processes or metacognitive processes are used here). Gagné, Yekovich and Yekovich (1993: 43) explain that the flow of information can be controlled by a control process in the human system and is generally organised around achieving some purpose.

2.4.1 The information processing model

According to Schunk (1991: 139) the human information system receives information, stores it in memory, and retrieves it when necessary. Three memory stores can be identified (see fig. 2.1): sensory memory, short-term memory (also called the working memory store) and long-term memory. The processing of information occurs through the flow of information through these three stores (Woolfolk, 1995: 244,245). The whole information processing system is operated by control processes that determine when and how information will flow through the system (Woolfolk, 1995: 243). Figure 2.1 is a schematic representation of a typical information processing model of memory.

2.4.1.1 The sensory memory or register (SM)

According to Schunk (1991: 140) information processing begins when a stimulus item (e.g. visual, auditory) impinges on one or more senses (e.g. hearing, sight, touch). The input is received by the sensory register which holds it for a short period in sensory form (Sprinthall, Sprinthall & Oja, 1994: 287). Perception takes place in the sensory register, which is the process of assigning meaning to a stimulus (see figure 2.1).

The sensory register is like an unending series of instant-camera snapshots which, when displayed, last for a short duration before fading away, but if recognised can be passed on into the short-term memory for attention which is a first control process (Biehler & Snowman, 1993: 382). Relevant information is selected (as a second control process) through a selective attention process and transferred to the short-term memory where it is held long enough for further attention (Woolfolk; 1990: 242; Gagné *et al.*, 1993: 40).

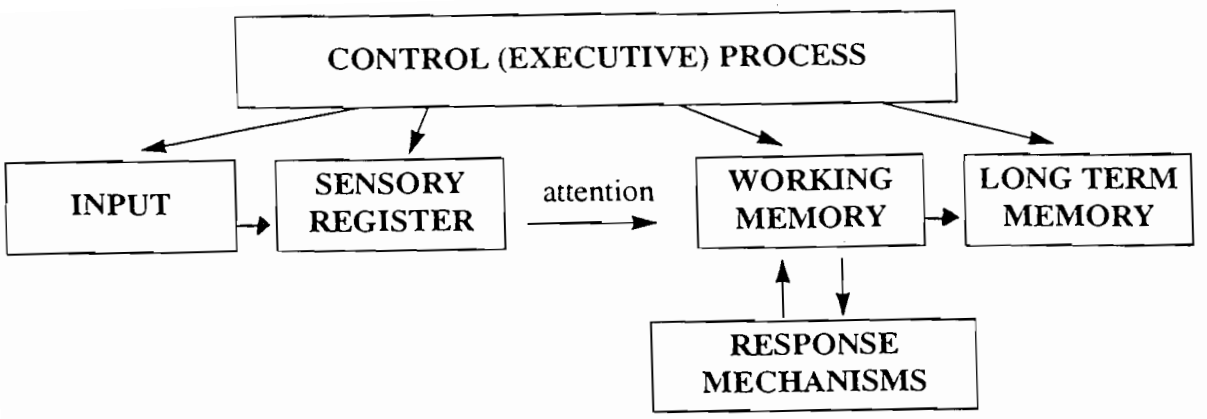

Figure 2.1. Information processing memory model (Gagnè *et al.*, 1993: 7).

The first step in learning is paying attention (Woolfolk, 1995: 246). If learners do not recognize or perceive something it cannot enter the sensory memory. Learner attention is influenced by several factors in the classroom (for example, eye-catching actions at the beginning of a lesson). Woolfolk (1995: 246) at the same time cautions that attention is a very limited resource. For example, an individual can pay attention to only one demanding task at a time.

2.4.1.2 Short-Term or Working Memory (STM or WM).

Information is transferred from the sensory memory to the short -term memory for further processing (Woolfolk, 1990: 236). Cognitive psychologists equate short-term memory with consciousness (Woolfolk, 1990: 237). Information lasts for only about twenty seconds in this memory store (Biehler & Snowman, 1993: 384).

Information is kept active in the short-term memory for further processing through rehearsal. Rehearsal involves the repetition of information to oneself (Biehler & Snowman, 1993: 384).The purpose of rehearsal is to provide time for processing or encoding information for later use (Biehler & Snowman, 1993: 384).

A distinction is made between two types of rehearsal, namely maintenance and elaborative rehearsal (Biehler & Snowman, 1993: 384). Where maintenance rehearsal refers to the rote rehearsal or repetition of information to hold it in the short-term memory for immediate use, elaborative rehearsal is a process that consciously relates new information to the knowledge already stored in the long-term memory (Biehler & Snowman, 1993: 384).

The short-term memory has a limited capacity for new information, for example, seven plus or minus two items or units of new information (Woolfolk, 1990: 237; Gagnè *et al.*, 1993: 41). The capacity of the STM is also affected by the complexity of the information to be processed. If the information as well as the way the information has to be processed (i.e chunking) is easy, the short-term memory increases its accommodation capacity, and if the information appears to be difficult, the STM decreases its accommodation capacity (Woolfolk, 1990: 237). The capacity of the STM can be enlarged through a process called chunking. Chunking is a process where individual bits of information are combined or organised to create more room for large amounts of information without exceeding the capacity of the short-term memory (Woolfolk, 1990: 237).

Short-term memory as a working memory (WM) corresponds to what one is aware of at a given moment (Schunk, 1991: 141). While information is in short-term memory, related knowledge in long-term memory is activated and placed in the STM to be integrated with the new information.

2.4.1.3 Long-Term Memory (LTM)

Long-term memory entails various processes or functions, namely transfer, encoding, storing and retrieval (Schunk, 1991: 9).

On the one hand transfer concerns how prior learning affects new learning (Schunk,

1991: 9) and on the other hand it can also be described as a process whereby selected information (i.e. visual images or verbal units) is transferred from the STM to the LTM through encoding processes (Woolfolk, 1990: 238). It also refers to knowledge being applied in new ways, situations or with different content (Schunk, 1991: 9).

In other words, transfer is a function of how information is coded in memory and occurs when learners understand how to apply knowledge in different contexts (Gagné *et al.*, 1993: 10-11; Schunk, 1991: 9).

Encoding of information deals with the addition of personal meaning to the new material to reflect the underlying relationship between new incoming information and already processed or prior knowledge (Shuell, 1988: 288).

Information apparently remains permanently in the LTM once it is stored there. Storage refers to a set of processes whereby integration of new and known information takes place in various ways (Gagné *et al.*, 1993: 42). Storing information involves how it is represented (i.e. through visual images) and how it is organized (i.e. through verbal units) (Woolfolk, 1990: 238).

Retrieval can be referred to as a set of processes that put information stored in LTM into a state in which it can be used for current processing (Gagné *et al.*, 1993: 42). For controlled processing, retrieval means becoming aware of the previously stored information. This process of re-establishing awareness is often referred to as activation. When information in LTM is required for use by an automatic process, it is retrieved by means of a pattern-matching process (Hamilton & Ghatala, 1994: 128; Gagnè *et al.*, 1993: 42).

The inability to retrieve information from memory is called forgetting (Schunk, 1991: 9). Forgetting something is thought to be due more often to a failure to find a good retrieval cue than to a loss of information from LTM. Forgetting may occur because of interference, memory loss, or inadequate cues to access information. Memory is very

important, hence the teacher's role to ensure that learners organize knowledge in memory for subsequent access and for relating it to other data previously acquired (Schunk, 1991: 9).

According to Schunk (1991: 127) information processing deals with the sequence and execution of cognitive events. Thus a learner needs to have cognitive abilities (such as learning strategies) to be able to engage in effective information processing.

2.5 LEARNING STRATEGIES

Recent research on student learning has taken a process-oriented perspective which is based on cognitive and information-processing models that depend on the premise that learning depends on learners' effective use of learning strategies (Brackney & Karabenick, 1995: 456).

2.5.1. Definition and description of learning strategies

Learning strategies are any set of cognitive and metacognitive operations used by a learner in order to facilitate the acquisition, storage, retrieval, or use of information (Brackney & Karabenick , 1995: 456).

Learning strategies are also defined as "the cognitive processes learners use to process information that enhances comprehension, to learn and to retain information as well as to integrate new information with existing knowledge" (Brackney & Karabenick, 1995: 456).

Pintrich (1989: 129) states that learning strategies may describe either cognitive or metacognitive activities. Much of the reported failure of learning strategies to transfer to new tasks can be attributed to the failure to combine metacognitive information with a cognitive approach to learning strategies. Furthermore, learners without metacognitive approaches are essentially learners without direction and ability to review their progress

as well as future learning directions (Pintrich, 1989: 129).

The purpose of learning strategies is to affect the way in which the learner selects, acquires, organises and integrates new knowledge with existing knowledge, i.e. information processing (Brackney & Karabenick, 1995: 456). Any of the following can be regarded as learning strategies: analysing and monitoring information during acquisition, focussing on selected aspects of new information, organising, evaluating the effectiveness of learning when it is completed, or elaborating on new information during the encoding process (Mathebula, 1992: 32).

2.5.2 Categories of learning strategies

Different categories of learning strategies are described by different researchers. An analysis of these categories reveals that the following learning strategies are common to most of the categories: cognitive strategies such as elaboration, rehearsal and organisation; metacognitive strategies such as planning, monitoring and regulating as well as resource management strategies such as the effective use of time and study environment, effort regulation, peer learning and help seeking (Brackney & Karabenick, 1995: 456; Mathebula, 1992: 34).

2.5.2.1 Cognitive strategies

A cognitive learning strategy is "a plan for orchestrating cognitive resources, such as attention and long-term memory, to help reach a learning goal" (Weinstein & Meyer, 1991: 17). Different types of cognitive strategies will now be briefly discussed.

Rehearsal Strategies

As far as information processing is concerned, the learner brings information into the short term or working memory (STM or WM) which shows that rehearsal is related to the attention and encoding components. According to Gagné *et al.* (1993: 52) a learner

receives information and keeps it in an active state for a brief period of time. By repeating the information over and over (maintenance rehearsal and elaborating on the information), active memory for information may be prolonged (Hamilton & Ghatala, 1994: 116).

Rehearsal strategies are more passive and are less likely to be beneficial for meaningful learning because it promotes surface learning which is designed to hold information in memory for immediate use (Pintrich & Johnson, 1990: 86).

Rehearsal strategies can be divided into basic rehearsal strategies and rehearsal strategies for complex tasks (Pintrich, 1989: 130). Naming items from a list to be learned can be classified as a basic rehearsal strategy. Basic rehearsal strategies are best used for simple tasks rather than the acquisition and integration of new information as is required for complex tasks (Pintrich, 1989: 130; Pintrich & Johnson; 1990: 87). Rehearsal strategies for complex tasks include strategies which are used by learners on a day to day basis for studying, for example, note taking as one reads as well as underlining (Mathebula, 1992: 35).

Elaboration Strategies

As far as information processing is concerned, elaboration facilitates retrieval in two ways. First elaboration makes alternate retrieval pathways possible along which activation can spread and second, it provides additional information from which answers can be constructed (Gagné *et al.*, 1993: 130). Elaboration on new information takes place in working memory, where elaborative rehearsal takes place and new information is connected with prior knowledge (encoding) (Derry, 1990: 352).

According to Gagné *et al.* (1993: 127) elaboration is the process of adding to the information being learned. Examples of such elaboration strategies include summarising, explaining, paraphrasing and creating analogies.

Elaboration strategies are also divided into strategies for basic and complex tasks. According to Monteith (1997: 74,75) elaboration strategies for basic learning tasks include paired-associate learning and the keyword method for acquiring foreign language vocabulary. Elaboration strategies for complex tasks help learners store information in long-term memory (LTM) by connecting new information with prior knowledge (Monteith, 1997: 76). For example, a learner may present the content of a passage in his/her own words (paraphrasing) or present the passage in fewer words (summarising).

Organisational Strategies

According to Gagné *et al.* (1993: 135) and Hamilton and Ghatala (1994: 119) organisation is "the process of dividing an information set into subsets and indicating the relationship among the subsets."

Organisational strategies for basic tasks include listing items or grouping them into categories. A learner should be actively involved in a task of categorising a list of items, for example, snake, dinosaur, bed, table and crocodile. Such a list could be listed as : bed, table; snake, dinosaur and crocodile.

According to Pintrich (1989: 131) organisational strategies for complex tasks help the learner select appropriate information and construct connections within the information to be learned. Examples of organisational strategies are networking, text mapping, outlining and forming hierarchies (Pintrich, 1989: 131).

Learning strategies thus include a wide variety of cognitive processes and behavioural skills (Weinstein & Meyer, 1991: 19). The three categories of strategies (rehearsal, elaboration and organisation) are linked to information processing. Effective rehearsal strategies are used in the acquisition of basic knowledge and could be considered a first step in the creation of more extensive, integrated knowledge in an area.

Organisation strategies on the other hand, require the transformation of information into another form. The purpose here is to help create added meaning to the information, so that it can move into long-term memory more effectively (Weinstein & Meyer, 1991: 20).

2.5.2.2 Metacognitive Strategies

Metacognitive learning strategies are generally applicable to a variety of learning tasks and include knowledge about cognition as well as regulation of cognition or planning, monitoring and evaluating a learning activity.

Metacognitive strategies refer to the control component of metacognition which is the same as the so-called control processes referred to in information processing (Gagné *et al.*, 1993: 43) (also see par. 2.4). The purpose of metacognitive strategies in terms of information-processing is to control the cognitive processes so that the learner can make certain that he/she really understands and remembers the learning content and skills (Gagné *et al.*, 1993: 43).

Examples of metacognitive strategies are directed attention, or consciously directing one's own attention to the learning task (Paris & Winograd, 1990: 22). In addition, it includes self-evaluation or appraising the success and difficulties in one's learning effort (Paris & Winograd, 1990: 22). The extensive use of metacognitive strategies by learners suggest that there is considerable reflection on learning and the use of learning strategies (Derry, 1990: 349). Furthermore, learners can cope better with a variety of learning situations if they possess enough knowledge about learning strategies and their uses. Planning, monitoring and evaluating are metacognitive strategies.

Planning Strategies

Planning refers to metacognitive processes which include goal-setting, generating questions and doing task analysis of the problem to be solved or the task to be completed (Pintrich, 1989: 132). Planning strategies entail a learner's attempts to set goals for

himself/herself when studying (Pintrich & Johnson, 1990: 88), generating questions before reading the text, skimming and doing a task analysis of the problem (Pintrich, 1989: 132). A learner not only plans a learning activity, but also analyses his/her ability to learn, the demands of the learning task, the available strategies to be used for the learning task, as well as the effectiveness of the available strategies (Monteith, 1994: 91). On the basis of this knowledge the learner plans how he/she will attempt the learning task, how he/she will manage the available time and how much he/she should involve himself/herself to effectively completing the learning task.

Learners plan their use of strategies with the help of these activities to facilitate the processing of information and activate relevant aspects of prior knowledge that make organising and comprehending the material easier (Pintrich & Johnson, 1990: 86). Effective and competent learners engage themselves in more planning than poor learners (Paris & Winograd, 1990: 29; Pintrich, 1989: 132).

Monitoring and Evaluation

According to Mathebula (1992: 37) an essential aspect of metacognition is the use of monitoring strategies. Monitoring strategies include tracking one's attention as one reads, use of test-taking strategies and monitoring comprehension. According to Pintrich (1989: 133) these various monitoring activities help the learner to understand the material as well as integrate it with prior knowledge.

Monitoring also entails measures or steps that learners take to evaluate their own understanding or progress towards goal attainment (Montague, 1997: 168). According to Hamilton and Ghatala (1994: 136) information gained through monitoring progress on a task can become a permanent part of the learner's knowledge of strategies. Monitoring thus results in two important outcomes whereby firstly the use of a particular strategy can be continued, stopped or changed in light of its consequences and, secondly, monitoring can add knowledge to long-term memory concerning how to use a strategy and the benefits gained from it (Hamilton & Ghatala, 1994: 136).

An indication that monitoring strategies are related to self-regulating strategies is a situation whereby learners can regulate their reading speed as a means of adjusting to the difficulty of the material (Pintrich, 1989: 133). Self-regulating activities, such as re-reading portions of a text and reviewing material, are assumed to improve performance by helping learners to check and correct their behaviour as they proceed with a task (Pintrich, 1989: 133).

Evaluation is also a form of monitoring (Monteith, 1994: 91) whereby learners evaluate the effectiveness of their strategic actions. Self-regulation activities are related to evaluation or monitoring activities because, as learners monitor their comprehension of the text, they can regulate their reading speed to adjust to the difficulty of the material (Pintrich, 1989: 133).

2.5.2.3 Resource Management Strategies

Resource management strategies assist learners in managing their learning environment and the resources available (Pintrich, 1989: 133). Resource management strategies also include affective or motivational strategies to help create and maintain climates for learning (Pintrich & Johnson, 1990: 88). The following resource management strategies will be discussed briefly: effort management, help seeking, time management and study environment.

Effort Management

Effort management refers to learners' persistence at difficult or boring tasks and working diligently until they finish their learning tasks. Thus an effective learner may continue working until he/she finishes the learning task even if the study material is dull and uninteresting (Pintrich & De Groot, 1990: 35).

According to Mathebula (1992: 40) effort management is one of the most important learning strategies and is further described as an interaction between motivation and cognition. A good learner knows when to increase effort and persist on the task.

The value component of learners' motivation and their beliefs about the importance and interest in the learning task influence effective effort management (Pintrich & De Groot, 1990: 34; Pintrich, 1989: 135). Learners with a motivational orientation that involves goals of mastery, learning, and positive beliefs about a learning task, will persist longer at difficult tasks than learners who do not believe that they can perform the task, or who have negative goal orientation (Pintrich & De Groot, 1990: 34).

Help Seeking

Effective learners are able to identify someone to provide some assistance when they realise they don't know something (Pintrich, 1989: 134). In other words, an important aspect of the environment that a learner has to manage is the support of others. According to Mathebula (1992: 39) it is important for the learner to know when and how to seek and obtain support from other learners, their teachers, or their parents (White, 1994: 5545).

Learners who attribute their poor performance to low effort and a lack of subject or domain specific knowledge, rather than a general ability deficit, are more likely to seek help than those learners who attribute their poor performance to examination difficulty, the instructor or lack of interest (Mathebula, 1992: 39). It is for this reason that Pintrich (1989: 135) contends that learners' help-seeking behaviour is related to motivational patterns.

Learners' academic performance is improved while their learning is enhanced due to appropriate help seeking (White, 1994: 5545). Help involves social interaction which enables learners to act on a higher level of cognition.

Time Management

Mathebula (1992: 38) states that there are different ways of time management varying from managing an evening of studying to monthly and weekly scheduling. It is useful for learners to have a weekly schedule for studying in a quest to help them organise their time.

According to White (1994: 5545) time management is an important self-management activity in studying. Time management needs to be flexible enough to give learners ample time for example, to prepare themselves for mid-term and final examinations without losing sight of other activities which are still to be carried out before the examination (Weinstein, 1988: 309; Pintrich, 1989: 133). Learners may, for example employ a workbook to specify their long- and short-term goals, and schedule their time appropriately, then monitor their progress in achieving those goals.

Monteith's (1997: 86) view is that time management has to do with time that learners may assign to review their study material to achieve their learning goals. Review sessions involved in time management offer an immediate feedback on the strengths and weaknesses of learning activities, thereby giving learners an opportunity to alter their learning and study strategies if those employed do not bring success (Monteith, 1997: 86). Time management allows continuous monitoring of learning events and thus produces higher levels of achievement because it conveys information about how instructional events occur (Pintrich, 1989: 133).

Study Environment

A proper study environment must be managed effectively as a resource to increase learning opportunities (Pintrich, 1989: 134; Mathebula, 1992: 39). The study environment should be free of distractions and can include a variety of settings such as the library, study hall or kitchen table (Pintrich, 1989: 134; Woolfolk, 1995: 390). It is not possible to have quality engagement in studying when there are distractions like loud

music or television. Furthermore, the study environment should be organised in such a way as to increase attention (Pintrich, 1989: 134).

2.5.2.4 Summary

Pintrich and Johnson (1990: 88,89) purport that all three types of strategies, namely cognitive, metacognitive and resource management strategies are equally important. As far as learners are concerned, these strategies can serve to increase awareness of the use of different learning strategies as well as the motivation for using them. By using these strategies, feedback can be provided to learners on their relative levels of motivation and cognition and can thus motivate them to seek formal or informal help to improve their learning (Pintrich & Johnson, 1990: 89).

2.5.3 The relation between learning strategies, motivation, and academic achievement.

According to Weinstein and Meyer (1991: 19) effective and efficient learning in the classroom is influenced by learners' knowledge about what learning strategies to select and use. Once learners become aware of the effectiveness of a learning strategy, they tend to use it more often when accomplishing tasks related to the use of that strategy (Mofokeng, 1996: 39). Furthermore, items are remembered much better if they are processed with an effective learning strategy, than items processed with an ineffective learning strategy.

Mathebula (1992: 41) maintains that learning strategies are used by the learner to motivate himself/herself, to engage in cognitive activities, like information processing as well as to control his/her cognitive activities. If a learner wants to improve his/her academic achievement, he/she should select appropriate learning strategies for a learning task, for example using repetition strategies by rereading the difficult part until the goal is achieved (Mathebula, 1992: 41).

According to Woolfolk (1995: 391) learning strategies also influence motivation (see chapter 3). The strategies to encourage motivation to learn include: the fulfilment of basic requirements (an organised class environment, a supportive teacher, challenging work and worthwhile tasks), building confidence and positive expectations (clear learning goals, work on learners' level, stress self-comparison instead of competition, stress that academic ability is improvable and model good problem-solving), show the value of learning (link activities to learners' interests, arouse curiosity, provide opportunities to respond and to create a finished product, avoid heavy emphasis on grading, model motivation and teach learning tactics). According to Woolfolk (1995: 391) these strategies refer to the entire list to encourage motivation and thoughtful learning.

Learners should select appropriate learning strategies for a particular learning task and apply them to improve their academic achievement (Garner, 1990: 518). Thus knowledge regarding learning processes is essential because it explains successes in learning and as a result may help to alleviate or prevent failures.

Ames and Archer (1988: 260) and Garner (1990: 518) stress the importance for learners to develop ways of thinking and strategies that can help them to process information, plan study activities, monitor their attention, and sustain a motivation for learning. Learners' use of learning strategies may be related to whether they adopt a mastery goal orientation (entails effort, learning, process of learning and progress) or performance goals orientation (entails high grades and own performance relative to others') in the classroom (Ames & Archer, 1988: 261).

The use of effective learning strategies is more evident among those learners who have high assessments of their ability (Ames & Archer, 1988: 261). How learners approach tasks, engage in the process of learning, and respond to the situation may be related to their own perceived ability as well as to the perceived goals of the environment. Thus it seems as if the use of more types of learning strategies and metacognitive learning strategies influence initial motivation to choose a task, initiate the task, maintain the task

performance until it is completed (despite difficulties), and evaluate the completed task to ascertain that it has been correctly performed.

If a learner, for example, ascribes low achievement in a test to an incorrect learning strategy, too little time spent on preparation or that a specific question was answered incorrectly because of bad planning, he/she will still feel that he/she is in charge of the situation. The learner will also still be motivated to perform better in future because he/she is able to use another learning strategy (Monteith, 1994: 92). It is thus important that the learner should be aware of the variables that influence his/her learning and motivation, of which learning strategies form a part.

2.5.4 Conclusion

The use of cognitive, metacognitive and resource-management strategies are predictors of achievement as they are influential through their relation with effort (Pokay & Blumenfeld, 1990: 42). The relation between motivation (including self-concept, expectancies, and value placed on the subject matter) and use of learning strategies (including cognitive, metacognitive, and effort management) and the influence it has on academic achievement is the main focus of this study. Thus, motivation which is consonant with a process-oriented approach to learning (Pintrich, 1988: 66) will be discussed in chapter 3 in more detail.

The learning strategies selected for the empirical research include memory, summaries and test taking. These strategies were chosen specifically to show to what extent the effective use thereof can influence motivation and GPA as well as make learning more efficient and effective.

CHAPTER 3

3. THE RELATIONSHIP BETWEEN MOTIVATION AND LEARNING

3.1 INTRODUCTION

The role of motivation during learning is important for learning (Pintrich & Schunk, 1996: 5; Nixon *et al.*, 1996: 16). Motivation exercises an influence on what, when and how learners learn (Pintrich & Schunk, 1996: 6; Lens, 1994: 3936). Learners who are motivated to learn are likely to engage in activities they believe will help them learn. In contrast, learners who are unmotivated to learn are normally not systematic in their learning effort (Pintrich & Schunk, 1996: 6).

According to Gagné *et al.* (1993: 426) motivation is that which gives direction and intensity to behaviour. As Lens (1994: 3936) puts it "motivation is an important determinant of learning and its outcomes as expressed in academic performances." Thus, the extent to which learners will actively involve themselves in learning is determined by their level of motivation (Oxford & Nyikos, 1989: 295). Learners who are highly motivated use a variety of strategies which will lead to more successful learning. Scott (1991: 30) maintains that learners' ability to develop strategies for enhancing intrinsic motivation depends highly on their level of self-efficacy, self-evaluation, goal-orientation and attributions to his/her motivation to learn.

There is a significant relationship between learners' motivation to learn and their use of learning strategies that are, in turn, related to academic performance. Whether these strategies are used depends not only on learners' strategic knowledge about these strategies, but also on their motivation to use them. If, for example, a learner possesses comprehension monitoring skills, but have little desire to master the material, he/she may not use those skills (Brackney & Karabenick, 1995: 456).

The importance of illustrating the relationship between motivation and learning in this section lies in the belief that students are more likely to want to learn if they believe they will succeed if they apply reasonable effort. Pintrich and Schunk (1996: 6) state that considerable disagreement exists about what processes are involved in motivation. In addition, disagreement also exists on how those processes which are involved operate, how motivation can be enhanced and sustained and very importantly, how motivation relates to learning and achievement (Pintrich & Schunk, 1996: v). The disagreement occurs due to various approaches to motivation. Whereas a behaviouristic approach perceives motivation as something that is externally instigated (Gagné *et al.*, 1993: 427) and concentrates on the role of the teacher, a social cognitive approach perceives motivation to be intrinsic if it is to have any enduring influence on learning (Gagné *et al.*, 1993: 427). Due to different approaches motivation can thus be described in various ways.

In this chapter the following aspects of motivation will be addressed: definitions and description of motivation (par. 3.2), a social cognitive approach to learning motivation (par. 3.3),variables that influence learning (par. 3.4), and variables that influence motivation (par. 3.5). These aspects are singled out to illustrate how motivation can influence *what, when*, and *how* we learn.

3.2 DESCRIPTION OF LEARNING MOTIVATION

3.2.1 Definitions and description of learning motivation

Motivation is generally defined as an internal state that arouses, directs and maintain behaviour (Woolfolk, 1995: 338). Motivation is also referred to as the process of instigating and sustaining goal-directed behaviour (Schunk, 1996: 284; Pintrich & Schunk, 1996: 4). There is a distinction between motivation to learn and achievement motivation. According to Schunk (1996: 292, 313) achievement motivation refers to the striving to perform difficult tasks as well as possible, while motivated learning refers to

motivation to acquire skills and strategies to perform tasks. Achievement motivation is described as the individual's striving for excellence in a field for the sake of achieving well and is thus extrinsic of nature (Woolfolk, 1995: 338-342) but could also be intrinsic of nature when the individual enjoys an activity (affective aspect). Motivation to learn, on the other hand, means working towards learning, not performance, and staying intrinsically focussed on the task at hand (Woolfolk, 1995: 338-342).

Motivation to learn can also be described as a student's tendency to try to derive academic benefits from meaningful and worthwhile academic activities (Woolfolk, 1995: 336). Elements such as planning, concentration on the goal, metacognitive awareness of what one intends to learn and how one intends to learn, the active search for new information, clear feedback perceptions, pride and satisfaction in achievement and a lack of anxiety or fear of failure, form the elements of motivation to learn (Woolfolk, 1995: 336). Due to different approaches (also see par. 3.1) motivation can be described in various ways such as intrinsic and extrinsic motivation.

3.2.2 Intrinsic versus extrinsic learning motivation

Learners are extrinsically motivated when a task or an activity is done for the sake of material rewards and intrinsically motivated when learning and performing at school are goals in themselves (Lens, 1994: 3938). Learning motivation is not only influenced or determined by intrinsic variables situated in the learner (such as self-evaluation, needs, interests and personality characteristics) however, but also by extrinsic classroom-related variables, such as social pressure, rewards and punishment (Woolfolk, 1995: 339). If for example a classroom is a fearful place, students will be more concerned with security and less with learning.

It is important, however, to stress the important role of extrinsic motivation for learning and its interaction with the various types of intrinsic motivation (Lens, 1994: 3942).

A student, for example, who is only motivated by intrinsic concerns (such as interest in the subject matter) and repeatedly receive intrinsic rewards may ultimately perceive those rewards to be the external reasons for learning (Lens, 1994: 3941). The reason why this is the case will be discussed briefly in paragraphs 3.2.2.1 and 3.2.2.2.

3.2.2.1 *Intrinsic motivation*

Intrinsic motivation according to Pintrich and Schunk (1996: 257) refers to motivation to engage in an activity for its own sake. In other words, students who are intrinsically motivated engage in tasks because they find them enjoyable, interesting or worthwhile. Woolfolk (1995: 332) concurs by referring to intrinsic motivation as motivation associated with activities that have their own reward. According to Lens (1994: 3938) intrinsic motivation is the natural tendency to pursue personal interests and exercise capabilities and in doing so, seek out and conquer challenges. In other words, children are intrinsically motivated when learning and performing at school are goals in themselves.

Pintrich and Schunk (1996: 258) outline the relation between intrinsic motivation and learning by describing students who are intrinsically motivated as engaging in activities that enhance learning. These students attend to instruction, rehearse new information, organise knowledge and relate it to previously acquired knowledge, and apply skills and knowledge in different contexts. Intrinsic motivation thus promotes deep information processing (see par. 2.2.2).

In turn, learning promotes intrinsic motivation. This is accomplished as students develop skills and feel more efficacious about learning (Pintrich & Schunk, 1996: 258). This view is also shared by Bandura (1993: 117-148) who maintains that heightened self-efficacy and positive outcome expectations raise intrinsic motivation and lead to further learning.

3.2.2.2 Extrinsic motivation

Whereas an intrinsically motivated student sees learning as a goal in itself, an extrinsically motivated student sees learning as a means to a goal (the goal being recognition by others or social acceptance) (Woolfolk, 1995: 338,339).

Extrinsic motivation is motivation created by external factors such as rewards and punishments (Woolfolk, 1995: 332). If an individual does something in order to earn a grade or reward, avoid punishment, please the teacher, or for reasons that have nothing to do with the task itself, he/she experiences extrinsic motivation (Lens, 1994: 3938; Pintrich & Schunk, 1996: 258). The learner is not really interested in the activity for its own sake but cares only about what it will gain him.

Extrinsic motivation relates to the so-called behavioural theories of learning and motivation, whereas intrinsic motivation relates to the cognitive and social cognitive theories of learning and motivation. Behavioural theories relate to a product-oriented approach, whereas social cognitive theories relate to a process-oriented approach (see par. 2.2.2).

In the next section, attention will be given to the social cognitive approach to motivation. Apart from other things, this approach also focusses on intrinsic motivation.

3.3 A SOCIAL COGNITIVE APPROACH TO LEARNING MOTIVATION

According to the product perspective motivation is something that you have. Motivation is then seen as a more or less stable, inborn or acquired, fixed personality trait (Lens, 1994: 3936, 3937). A social cognitive approach to learning motivation is singled out since it describes motivation from a process-oriented perspective (Lens, 1994: 3936, 3937).

At the heart of Bandura's (1986: 391) social cognitive theory is the premise that human

functioning can be viewed as a series of reciprocal interactions between behaviour, environmental variables, and cognitions, as well as other personal factors such as emotions. A social cognitive approach thus implies that motivation is cognitive by nature and is influenced by the social environment.

The terms "cognitive" and "social" can be conceptualised by relating the student's thinking and beliefs to social influences (Schunk, 1991: 87). According to Ainley (1993: 395) students bring to the contexts a personal construction of the purposes of their learning and a set of beliefs about themselves as learners. These beliefs have a powerful influence on learning.

Since learning takes effort, time and motivation, individuals do not learn as effectively without it (Nixon *et al.*, 1996: 52). Learners must therefore also have a sense that learning has a purpose and want to take responsibility for achieving the ends involved in the learning process. Internal to the purpose of learning is thus the motivation to learn and the rewards thereof are intrinsic to the process (Nixon *et al.*, 1996: 52).

According to the process perspective motivation is seen as a psychological process in which personality factors (such as needs, motives and abilities) interact with the environment. There is an interaction between characteristics of the individual such as abilities, temperament, self-evaluation, self-efficacy, goal-orientation and attributions and aspects from the environment such as instructional design (knowledge of learning objectives, opportunities for exercise, feedback, interest, variation in teaching methods and rewards), social climate, influence of peers and the teacher as model (Lens, 1994: 3937).

3.4 VARIABLES THAT INFLUENCE LEARNING

All aspects of the teaching-learning situation like instruction, motivation, learning strategies and metacognition influence academic achievement. In as far as teaching in interaction with motivation is concerned, Woolfolk (1995: 336) and Gagné *et al.* (1993:

426) agree that teachers are concerned about developing a particular kind of motivation in their learners, that is, the motivation to learn. The motivation to learn refers to the acquisition of skills and strategies rather than to perform tasks (Pintrich & Schunk, 1996: 177).

Bandura (1993: 136) states that the long-term goal of teachers is to develop in learners the characteristics of being motivated to learn so that they will eventually be able to educate themselves throughout their life time. The elements that make up the motivation to learn include planning, concentration on the goal, metacognitive awareness of what one intends to learn and how one intends to learn it, the active search for new information, clear perceptions of feedback, pride and satisfaction in achievement, and no fear of failure (Woolfolk, 1995: 336).

The teacher's purpose of instruction is to teach learners the necessary skills and strategies to enable them to master different types of learning tasks, and to become intrinsically motivated to perform tasks more independently. The teacher has to teach *how goals* (see fig. 3.1) which include how to get information, process, learn, understand and remember that information as well as how to become and stay motivated in terms of *what goals* (which include what to learn, know and do with what you have learnt).

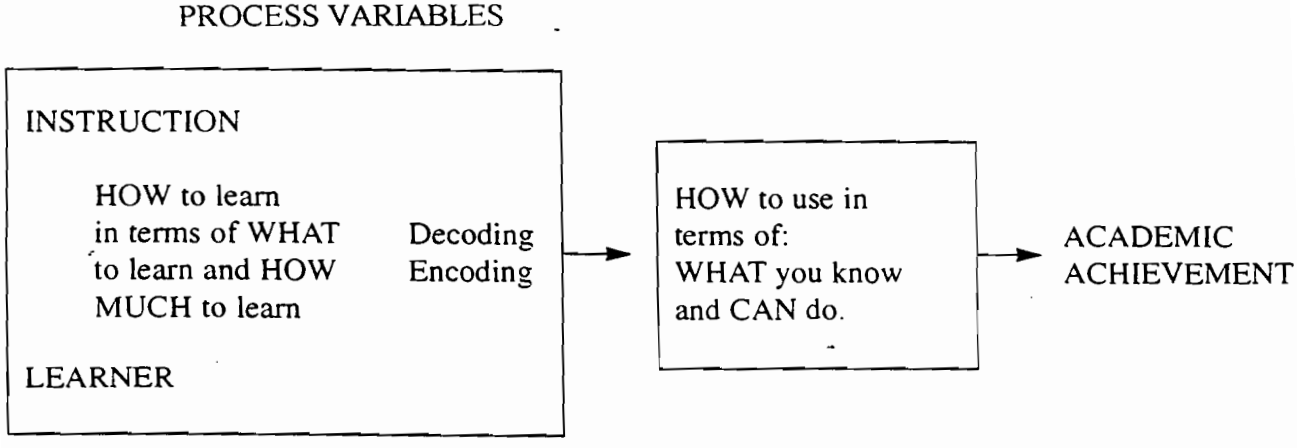

Figure 3.1: Learning-from-instruction (Scott, 1991: 22)

How learning occurs has important implications for academic achievement. According to Scott (1991: 42) self-efficacy, attributional beliefs and goal-orientation directly influence motivation. Furthermore, emphasising control over conceptions of ability and learning goals implies that competence as well as ability can be increased (Scott, 1991: 43).

Learners can be taught to take control of learning through developing learning-directed goals and enhancing self-efficacy beliefs. The learner will become self-motivated which in turn has implications (i.e. high expectancies for success and value of the task) for academic achievement.

Metacognition (see par. 2.5.2.2) and learning strategies also influence academic achievement. According to Paris and Winograd (1990: 22) metacognition refers to the learner's metacognitive knowledge of the variables that influences his/her learning and motivation and control (see par. 2.5.2.2) over these variables. Metacognitive knowledge refers to the learners' own knowledge regarding the general characteristics of learners as well as their own characteristics (such as abilities and beliefs of self-efficacy), of general and specific learning strategies, and of task characteristics (such as structure, goals, effort, prior knowledge and perseverance) (Paris & Winograd, 1990: 22). Metacognition enables the learner to consciously monitor and control learning and subsequently to manage his/her own learning (Paris & Winograd, 1990: 22).

According to Weinstein and Meyer (1991: 17) learning strategies (see par. 2.5) are behaviours that are aimed at helping learners to acquire new information and evaluate their learning tasks. Learning strategies can therefore help influence the ways in which learners study new material, process information, and improve the planning, execution, and organisation of their learning tasks for better performance (Weinstein & Meyer, 1991: 17).

Instruction, motivation, learning strategies as well as metacognition thus all influence academic achievement. This is an indication that academic achievement is influenced

by all aspects of the teaching-learning process.

Hofer and Pintrich (1997: 117) suggest that the construct of epistemological beliefs be limited to learners' beliefs about the nature of knowledge and the process of learning. With regard to the nature of knowledge Hofer and Pintrich (1997: 120) found that, in terms of the lower levels of the different epistemological models, knowledge emanate as a result of an external authority (i.e. teacher). On the other end of the continuum is the view that knowledge is constructed through interaction with others; that the learner can actively derive meaning (Hofer & Pintrich, 1997: 120). The justification of knowledge includes how learners evaluate knowledge, handle results, their use of authority figures and how they evaluate teachers (Hofer & Pintrich, 1997: 120).

The relation between epistemological beliefs, the use of learning strategies and academic achievement indicate that the belief that learning is quick is related to simplified conclusions, low test results and high self-efficacy (Hofer & Pintrich, 1997: 108). In addition it also indicates that learners who believe that knowledge is certain, are more inclined to make definite conclusions; and that high self-efficacy and academic achievement correlate negatively to a naive perception of learning (Hofer & Pintrich, 1997: 108).

Epistemological beliefs indirectly influence the learner's use of learning strategies (Hofer & Pintrich, 1997: 128). Epistemological beliefs can function as a standard against which learning can be evaluated. If the learner, for example, believes that knowledge is simple, there is no reason why deep processing should take place by the use of learning strategies such as elaboration and organisation (Hofer & Pintrich, 1997: 128). For surface processing a learning strategy such as memorisation would suffice. Research has shown that self-regulated learners should have a criteria or goal against which they could evaluate their progress. The goal serve as guide line for the implementation of cognitive or metacognitive strategies (Hofer & Pintrich, 1997: 128).

3.5 VARIABLES THAT INFLUENCE MOTIVATION

Motivation is that which gives direction and intensity to behaviour (Gagné *et al.*, 1993: 426). Motivational behaviour in achievement situations is strongly influenced by self-efficacy perceptions, goal-orientation, attributional beliefs, values and self-evaluation (Gagné *et al.*, 1993: 438; Pintrich & Schunk, 1990: 33; Monteith, 1990: 455). These variables of motivation (self-efficacy, attributions, goal-orientation and self-evaluation) will be discussed briefly.

3.5.1 Self-efficacy

Self-efficacy is an important variable in understanding motivated learning and enables one to explain a student's use of learning strategies and motivation to learn. High self-efficacy stimulates effort and persistence when problems are encountered (Monteith, 1997: 49), while low self-efficacy leads to avoidance techniques and lack of effort (Brackney & Karabenick, 1995: 457; Schunk 1991b: 121; Woolfolk, 1995: 352).

Self-efficacy is defined as a student's personal beliefs about his capabilities to organise and implement actions necessary to attain designated performance levels or goals (Schunk, 1994a: 3). Scott (1991: 33) defines self-efficacy as the student's beliefs of what he can do with whatever skills he has and involves perceptions of competence.

These definitions take on a motivational position by learners that is strengthened by ongoing self-perceptions of efficacy when specific tasks are performed. Self-efficacy is not concerned with the skill one has, but with the judgement of what one can achieve with whatever skills one possesses (Monteith, 1997: 95).

Perceived self-efficacy deals with the judgement of one's capability to perform given tasks, whereas outcome expectations are concerned with what will result from such actions or activities. For example, the belief that one can swim across a deep river is an efficacy judgement, but the anticipated social recognition, applause, and self-satisfaction

resulting from such a performance will constitute the outcome expectations. An outcome is thus the result of an act and not the act itself. One's expectations for succeeding or failing at a particular task will be influenced by one's sense of self-efficacy in that area (Woolfolk, 1995: 351).

Students' choice of learning tasks or behavioural settings are influenced by efficacy judgements. If students believe that threatening situations exceed their coping skills they tend to avoid such situations and instead become involved in activities they are capable of controlling (Monteith, 1997: 96).

Efficacy judgements determine the amount of effort an individual will expend and the time it takes for him to persist in difficult situations (Schunk, 1988: 23). Effort is slackened by students who seriously doubt their capabilities, or give up altogether when facing difficulties, whereas high self-efficacious students exert greater effort and persist longer to master the challenge (Czerniak & Chiarelott, 1990: 49-50; Monteith, 1997: 96).

When efficacy judgements are combined with appropriate skills and adequate incentives they are likely to produce positive outcomes because these factors help sustain effort in dealing with stressful situations (Monteith, 1997: 96).

Students note their progress towards learning goals as they work on their learning tasks and subsequently their self-efficacy for continued learning is enhanced. Thus students who regard themselves as efficacious, think, act and feel differently from those who feel inefficacious and are thus able to shape their own future (Monteith, 1997: 97).

A student gets information on his/her self-efficacy by evaluating and interpreting his/her own performances (self-evaluation), the performances of similar others (peer evaluation), feedback of significant others (teacher evaluation) and physiological reactions (Gagné *et al.*, 1993: 441; Bandalos, Yates & Thorndike-Christ, 1995: 612). Each of these sources will now be discussed briefly.

According to Schunk (1991: 86) self-evaluation refers to comparing one's progress with one's goal to determine whether progress is acceptable. Whereas repeated failures lower self-efficacy, repeated successes raise the level of self-efficacy and occasional failures do not have such an immediate effect on the level of self-efficacy (Schunk, 1991: 122). This is so if the student interprets the failures within the pattern in which they occur, the type of tasks, amount of effort expended and external help received (Schunk, 1991: 122). If a student fails at a generally accepted difficult task, his self-efficacy will not suffer as much as when the task is easy, but would, however, experience a sharp decline in self-efficacy if he/she fails to master an easy task despite much effort and external help (Scott, 1991: 35).

Peer evaluation can be defined as the observation of the performances of similar others (or peers) and comparison with peer performance. Much self-efficacy information is gained when peer evaluation takes place (Scott, 1991: 35). The successes of peers may cause the student to judge his/her capabilities to be the same and therefore he/she may expect to succeed as well. In turn his/her self-efficacy is enhanced which subsequently induces motivation to act. By observing similar peers fail may bring about a decline in one's self-efficacy (Schunk, 1991: 122).

Teacher evaluation refers to the process where a teacher provides students with feedback regarding their performance (Pintrich & Schunk, 1996: 100). Teacher feedback can have an impact on self-efficacy (Schunk, 1991: 86). If a teacher uses a statement such as "I know you can do this" it may raise students' efficacy beliefs (Schunk, 1991: 86). Similarly the student can also interpret physiological reactions (excessive perspiration, accelerated heartbeat) as indication of his/her incapability to learn or perform (Schunk, 1991: 122).

Performance feedback is hypothesized to influence self-efficacy by "highlighting performance outcomes and patterns" (Mathebula, 1992: 18; Pintrich &Schunk, 1996: 100). If a student is getting feedback that he is making progress, he is automatically informed that he is acquiring skills and knowledge. As a result of these acquired skills

and knowledge, motivation is sustained and at the same time learning self-efficacy is enhanced (Pintrich & Schunk, 1996: 100).

When and how teachers provide students with performance feedback can influence self-efficacy (Pintrich & Schunk, 1996: 100). When students can derive their own feedback (e.g. self-checking of answers), teacher feedback is less important (Pintrich & Schunk, 1996: 100).

The role of self-efficacy in learning motivation is thus important since high self-efficacy has a powerful influence on the learner's motivation and subsequently on learning.

3.5.2 Attributions

3.5.2.1 Definition

According to Scott (1991: 33) attributions refer to beliefs about the causes of behaviour. Similar to self-efficacy, attributions can also be viewed as a system of beliefs regarding the occurrence of results which is derived from self-evaluation of the outcomes and consequences of behaviour (Scott, 1991: 39). Mathebula (1995: 64) defines attributions as learners' endeavour to understand the environment and themselves. Attributions are also seen as a learner's interpretation of the causes of his successes or failures (Monteith, 1990: 455; Gagné *et al.*, 1993: 431).

According to Pintrich and Schunk (1996: 134) achievement attributions can be typified by the three dimensions of locus, stability, and controllability. The locus dimension deals with whether a cause is seen as being internal or external to the individual (Pintrich & Schunk, 1996: 130). For example, ability and effort are grouped under internal causes and difficulty and luck are grouped under external causes. An individual's locus of control is internal if he/she believes that the reward received is due to his/her own effort or ability. An individual with an external locus of control, on the other hand, perceives rewards to be due to luck or fate (Pintrich & Schunk, 1996: 130).

The stability dimension refers to whether the cause is fixed and stable or whether it is variable and unstable in general situations and over time (Pintrich & Schunk, 1996: 131). The two attributions of effort and aptitude differ in terms of stability. Effort is seen as unstable and aptitude is seen as stable (Pintrich & Schunk, 1996: 131). Because aptitude signifies a stable, unchangeable, internal characteristic of an individual, it is a better term than ability. For example, an individual can try very hard for a final math test (effort), whereas on the other hand, he/she can have a great aptitude for music or art that makes him/her outstanding in his/her field (Pintrich & Schunk, 1996: 131).

According to Pintrich and Schunk (1996: 133) it is important to have two separate dimensions - locus and controllability - not one form that fuses the two dimensions. For example, both aptitude and effort would be classified as representing an internal locus of control. The difference is where most people see effort as something they have willing control over, whereas aptitude (i.e. artistic ability; physical co-ordination) is usually observed as something they have little control over.

Pintrich and Schunk's (1996: 134) attributional model makes mention of another dimension, intentionality, whereby one uses a bad strategy to solve a problem, but do not think it is a bad strategy. In other words, both strategy and effort can be controlled, but there should be a distinction between "the intentionality of effort versus bad strategy" (Pintrich & Schunk, 1996: 135).

3.5.2.2 Perceived causes of academic achievement

According to Tuckman (1992: 299) people use causal attributes such as ability, effort, task difficulty, luck and help from others to explain their successes and failures. Learners most often use causal ascriptions such as ability, environmental variables (i.e. instructional practices and peers), effort, luck and the level of task difficulty to explain learning performances (Gagné *et al.*, 1993: 431). Outcomes thus depend on how much ability or skill one has, how much effort one puts in, how difficult the task is, how lucky one is and how much help one receives (Tuckman, 1992: 299).

These causes can be viewed as internal or external, stable or unstable and controllable or uncontrollable (see figure 3.2) (Schunk, 1994c: 81; Woolfolk, 1995: 350; Mathebula, 1995: 64,65). Ability and effort are perceived as being internal causes because they reflect characteristics of people (Mathebula, 1995: 64). On the other hand, task difficulty or help from others and luck are external causes. These attributional processes have a direct link to individuals' expectancy beliefs (Pintrich & Schunk, 1996: 107). In other words, individuals' expectations for success and perceptions of ability for academic tasks are closely related to actual achievement on tests (Pintrich & Schunk, 1996: 103).

	Locus			
Stability	*Internal*		*External*	
	Controllable	*Uncontrollable*	*Controllable*	*Uncontrollable*
Stable	Long-term effort	Aptitude	Instructor/bias Favouritism	Ease/difficulty of school or course requirements
Unstable	Skills / knowledge temporary or situational effort for exam	Health on day of exam Mood	Help from friends / teacher	Chance

Figure 3.2. Achievement attributions classified by locus, stability, and controllability dimensions (Pintrich & Schunk, 1996: 134).

The basic distinction between causes that are internal in comparison with those which are external, relates to the central question in attribution theory regarding the relative influence of personal and environmental factors on an individual's behaviour (Pintrich & Schunk, 1996: 130). In the light of this, it is necessary to discuss the dimensions of aptitude, effort, task difficulty and chance.

3.5.2.2.1 Aptitude

Aptitude is viewed to be stable and uncontrollable (Schunk, 1994c: 81). Information of previous successes and failures primarily determine aptitude inferences: whether an individual "can" or "cannot" is indicated by repeated successes or failures. Mathebula (1995: 65) agrees that high grades are often accepted as evidence that a person is "smart" and winning games is proof of a "good" team. Students who believe that success in mathematics, for example, is due to ability do not necessarily make similar causal ascriptions for success in reading (Mathebula, 1995: 66). On the other hand, if students believe that success in mathematics is due to effort, they generally make the same causal ascription for success in reading. What is believed about aptitude is one of the most powerful attributions affecting motivation (Woolfolk, 1995: 350; Gagnè *et al.*,1993: 432).

Students are more likely to attribute their failure to an uncontrollable cause (usually lack of aptitude) if teachers respond to their mistakes with pity, praise for a "good try", or unsolicited help (Woolfolk, 1995: 348). For example, a student who is given help by a teacher even though he/she did not ask for it, will be perceived as lower in ability than a student who did not get help while engaged in the same activity. This is referred to as low-ability cues (Woolfolk, 1995: 350).

3.5.2.2.2 Effort

Effort is seen as an unstable but controllable cause (Gagnè *et al.*, 1993: 432). This means that individuals who take responsibility for outcomes are those who believe that their successes are due to effort and their failure due to lack of effort. Effort is inferred from a number of observables which include the time spent on a task and persistence in performance to do well (Mathebula, 1995: 66).

Since an individual can increase or decrease effort expenditure, for example, adopting

a deep learning strategy which requires more effort instead of a surface strategy which requires less effort (Gagnè *et al.*, 1993: 434), it is viewed to be controllable. Thus individuals who do well in academic tasks, perceive themselves and are judged by others as having put in more effort than those who fail. At the same time, a heightened performance level is believed to be due to an increase in motivation, while descending performance is sometimes ascribed to a lack of effort (Mathebula, 1995: 66).

3.5.2.2.3 Task difficulty

Task difficulty, an external attribution, is stable and uncontrollable and is defined with reference to the performance of one's peers (Pintrich & Schunk, 1996: 13). The length and the complexity of the task influence initial judgments of task difficulty. Difficulty level in this context implies how difficult the students perceive the task to be in relation to their ability and competence. According to Mathebula (1995: 67) success with a difficult task is seen to require both ability and effort, since ability inferences are determined by information of previous successes and failures, whereas effort is controllable and a student can increase efforts in order to succeed in task difficulty .

3.5.2.2.4 Luck

Luck is an external variable and not controllable (Mathebula, 1995: 67). Luck is inferred from an apparent lack of personal control over the outcome and variability in the outcome sequence. Examination success may be attributed to luck especially when one gets an easy question paper or receives questions which one has prepared thoroughly prior to the test (Mathebula, 1995: 67).

3.5.2.3 Educational implications of attributions

Motivation is affected by beliefs and attributions about *what* is happening and *why* in terms of success and failure (Woolfolk, 1995: 346). Failure is not threatening unless the

individual believes that it implies something is "wrong". On the other hand, success will not encourage motivation if, for example, the individual believes he/she was "just lucky" and the same will probably not happen again (Woolfolk, 1995: 346). Attributional feedback answers the question "why did I do well or badly?" and involves a persuasive source of self-efficacy information that a student can gain from himself or from another person (Pintrich & Schunk, 1996: 136). Positive feedback on prior successes supports students' perceptions of their progress in learning and at the same time sustains motivation and increases efficacy for continued learning (Pintrich & Schunk, 1996: 135-136).

Teachers should help students to make accurate attributions for their own behaviour that, in the long run, will be more adaptive (Pintrich & Schunk, 1996: 147). To promote intrinsic motivation teachers should aim to provide accurate feedback to students about the reasons for their failure. Teachers should thus attribute all failure situations to low effort (Gagnè *et al.*, 1993: 442) and therefore encourage them to make this low effort attribution. This communicates to students that they can do better in future situations (Pintrich & Schunk, 1996: 147). Teachers can also provide regular changes in activity to stimulate effort (Moyo, 1994: 44). Activities should thus be made interesting (Woodbridge & Manamela, 1992: 117).

Duda (1993: 425) states that goal-progress feedback raises self-efficacy motivation and performance because it convinces individuals that they are competent and can continue to improve by working diligently. Mathebula (1995: 54) also maintains that ability feedback for prior successes , e.g "you're good at this", enhances self-efficacy . As a result of this, higher self-efficacy sustains motivation as students believe that with continued effort they can attain their goals (Mathebula, 1995: 54).

There are a number of environmental cues that teachers should use as they make attributions for the behaviour of their students. For example, a teacher should seek information about the specificity of a student's behaviour in his/her own classroom. In other words, whether it occurs only on certain types of tasks or for certain types of

activities (Pintrich & Schunk, 1996: 145). The teacher should also look for the consistency of the student's behaviour from other classrooms and teachers as well as different teachers' attributions for the student's problem behaviour.

Students can also provide teachers with a variety of information (portfolios) about their mastery of the course matter (Pintrich & Schunk, 1996: 145). The diversity of the information can provide the teacher with consistency, distinctiveness, and consensus information about the student's performance. The teacher will thus get information on which areas the student has difficulty with (Pintrich & Schunk, 1996: 145).

3.5.2.4 The influence of attributions on motivation

According to Scott (1991: 33) motivation affects students' feelings of competence and confidence when setting or using academic goals and approaching academic tasks. Efficacy affects effort and persistence while attributions help to determine whether students think their efforts or actions have an impact on learning outcomes. These variables are important for generating and maintaining motivation into goal-directed actions (Scott, 1991: 33).

Motivational patterns are formed by personal expectancies which in turn are influenced by those of significant others such as parents and peers (Scott, 1991: 41).

The student who succeeds on a constant basis is likely to infer ability as the cause for his success. The latter is a stable, internal cause. On the other hand, an occasional and unexpected failure will be attributed to an unstable or external cause such as luck or task difficulty (Tuckman, 1992: 305). As a result of this, self-esteem will be maintained and confidence will not be undermined (Pintrich & Schunk, 1996: 110, 111). These expectancy beliefs and affects are then linked to actual behavioural consequences whereby students with high efficacy and expectancies will tend to choose to pursue a task as well as try harder and persist longer at that task (Pintrich & Schunk, 1996: 111, 112; Moyo, 1994: 41) (see figure 3.3).

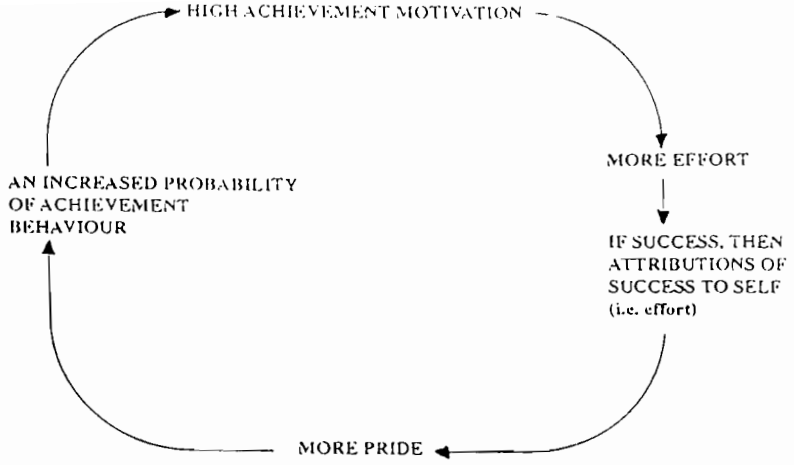

Fig. 3.3. Achievement motivation (Moyo,1994: 41).

3.5.2.5 The influence of attributions on academic achievement

Attributions are important mediators of achievement and achievement-related behaviour (Pintrich & Schunk, 1996: 150). Achievement motivation is influenced by many factors (Woolfolk, 1995: 353). For example, receiving feedback from adults and experiencing success or failure that highlights either ability or effort affects children's attributions to mastery (achievement) or helplessness (Woolfolk, 1995: 353). As attributions shape academic self-esteem, the latter influences expectancies for future success and sense of efficacy for future-related tasks. A sense of efficacy coupled with expectations affect achievement motivation. The cycle starts again as motivation influences whether a child fails or succeeds (Woolfolk, 1995: 353) (see fig. 3.4). In other words, the influence of attributions on motivation impacts on the influence of attributions on academic achievement.

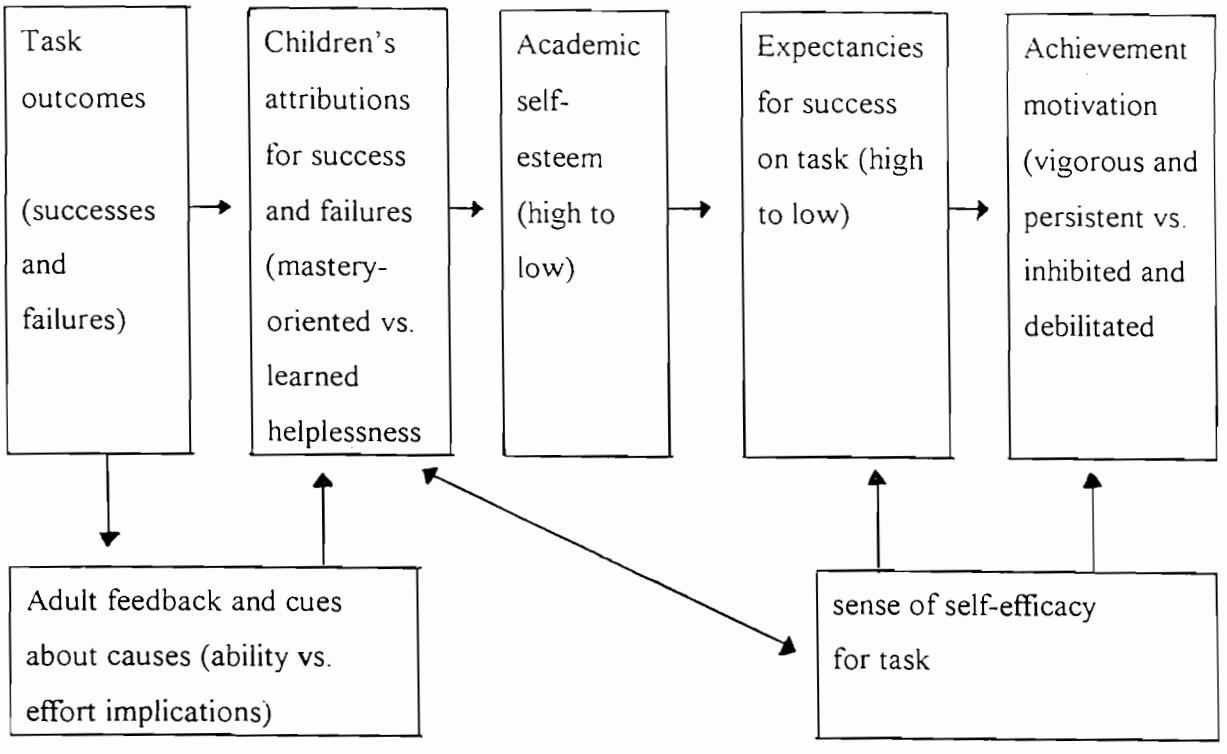

Fig. 3.4. How efficacy and expectations affect achievement motivation (Woolfolk, 1995: 353).

Attributions enhance personal responsibility for failure, for example, where a usually high achieving student fails an exam and then consciously search for the causes of this failure (Pintrich & Schunk, 1996: 126). Attributions also increase motivation, reduce threat and other positive benefits of good instruction (Mathebula, 1992: 30).

Attributions not only influence the individual's choice of tasks, but also the persistence and intensity of achievement-motivation (Perry & Magnusson, 1989: 164). On the same note, causal attributions may serve to regulate control of failure when it threatens self-esteem, for example, an external attribution can function as a secondary control strategy to maintain failure (Perry & Magnusson, 1989: 165). This response makes it possible for the student to reduce the threat to self-esteem. Attributions thus have wide consequences for academic achievement. Students with positive attributions ought to be better

achievers than students with negative attributions.

Attributions and self-efficacy are thus important variables in as far as the generation and maintenance of motivation into goal-directed actions is concerned.

3.5.3 Goal-orientation

Goal-orientation specifically explains achievement behaviour related to an individual's learning and performance on academic tasks and in school settings (Pintrich & Schunk, 1996: 233). Goal-orientation is linked to values since the latter refer to the idea that people will only be motivated when they are interested in the activity or believe it is important to them or their goals (Pintrich & Schunk,1996: 290). A discussion of goal-orientation is important to outline the purposes for engaging in achievement behaviour. It also links learning and performance goals which are the two general goal orientations under investigation in this study (Pintrich & Schunk, 1996: 234).

3.5.3.1 Definition and description of goal-orientation

Goal-directed behaviour entails what an individual strives to accomplish (Woolfolk, 1995: 336). Goals motivate people to act in terms of where they are and where they want to be (Monteith,1997: 88). Whereas goals refer to standards to which learning performances are compared, goal-orientations refer to the tendency to adopt a specific type of goal. Goal orientations also refer to belief systems that determine how students will approach, accept and commit themselves to different goals (Scott, 1991: 36).

3.5.3.2 Learning and performance goals

Students should be involved in learning activities most of the time which implies that their goals must be to increase their knowledge and competencies, to understand more, and to master more complex issues (Lens, 1994: 3938). Performance goals can promote

effective motivation for challenging tasks, but are generally less conducive to learning than learning goals (Pintrich & Schunk, 1996: 234). According to Dweck (1989: 99) learning goals generate internal standards of performance (emphasising effort and competence) while performance goals generate normative standards emphasising performance and ability. Task acceptance, interpretation of task progress and outcomes are determined by these standards (Scott, 1991: 37).

Learning goals emphasise students' concern with learning and mastery of a task as well as increasing their ability (Pintrich & Schunk, 1996: 238).

According to Scott (1991: 36) learning goals are characterised by the individual's wish to increase competence in order to facilitate understanding or mastery of something new. Woolfolk (1995: 338) states that the aim of a learning goal is to improve, to learn, no matter how many mistakes are made. Students who set learning goals tend to seek challenges and persist when they encounter difficulties (Woolfolk, 1995: 338). These learners are referred to as task-involved learners since their main concern is to master the task and not to be concerned with how their performance compares to others in the class.

Performance goals centre around the learner's aim to validate his/her competence in order to gain favourable judgements, or to avoid unfavourable judgements of his/her abilities (Pintrich & Schunk, 1996: 234). According to Woolfolk (1995: 338) students with performance goals concentrate on how they are judged by others. They avoid looking incompetent and want to look smart. What matters is the evaluation of their performance and not what they learn or how hard they try. Because these learners are preoccupied with themselves, they are referred to as ego-involved learners (Woolfolk, 1995: 338). Their goal is to perform and not to learn. If it is impossible for them to look smarter than others in the class, they may adopt defensive, failure-avoiding strategies (e.g. they pretend not to care or simply give up) (Woolfolk, 1995: 338). They also avoid challenging tasks (Lens, 1994: 3938).

Performance goal orientation seems to lead to using ability attributions for both success and failure (Pintrich & Schunk, 1996: 239). Ability attributions for failure are maladaptive and can lead to learned helpless patterns of behaviour. Learned helplessness occur in students when they have a performance orientation and low confidence in their intelligence (Pintrich & Schunk, 1996: 239). On the other hand, "if students have a performance orientation but high confidence in their intelligence, then a performance orientation can lead to a mastery pattern of adaptive attributions and adaptive behaviour" (e.g. like seeking challenges and persisting) (Pintrich & Schunk, 1996: 239).

Performance-oriented students prefer to choose easy-to-average tasks that ensure maximum achievement and positive evaluation (Dweck, 1989: 99). Only after success has been experienced will difficult tasks be attempted. The choice of very easy tasks (which ensures success) is stimulated by low expectancies. On the other hand, low expectancies can stimulate very difficult tasks that do not reflect low ability at failure (Dweck, 1989: 99-100).

A student has to be learning-oriented to master logical or mathematical tasks (Kernan & Lord, 1988: 84). Goal-orientation, however, does not influence tasks of a purely factual nature, as much as it does tasks of a highly conceptual nature (Kernan & Lord, 1988: 84). A learning-oriented student may choose easy tasks if his/her self-efficacy is low (Scott, 1991: 39). Self-efficacy thus mediates the influence of goal-orientation on behaviour, whereas attributions mediate the influence of goal evaluation on goal orientation (Dweck, 1989: 89).

Both learning and performance goals may be manifested by a student simultaneously as long as no conflict occurs. One may thus learn with the goal of gaining favourable judgements, of increasing competence and of avoiding negative judgements (Dweck, 1989: 98).

3.5.3.3 Goal Setting

According to Tsenye (1996: 13) and Monteith (1997: 42) an individual who sets goals should also strive towards achieving them. This is in line with Pintrich and Schenk's (1996: 176) description of goal setting which entails establishing quantitative or qualitative standards of performance. Goal setting is thus an important motivational process (Pintrich & Schunk, 1996: 176) whereby students who have set themselves goals are likely to experience a sense of self-efficacy for attaining them (Schunk, 1991: 91). Goal setting thus leads to activities such as attending to instruction, rehearsing information to be remembered, expending effort and persistence (Pintrich & Schunk, 1996: 176). As learners observe goal progress, self-efficacy is substantiated which conveys they are becoming skilful. Self-efficacy is raised as students are provided with feedback on goal progress and in turn heightened self-efficacy sustains motivation and improves skills which in turn influence academic achievement (Pintrich & Schunk, 1996: 176).

3.5.3.4 Properties of goals

Goals which are close at hand (proximal goals) result in greater motivation than distant goals. Monteith (1997: 90) explains that progress towards a proximate goal is easier to measure in as far as academic achievement is concerned. Furthermore, proximate goals heighten students' self-efficacy, task motivation, interest and performance (Monteith, 1997: 90). Proximal goals, compared to distant or no goals, mobilise effort and give direction to the task at hand (Monteith,1997: 90,91).

Apart from the fact that learners set specific, challenging and attainable learning goals (specificity and difficulty level of goals) and focus on the task, an additional factor makes goal-setting in the classroom effective. Since students must have a clear sense of where they are and how far they have to go they need to receive clear feedback in order to promote motivation (Woolfolk, 1995: 339). Clear feedback (from the teacher) can inform the learner of shortfalls in his effort which in turn urges him to exert more effort

or even try another strategy.

3.5.3.5 The relationship between self-efficacy and goal setting

Self-efficacy is one of the most important positive influences on personal goal setting. Higher self-efficacious students set higher goals for themselves (Pintrich and Schunk, 1996: 212). Self-efficacy also has a positive relation to goal commitment where commitment is stronger when efficacy is high (Pintrich & Schunk, 1996: 212).

It is not enough for an individual to think that a goal is desirable (goal level) and possible to achieve (self-efficacy). He/she should still get actively involved in the task or activity and that reflects the commitment to the goal (Pintrich & Schunk, 1996: 211).

Table 3.1 displays a partial list of factors that influence the choice of a personal goal as well as an individual's commitment to that goal. A number of personal factors are included in the first category. If individuals had some success at previously attained goals (e.g. good students trying to perform well in a test) they will most likely try to attain similar goals (Pintrich & Schunk, 1996: 212). On the other hand it is unlikely that individuals will try to attain goals that are very much beyond their actual skill level or previous performances (e.g. a student who has a history of low grades in mathematics setting a goal of earning all A's).

According to Locke and Latham's Model of goal choice and goal commitment (*in* Pintrich & Schunk, 1996: 212), personal individual factors such as self-efficacy, causal attributions and actual ability, as well as social environmental factors such as group goals and modelling amongst others, can play a role in goal setting (see table 3.1) (Pintrich & Schunk, 1996: 212).

Personal-individual factors

Previous performance

Actual ability/skill level

Self-efficacy

Causal attributions

Valence/values

Mood

Social-environmental factors

Group factors

Group norms, normative information

Group goals

Peer group

Role modeling

Reward structure

Nature of rewards

Competition

Nature of authority and goal assignment

Authority is legitimate

Authority is knowledgeable

Nature of feedback

Conveys efficacy information

Fosters sense of achievement and mastery

Implies opportunities for self-development

Table 3.1. Factors influencing goal choice and goal commitment
Pintrich and Schunk (1996: 212)

3.5.3.6 The influence of teachers on goal-setting

Teachers can influence learners' goal-setting by specifying clear and unambiguous goals for all students in the class (Pintrich & Schunk, 1996: 217). Goals should be challenging and difficult, but not outside the range of students' capabilities. Teachers should additionally set both proximal and distal goals and also provide feedback that increase students' self-efficacy for obtaining the goal (Pintrich & Schunk, 1996: 218). Proximal goals (short term goals) are relatively more effective than distal goals (long term goals) since a series of sub goals which lead to larger distal goals are more easily attainable (Pintrich & Schunk, 1996: 217, 218).

Any rewards or verbal feedback given to students provide efficacy information that encourages them to continue working toward goal attainment. Even though intrinsic rewards allow for positive effects, Pintrich and Schunk (1996: 218) urge that teachers should not be afraid to use extrinsic rewards, but should use them in a way that makes them contingent on actual academic performance, not as ways to control general behaviour.

3.5.4 Achievement Task Values

According to Scott (1992: 160) values are defined as the student's beliefs about the importance of tasks as well as one's responsibility for performing tasks. Achievement task value can be defined in terms of attainment value (the importance) of doing well in a task. Achievement task value can also be defined in terms of intrinsic interest value (the enjoyment experienced when doing a task) and extrinsic utility value (the usefulness of the task in terms of future goals) (Pintrich & Schunk, 1996: 294, 295). If one views a task as interesting and important because competence can be improved, more effort will be spent on the task as opposed to an individual who only wants to gain social recognition or high marks (Pintrich &Schunk,1990: 33).

The effort one expends on a task is a product of the degree to which one expects to be able to perform the task successfully if one applies oneself and the degree to which one values participation in the task itself . No effort will be invested in a task if a learner does not value the importance of taking part in a task itself. Furthermore, people do not invest effort on tasks that do not lead to valued outcomes (Pintrich & De Groot,1990: 33).

For younger children, intrinsic or interest value is a greater determinant of motivation than attainment or utility value. Young students have a more immediate, concrete focus, and thus have difficulty seeing the value of an activity that is linked to distant goals such as getting a good job (Woolfolk, 1995: 392). It can thus be derived that proximal goals instigate positive intrinsic motivation towards the value of the learning task. For older students utility is more important because they have the cognitive ability to think more abstractly and link what they are learning now with future goals (Woolfolk, 1995: 392).

3.5.5 Self-evaluation

Self-evaluation can be defined as the self-appraisal of one's own thoughts, feelings and actions as influenced by social interactions, environmental variables and prior experiences (Paris & Winograd, 1990: 26). Self-evaluative questions assist the student in clarifying the value that is attached to learning and one's expectancies of success (Scott, 1991: 32) as well as to which causes one attributes learning outcomes and level of self-efficacy.

Self-evaluation is linked to personal control over and ability to learn (Monteith, 1990: 455). The information that a student gets from self-evaluation is assessed by the learner by comparing it to his personal standards or the goal that he sets for himself. The beliefs of the learner influences self-evaluation and at the same time indicates the expectations of the learner with respect to learning. These beliefs also include the learner's attributions and self-efficacy beliefs (Monteith, 1990: 455).

Self-evaluation occurs through the cognitive capabilities of symbolising, forethought, vicarious deduction, self-regulation and self-reflectivity (Scott, 1991: 30).

The symbolising capability enables the processing of personal experiences (Scott, 1991: 30). Self-efficacy is guided by these models, as they provide structure and meaning of self-evaluation of performances, behavioural patterns, physiological reactions and extrinsic feedback.

Forethought is regarded as the cognitive representative of the future in the present obtained from enactive, symbolic and vicarious sources. Forethought makes possible the formulation of learning goals, action plan structuring to reach the goals, and expectancies about possible outcomes. In turn, outcome expectancies are dependent on judgements of one's capability to accomplish a certain level of performance (Scott, 1991: 31).

The vicarious capability helps the student to gain self-knowledge through observation of any model, but only if the modelled behaviour is important to him. Observing similar others performing tasks (dependent on skills, strategies and knowledge) serves as a source of outcome expectancies and self-efficacy. Modelled behaviour is evaluated on its outcomes, social reactions and rewards (Scott, 1991: 31).

Through the evaluation of his/her own behaviour the student can also regulate which observationally learned activities are most likely to be pursued.

The self-regulatory capability makes it possible for performances to be compared to internal standards of excellence (Scott, 1991: 31). Self-regulation sustains motivation since learning is aimed at outcomes and often occurs without external feedback. Self-regulation ensues from self-judgement, self-observation and self-reaction. Self-observation helps the organisation of performance information whereby the student gains self-knowledge to set realistic goals. The goals form the internal standard to which performance are compared and generate self-reactions. Self-reactions which are perceived as outcomes under personal control are influenced by attributions and at the

same time efficacy is generated. According to Scott (1991: 32) students who experience control over their behaviour and social interactions show good judgement, even during failure, since they can discern whether they themselves, or external circumstances, are to be blamed for the failure. One is thus more motivated to follow a course of action that will result in positive self-reactions than one that will inspire self-centure.

Self-evaluation (or self-reflectivity) can be described as a person's ability to reflect about his own thoughts and feelings and evaluate his learning experiences (Scott, 1991: 32), thoughts about the self help with the formation of goals and expectancies. Self-thoughts are structured into internal models through symbolic thought and forethought.

Comparison of personal capabilities to those of others is enabled by the vicarious capability. The self-regulatory capability enables the observation and judgement of performances. This gives way to self-reactive control. Self-reflection leads to a total concept of how efficacious one is to act and at the same time mediates the relationship between self-knowledge and behaviour.

Internal events thus play an important role in motivation. Students should be intrinsically motivated to master complex learning tasks through their concerted efforts of evaluating not only learning skills and content, but also motivational strategies and self-knowledge.

By ascribing the most suitable causes to learning outcomes, developing learning- directed goals and enhancing self-efficacy beliefs, learners can thus be taught to take control of learning.

3.6 THE RELATIONSHIP BETWEEN MOTIVATION AND LEARNING

Critical aspects were discussed in the aforementioned sections and will be highlighted briefly as a means to summarise the relationship between motivation and learning. Examples of these critical aspects include a description of learning motivation, a social cognitive approach to learning motivation and the components of motivation. The

significance of learning strategy instruction offered to learners open up new ways for them to achieve academically (see also par. 2.5). It provides learners with a validated means of being efficient, effective, independent and strategic learners (Brackney & Karabenick, 1995: 456). What, when and how learners learn is influenced by motivation (Pintrich & Schunk, 1996: 6).

From the preceding sections it can be deduced that there is a significant relationship between learners' motivation and learning. The state of motivation to learn exists when a learner's engagement in a particular activity is guided by the intention of acquiring the knowledge or mastering the skill that the activity is designed to teach. Motivation to learn functions as a scheme that includes not only affective elements (such as intrinsic motivation and self-efficacy), but also cognitive elements (such as goals and strategies).

The concept *motivation to learn* refers not only to the motivation that drives later performance, but also to the motivation underlying the covert processes that occur during learning. The emphasis is not merely on offering students incentives for good performance later, but on stimulating them to use thoughtful learning.

3.7 CONCLUSION

Although student motivation to learn cannot be taught as directly as a concept or a skill, it can be developed in learners by teachers who use learning strategies as part of instruction. A few learning strategies were selected to determine if and how they influence a learner's motivation and Grade Point Average defined as GPA. These strategies include memory, summaries and test-taking and will be discussed in the next chapter.

CHAPTER 4

4. METHOD OF RESEARCH

4.1 INTRODUCTION

The purpose of this chapter is to explain the method of research used in this study. Paragraph 4.2 outlines the aim of this study while the method of research is explained in the following paragraphs:

The experimental design of the study (par. 4.3); subjects (par.4.4); programme (par. 4.5); instrumentation used (par. 4.9); variables involved (par. 4.10); and data collection procedures (par. 4.11).

4.2 AIM OF THE STUDY

The purpose of the research (see par. 1.2) was to:

- determine the relationship between learning strategy use, motivation and the academic achievement of low achieving Black Secondary School learners;
- determine the influence of a learning strategies programme on:
  - the academic achievement and
  - motivational level of low achieving Black Secondary School learners.

4.3 EXPERIMENTAL DESIGN

In order to be able to assess accurately the extent to which a group of learners' level of learning strategy use can be improved over the cause of an experimental investigation, a pre-test-post-test design was selected with one experimental and one control group.

GROUP	PRE-TEST	EXPERIMENTAL TREATMENT	POST- TEST
Experimental group (E)	Y1	X: programme in learning strategies	Y2
Control group (C)	Y1		Y2

Key:

Y1 = Pre-test

Y2 = Post-test

As mentioned in paragraph 1.2, the aim of this study was to determine whether a learning strategies programme influence the academic achievement of low achieving Black Secondary School learners. The experimental treatment (learning strategies programme) was administered to the experimental group. For the pre-test (Y1) a questionnaire, the MSLQ was administered. A t-test was used to determine whether there was a difference between the pre- and post-test scores.

4.4 SUBJECTS

The experimental group in this study was 50 (n = 50) English Second Language learners. They were all grade 10 learners, ranging in age from 13 to 18 years (see table 5.4). All the subjects were from different Secondary Schools in and around the Molopo area, attended PROTEC (Programme for Technological Careers) on Saturdays.

The control group (n = 50) was chosen from a rural (n = 25) and an urban (n = 25) school around the Molopo area. They were randomly chosen. The schools from which they were chosen were similar to those from which the experimental group (i.e. students attending PROTEC) come. The subjects for the control group were all English Second Language, grade 10 students, ranging between the ages of 15 to 22 years.

The subjects in the experimental group were subjected to a learning strategies training programme over a period of 7 weeks, while the subjects for the control group did not go through the programme, but attended school in normal fashion performing normal school activities.

4.5 PROGRAMME

4.5.1. Purpose of the programme

The purpose of this programme was to instruct and empower students in the use of learning strategies. The programme was developed based on information from Du Toit, Heese and Orr (1995) and the internet (Mind Tools, Ltd., 1995-6).

4.5.2. Overview of the programme

See table 4.1 for an overview of the programme.

TABLE 4.1: OVERVIEW OF THE PROGRAMME

PROGRAMME				
TIME	**STRATEGIES**	**PERIOD**	**DURATION**	**VENUE**
3 hrs (out of 7) 3 hrs (out of 7) 1 hr (out of 7)	Memory Summary Test-taking	One hour per week for a total of 7 weeks	seven (7) hours	PROTEC (Programme for technological careers)

4.5.3 Basic structure of the programme

Each one hour session of the programme consisted of the following activities :

1. Introduction and explanation of the strategy to be learned during the particular session.
2. Performance objectives to ensure that the set objectives are met.
3. Practice time to give learners the opportunity to practice what they have learnt.
4. Tips to improve learners' memory, summary and test-taking skills.
5. Discussion to help learners to focus, pay attention and concentrate.
6. Activities to ensure learners' involvement to subsequently enhance their use of memory, summary and test-taking strategies.

The above activities were spread across the sessions (see table 4.2).

After each session learners were requested to review and practice (at home) all the techniques, tips and information they received for the duration of the week before the next session.

Three one hour sessions were used for training in the following memory strategies:
How to focus - 1½ hours
How to remember - 1½ hours

Three one hour sessions were used for training in the following summary strategies:
Identifying main ideas - 1½ hours
Making a summary - 1½ hours

A one hour session was used for training in test-taking.

TABLE 4.2: TIME ALLOCATION PER STRATEGY

MEMORY STRATEGIES - Session 1 (1 hour) - How to focus • Explanation of strategy • Objectives • Tips • Discussion • Practice time
Session 2 (1 hour) - How to remember • Activities (continued from How to focus) • Explanation of strategy • Objectives • Tips • Discussion
Session 3 (1 hour) - How to remember (continuation from previous session) • Practice time • Activities
SUMMARY STRATEGIES - Session 4 (1 hour) - Identifying main ideas • Explanation of strategy • Objectives • Tips • Discussion • Practice time
Session 5 (1 hour) - Identifying main ideas (continuation from previous session) • Activities • Explanation of strategy (making a summary) • Objectives • Tip • Discussion
Session 6 (1 hour) - Making a summary (continuation from previous session) • Practice time • Activities
Session 7 (1 hour) - Test-taking • Explanation of strategy • Objectives • Tips • Discussion • Practice time • Activities

4.6 MEMORY STRATEGIES

Session 1

Duration: 1 hour

4.6.1 General introduction of memory strategies (10 minutes)

The following explanation was made by the researcher to the learners:

Memory is unique to each of us. Undoubtedly, all of us experience exhilarating moments of insight and creativity when our previous knowledge and new learning meld to form "new life", new designs. This fusion of what is known with what is new not only enhances memory, but also gives greater meaning to what is learned. Without a "meaning or relationship connection", details are rapidly forgotten. Hence, learners learn more effectively when educators relate new ideas and new terms to what learners already know, and when educators challenge learners to do that for themselves as well. For example, learners can better ***FOCUS*** *on,* ***UNDERSTAND*** *and* ***REMEMBER*** *new ideas about the functioning of cells when that information is linked to students' existing knowledge about the make-up or structure of cells. This building of relationships between previous and present learning, then, not only strengthens retention of the new information, but also enriches one's background of knowledge.*

When you understand the importance of this linking process , you will become more actively involved in seeking connections.

This kind of involvement further enhances focussing, understanding and remembering.

4.6.2 Name of strategy: How to focus

4.6.2.1 Explanation of the strategy (10 minutes)

The following explanation was made by the researcher to the learners:

Frequently, learners complain about their inability to concentrate:

"I can't keep my mind on what I'm supposed to be doing".

"I just can't concentrate".

This is true for both low achieving as well as gifted learners.

Very often lack of concentration represent some form of conflict between studying and other interests or desires. All learners experience such conflicts:"

- *wanting to socialize vs. thinking through a theorem in geography.*
- *wanting to daydream vs. doing assignments.*
- *wanting to watch TV vs. learning new vocabulary terms.*

4.6.2.2 Performance objectives (5 minutes)

The objectives were put on an overhead projector:

As a result of the learning experiences in this session, learners should be able to:

1. Experience greater awareness and appreciation of that remarkable gift, memory.
2. Realise that memory can be improved.
3. Analyse the effect of attitude on focussing.
4. Experience focussing improvements through practice.
5. Assess their own concentration and state what contributes to concentration
6. List tips for improving focussing and analyse the applications of this to academic work.

4.6.2.3 Tips to improve focussing (10 minutes)

Learners were divided into groups of four to discuss the strategies to improve concentration which are tips on focussing principles.

The researcher said the following to the learners:

Now help yourself by reviewing the strategies summarized below to combat the causes of poor concentration. By combatting the causes of poor concentration, it helps you to focus.

Learners were expected to add any other causes of poor concentration and combatting strategies to the list.

Hand-outs to learners: these concentration strategies help learners to focus

STRATEGIES TO IMPROVE CONCENTRATION

CAUSES OF POOR CONCENTRATION	STRATEGIES
1. I am easily distracted.	Eliminate your distractions: - get enough sleep -study when rested - eat well so that you won't be hungry - study with a partner to increase motivation -create a good study place; do all your studying there
2. My mind wanders when I read.	Become an active reader: - formulate a purpose - turn headings into questions - underline main ideas - summarize key ideas in margins - look up unfamiliar words.

3. I can't find time to study.	Learn to manage your time: - take fewer courses - adjust work hours - ask family members to help out with chores - make a study schedule - use a calender and daily lists.
4. I procrastinate	Follow a six step plan: - break long assignments into smaller parts - reward yourself for completing work - schedule time for long assignments - assemble your materials - get help if you need it - think positively about your ability to complete assignments.
5. My mind goes blank on tests.	Reduce test anxiety: - prepare adequately for tests - learn how to practice a relaxation technique.
6. I don't like my instructor.	Develop an internal locus of control: - accept your instructor's limitations - accept your responsibility to raise your interest level - accept the course as a step you must take to reach your goals.
7. The course doesn't relate to my job.	Look beyond your job: - welcome new learning opportunities - set realistic and flexible goals.

8. The assignment is too hard.	Make assignments easier: - be sure you know what to do - break long assignments into smaller parts - allow plenty of time - ask your instructor for help.
9. I don't have a goal.	Decide what you want to do: - get a feel for college life - visit the career development centre - make career plans.

4.6.2.4 Discussion (10 minutes)

The learners were again divided into groups of four (this time they were not allowed to be in the same group as before) to have a discussion on the following question that was posed by the facilitator:

How many times have you gone to class or read an assignment with something else on your mind?

This question was posed to get learners' thoughts going on how to concentrate, pay attention and subsequently focus better.

The facilitator said the following to the learners:
When you employ the principle of intent to remember, you use concentration techniques that help you pay attention and focus. You have the attitude that you will learn this now, not wait until later.

The following hand-out was given to learners. It was explained to the learners that these are all concentration techniques that will help them pay attention when they are busy

with assignments, homework or studying.

Hand-outs to learners:

- Pretend that there will be a quiz when you finish. The reward will be R10 for every answer you get correct.
- Use a concentration check sheet. When you feel yourself wandering from the subject, put a check on this sheet. Do this every time you find yourself not concentrating. You will program your mind to pay attention.
- Use a rubber band on your wrist and do the same as above.
- When reading an assignment talk back to the writer.
- When listening to a lecture, ask frequent questions.

4.6.2.5 Practice time (15 minutes)

The purpose of this practice time was to help learners to reflect on "how to sharpen memory" in order to help sharpen focussing.

Learners were required to write the heading "How to sharpen memory" on a blank page. They were then invited to reflect and write their thoughts on the following questions:

Questions on the overhead projector:

- What would your life be like if you had no memory?
- If you could remember, do you believe that life would be more or less satisfying than it is now? Explain.

The results of the learners' reflections were discussed.

In response to the first question, students might state that they would have no friends, experience no recall of past painful experiences or have no prejudices.

Based upon what they have just learned about themselves, learners were asked to decide and write in their notebooks specifically how they could improve their remembering in school.

A volunteer at the blackboard recorded a list of learners' comments. Learners were supposed to take note of these comments and apply them when necessary at a later stage.

Session 2

Duration: 1 hour

4.6.2.6 Activities (15 minutes)

To introduce this session, it was started with activities related to the previous session that were supposed to help them remember what was done previously, and to make a connection with the new information in this new session.

By being involved in this activity learners were supposed to discover new approaches for meeting the challenge of concentration where good concentration skills impact on the learners' focussing skills.

Learners were requested to make a chart with the following format. They were supposed to list their concentration problems and possible solutions.

WINNING THE STRUGGLE TO CONCENTRATE

OBSTACLES TO CONCENTRATION	SOLUTIONS

At the end of this activity learners were told that if they could win the struggle to concentrate, it could help them to remember better.

4.6.3 Name of strategy: How to remember

4.6.3.1 Explanation of the strategy (10 minutes)

The following verbal explanation was made by the facilitator to the learners:

In order to remember something thoroughly, you must be interested in it. You must have a reason to learn it. Your understanding of new material depends to a great degree on how much you already know about the subject. The more you increase your basic knowledge, the easier it is to build new knowledge on this background. You can learn and remember better if you can group ideas into some sort of meaningful categories or groups.

4.6.3.2 Performance objectives (5 minutes)

The objectives were put on an overhead projector.

As a result of the learning experiences in this session, learners should be able to:

1. Experience greater awareness of remembering strategies.
2. Realise that remembering can be improved.
3. Analyse the effect of attitude on remembering.
4. Experience remembering improvements through learning:
   - to organise ideas in study material
   - to self-recite
   - to space reviews
   - to employ mnemonics
5. State what contributes to remembering
6. List tips for improving remembering.

4.6.3.3 Tips to improve remembering (15 minutes)

Learners were divided into groups of four to look at and discuss the following tips to improve remembering.

Hand-outs to learners:

Tips to improve remembering

- **Intent to remember** has much to do with whether you remember something or not. A key factor to remembering is having a positive attitude that you will remember.
- **Selectivity** - you must determine what is most important and select those parts to study and learn.
- **Recitation** - saying ideas aloud in your own words is probably the most powerful tool you have to transfer information from short-term to long-term memory.
- **Mental visualisation** - another powerful memory principle is making a mental picture of what needs to be remembered. By visualizing, you use an entirely different part of the brain than you did by reading or listening.
- **Association** - memory is increased when new facts to be learned are associated with something familiar to you.
- **Consolidation** - your brain must have time for new information to soak in. When you make a list or review your notes right after class, you are using the principle of consolidation.
- **Distributed practice** - a series of shorter study sessions distributed over several days is preferable to fewer but longer study sessions.

4.6.3.4 Discussion (15 minutes)

The facilitator lead a short discussion on how to experience memory improvements through learning. Memory improvements could take place through learning how to organise ideas in study material, self-recite, space reviews and employ mnemonics.

Learners were required to participate in the discussion by giving their views of what they think these memory improvement strategies entail.

The purpose of this discussion was to introduce the next activity where learners were required to be involved in practising these memory improvement strategies.

Session 3

Duration: 1 hour

This session was introduced by the facilitator reminding the learners of what they were doing in the previous session. In the previous session learners focussed mainly on ways to experience memory improvements. This session gave learners the opportunity to practice memory improvement strategies.

4.6.3.5 Practice time (30 minutes)

The purpose of this activity was to give learners the opportunity to practice the following memory improvement strategies: organising ideas in study material, self-reciting, spacing reviews and employing mnemonics.

4.6.3.5.1 Organisation of ideas

The following activities captivated learners' attention and sensitized them to the value of organizing ideas as they read and study:

To allow learners to experience the frustration of not being able to remember because they did not perceive any structural pattern.

Having used the overhead projector, about thirty seconds were allowed for learners to view a transparency of the following figures "Try to Remember"

After learners reproduced as many figures as they could they were asked how they tried to remember (i.e. in the order the figures appeared, according to how many sides an object has, etc.).

A sheet of paper containing the following words was then distributed to the learners:

way	**on**	**the**
this	**my**	**school**
to	**how**	**did**
friends	**a**	**morning**
tire	**have**	**flat**

Learners had about 15 seconds to memorize this list; after that, they were asked to write on a fresh sheet of paper all the words they could recall. They compared what they remembered with what they had to memorise.

Next, a sheet of paper containing the following sentence was handed out to learners:

"Did my friends have a flat tire on the way to school this morning?"

Again after about 15 seconds, learners were asked to record what they recalled from this

sentence. Again learners had to compare what they remembered with what they had to memorise. Finally, these questions were posed:

- After comparing your word list to the original one, what do you notice about the words you recalled, the words you forgot (i.e. position in the list or degree of meaning associated with the word)?
- Which was easier to recall - the list or the sentence and why?

Learners may have arrived at these valid conclusions concerning memory:

* one remembers more from the beginning and the end of a study session, less from the middle.
* one remembers best what has meaning or some kind of powerful association (the sentence versus the seemingly unrelated word list).
* one remembers most easily what is original, unique.

A tray with the following items on it was prepared by the facilitator in the classroom. These objects were covered with a cloth until the facilitator explained the activity.

thread	**keys**	**credit card**	**tea bag**
pocket knife	**pen**	**wallet**	**salt shaker**
spoon	**cigarettes**	**facial tissue**	**cup**
envelope	**apple**	**hand lotion**	**comb**
matches	**banana**	**cassette**	**mirror**

About forty five seconds were given to the learners to view the items on the tray. Learners were supposed to record all the items they remembered. The facilitator ascertained that this tray was located centrally so that all learners could surround it to scrutinize the variety of items.

Learners might have organised the items according to categories such as what is found in a kitchen, a purse, and so on.

4.6.3.5.2 Reciting and spacing reviews

The facilitator said the following to the learners:

Once you have decided how ideas are related to each other in your study materials and have somehow recorded this, you are ready to apply another powerful weapon to fight forgetting: frequent reciting and reviewing. The fact that most forgetting occurs within twenty-four hours of initial learning is a compelling reason to review and, thereby, check such an "evaporation" of knowledge. In fact, even one minute of review after learning can double retention.

Learners, in pairs, were supposed to come up with speculations as to why this is true. Reasons such as the following are valid:

- learners are more purposeful and more intent on understanding the content when they hold themselves accountable immediately after reading.
- in addition to seeing the material to be learned, the learners also hear it while reciting aloud. The more senses involved in learning, the greater the chance of remembering.

Learners received the following hand-out from the facilitator. The following question was posed by the facilitator:

Six weeks after the initial reading of the chemistry chapter, who will remember the most- Mpho or Thabiso? Justify your speculation.
Are you more like Mpho or Thabiso in your study habits?

Hand-outs to learners:

Mpho has just read a chemistry chapter. She then spends one entire hour studying and reviewing the chapter contents to be certain that she thoroughly understands it. Meanwhile, Thabiso has just read the same chemistry chapter. She also studies and reviews the material for one entire hour, spacing out her reviews over six weeks.

The following were taken into account when learners attempted to answer the question:

There's a difference between one extended review (like Mpho) and several brief, spaced reviews when long-term retention is the goal. The results are remarkable! Mpho, who studied one hour, steadily lost much of that knowledge over the next six weeks. Thabiso, on the other hand, studied the same amount of time - one hour - but spaced her reviews.

Six weeks later? The first student lost much of her original knowledge, whereas the second student maintained her high-level mastery of the material. Clearly, spaced reviews are a smart investment!

4.6.3.5.3 Employing mnemonics

The facilitator introduced the following activity by putting the following explanation on the overhead projector:

Learners are so frequently required to learn lists of dates; items; causes and effects of political, social, and economic events; laws and science; etc; that educators often assume that learners effectively cope with this learning task. Yet if you ask learners their procedures for remembering lists of elements they may reveal rote learning (*repetition*)

as virtually their only method. If this is the case, time tested, special memory systems known as mnemonics can increase learners' options, and concurrently, their chances of "memory success".

In order to explain to the learners what mnemonics are, the following verbal explanation was given.

Mnemonics refer to the science or art of improving memory by using formulae or other aids. One method for learning a listing of items is the number-rhyme, or peg-word system. In this system, each number from one to twenty is linked with a rhyming word. The first ten numbers are linked to the following, for instance:

1. Bun	*6. Sticks*
2. Shoe	*7. Heaven*
3. Tree	*8. Gate*
4. Door	*9. Vine*
5. Hive	*10. Hen*

The facilitator then explained to the learners that when attempting to learn a list of items, the learner creates a vivid image which associates the number one, the word bun, and the first word on the list of items to be learned.

4.6.3.6 Activities (30 minutes)

The purpose of the following activity was to assist learners to discern factors that affect their remembering.

The facilitator requested the learners to draw three columns on a page in their notebooks and write answers to the following:

In column ONE:

List five (5) things from both in school and out of school that are easy for you to

remember. (If students have trouble, suggest these: things they learn about friends, plots from novels, song lyrics, etc.)

In column TWO:

List five (5) things from both in school and out of school that are difficult for you to remember.

In column THREE:

Compare the first two lists. Then write at least three reasons for the differences between these two lists.(Learners may arrive at insights such as the positive effects of motivation and interests.)

Based upon what they have just learned about themselves, learners were required to decide and write in their notebooks specifically how they could improve their remembering at school.

A volunteer at the blackboard recorded a list of learners' comments.

As part of their activities learners were requested to conduct a survey of educators to determine their opinions on what contributes to their concentration and what detracts from it.

The purpose of this activity was to stimulate learners to synthesize what they have learned about concentration by producing material that will be helpful for them and for other learners in the future.

Learners were given this activity as homework because they enjoy compiling educational comments. The method for the survey could be either the use of a tape-recorder or listing in writing.

4.7 SUMMARY STRATEGIES

In this component of the programme the focus was on teaching the students how to identify and combine main ideas and how to write short notes and summaries.

Session 4

Duration: 1 hour

4.7.1 Name of strategy: Identifying main ideas

4.7.1.1 Explanation of strategy (10 minutes)

In order to explain the strategy to the learners the following questions were posed:

- *How does one identify the main idea presented in a paragraph?*
- *Why do you need to know about main ideas?*

In order to answer the two questions the facilitator put the following comments on the overhead projector:

On the overhead projector:

- Identifying main ideas can help you to get a clearer understanding of what you are reading
- It will help you to remember better and therefore to study more effectively, and to revise with ease, especially if you use aids such as underlining, highlighting and marginal notes.
- A knowledge of topic sentences can help you to write better assignments and exam answers. Remember to ask yourself: "Do my paragraphs clearly state one idea?"

4.7.1.2 Performance Objectives (5 minutes)

As a result of the learning experiences in this session, learners should be able to:

- Identify the main idea or topic sentence of a given paragraph.

4.7.1.3 Tips to improve learners' ability to identify main ideas (10 minutes)

The facilitator said the following to the learners regarding the tips to improve their ability to identify main ideas:

Just as it is important to grasp the main ideas of a paragraph it is also important to grasp the main idea of longer passages. We have said that the topic of a paragraph may be stated in the first sentence, a sentence somewhere in the middle or last sentence, or may have to be summed up in an implied sentence. Similarly, the main idea of a longer passage may be stated in the introductory paragraph, a paragraph somewhere in the middle, the final paragraph, or may be implied in the passage as a whole.

Hand-outs to learners:

- Look at the theme (heading or sub-heading) of a chapter or part of a chapter.
- Change the heading to a question and try to answer the question as briefly as possible after having read the section.
- Use additional questions like: Who? What did he/she/they do? What was the result? Or what is being described/told/argued?

4.7.1.4 Discussion (20 minutes)

In order to introduce a discussion of identification of main ideas the following was said

by the facilitator:

The position of the topic sentence (key sentence): the topic or main idea of a paragraph is usually stated in one of the sentences of which it is composed. This sentence is called the topic sentence. By far the most common position for this sentence in a paragraph is at the beginning, but this is not always the case. The topic sentence may be the second or even a later one, acting as a kind of link, or it may be the last one, so that the others lead up to it.

Learners were requested to identify the main idea or topic sentence in the following paragraph and thereafter discuss as a whole group how they arrived at their answers. The paragraph was placed on the overhead projector.

> We all need to communicate. To live, stay safe and remain healthy, we need to communicate our needs and wants to other people. People communicate with each other in different ways. Usually we speak, but we can communicate with other people without speaking. We can write, and use pictures and drawings.

The following answer was discussed:

The first sentence is the topic sentence. The rest of the paragraph states why it is important to communicate.

4.7.1.5 Practice time (15 minutes)

4.7.1.5.1 Exercise 1

Learners were asked to read the following paragraph and underline the statement that states the main idea.

Hand-outs of the following paragraph was given to learners.

> It is important to round off your essays neatly before submitting them. Correct all typing, spelling and grammatical errors and make sure that your writing is legible. Remember that your teachers are only human and have to correct a big number of essays within a limited time. (In examinations too, the legibility and neatness of your answers will probably play a role in the allocation of marks.)

The following explanation was made to learners:

If you chose the first one you were right. The first sentence gives an introduction to learners. The second sentence tells you how to carry out this instruction. The third gives a reason for doing so, while the sentence in brackets adds another related statement. If you omit all the sentences except the first one you would be left with a clear statement of the main idea.

4.7.1.5.2 Exercise 2

Learners were requested to identify the topic sentence in each of the following paragraphs.

Learners were requested to underline the topic sentence in each case. They received hand-outs of the following paragraph.

You often scan in everyday life, perhaps without knowing it. For instance, your mother sends you to the supermarket to buy some biscuits. You like a kind called "Marie" which carries a blue label. So when you arrive at the biscuit shelves, you look specifically for a blue label and the word "Marie". You run your eyes very quickly across the rest of the biscuits, not really seeing any of them properly, until you find the ones you want. When you get home, your mother asks: "Weren't there any of those chocolate ones?" You have to say that you don't know. You didn't notice, because you were scanning the shelves for your favourite kind.

After a discussion of all the possible answers, the following explanation was made:

The first sentence is the topic sentence. From the second sentence onwards, following on "for instance", the rest of the (fairly long) paragraph is an example or illustration of the statement made at the beginning.

Session 5

Duration: 1 hour

The introduction of this session (5 minutes) was done by means of a summary of what had been done in the previous session.

4.7.1.6 Activities (10 minutes)

Learners were given a short passage from their literature prescribed book and the facilitator assisted them to analyse it by means of the questions posed in the hand-out on

tips on how to identify main ideas.

Learners had to identify the main idea in the passage.

This section stressed the importance of main ideas in longer passages. It covered topic sentences in paragraphs and main ideas in longer passages. The importance of main ideas for study purposes was emphasised.

4.7.2 Name of strategy: Making a summary

The facilitator said the following to the learners:

In the last session we emphasised the importance of key or topic sentences. When you read, not all the information you gain is equally important. Identifying main ideas can help you to get a clearer understanding of what you are reading. Knowledge of topic sentences can help you to write better assignments and exam answers.

4.7.2.1 Explanation of strategy (10 minutes)

The following verbal explanation was made by the facilitator:

Summaries are used very often during exam preparation since the work that is to be learned is mostly too much to be memorised. When you summarize, you give a short statement which includes the main ideas of what you have read. Preparing a summary of something you have read is a three part process.

1. *You select key ideas presented.*
2. *You include any important details.*
3. *You restate this information briefly and clearly in writing.*

Summarizing is a good study tool because it accomplishes the following:

1. *It helps you separate the essential information that you will need to remember from the less important ideas.*
2. *It makes you aware of how the content is organised. This helps you to organise the information in your mind.*
3. *The overall process of selecting important ideas and preparing a summary from them helps you to remember what you have read.*

4.7.2.2 Performance objectives (5 minutes)

As a result of the learning experiences in this session, learners should be able to:
-Write short notes
-Combine main ideas from different paragraphs
-Write a summary in paragraph-format.

4.7.2.3 Tip to improve learners' ability to make summaries (5 minutes)

The following tip to improve the learners' summary making abilities was handed out to the learners.

Hand-out to learners:

> When you read and study material, you often find the content is often organised in chronological order (the order in which events happened).
> Why is this chronological order helpful? Because you can use this pattern of organisation to help you remember the important details.

4.7.2.4 Discussion (25 minutes)

Learners had to participate in a discussion on the chronological order of events used to make a summary.

The important fact shown below appeared in a selection about the women's rights movement. Learners had to note how chronological order was used in preparing the written summary.

Learners were given a hand-out on the chronological order of events used to make a summary.

INFORMATION TO BE INCLUDED IN SUMMARY		
Important dates	**Important points**	**Important details**
July 19, 1848	Women's rights meeting led by Elizabeth Cady Stanton	Seneca Falls, N.Y. Five women present; Prepared equal rights platform; demanded vote
July, 20, 1848	Platform passed	First platform of women's rights movement
1869	First women's vote bill passed	Wyoming; women handled new freedom without neglecting families; men still objected.
1869-1899	Losing battle except in few Western States	Yearly defeat in congress
World War 1	Women gained recognition as valuable asset to country	Supported war effort
August 26, 1920	Women gained right to vote	19th Amendment passed

This session was concluded at this point and learners were reminded that the next session will start with a practice opportunity for them to practice how to write a summary in chronological order of events.

Session 6

Duration: 1 hour

4.7.2.5 Practice time (30 minutes)

The purpose of this session was to give the learners the opportunity to practice writing a summary in the chronological order of events. The facilitator asked the learners to write a summary corresponding with the chronological order of events. This exercise will help learners to concentrate on main points only and summarise as briefly as possible.

Learners had to:

- write on half of A4 paper.
- write in pencil
- use only one side of the half A4 paper
- work in pairs: when finished, exchange with neighbour and check differences.

The facilitator put her version of a summary on the overhead projector and went through it with all the learners. Learners got the opportunity to check where they lacked in information or where they went wrong.

On the overhead projector:

SUMMARY

On July, 19,1848, a meeting led by Elizabeth Cady Stanton took place in Seneca Falls, New York. The five women present had come from various parts of the United States to prepare a platform calling for equal rights for women including the right to vote. The next day, the platform was approved as the first of the women rights movement. But , regardless of the efforts in the years that followed, it was not until 1869 that the first women's vote bill was passed in Wyoming. It didn't take long for women to show that they could handle their new freedom without neglecting their families. But in other parts of the country, men still objected. For thirty years, with the exception of a few western states, women fought a losing battle as their rights bill was defeated yearly in congress. Finally, during World War 1, women gained deserved recognition as a valuable asset to their country because of their support of the war effort. And on August 26, 1920, women at last gained the right to vote with the passing of the 19th amendment.

4.7.2.6 Activities (30 minutes)

The following hand-outs were distributed to the learners. Learners had to:

A. Write a summary of each paragraph and try to use no more than one sentence.

In 1937, Russia, a leader in Arctic exploration decided to land a group of scientists on an ice island near the pole. They named it North Pole 1. For ten months they braved the fury of the winter gales. Then North Pole 1 drifted among the iceberg between Iceland and Greenland. The Russians left it, as warmer waters and the summer thaw began to melt the island.

1.SUMMARY :----------

Meteorologists, or weathermen, are concerned with measuring conditions in the atmosphere. They keep track of wind direction and speed, air pressure and temperature, relative humidity, and rain. People and equipment in weather stations all over the world and weathermen by observing and recording the weather. Some equipment is on the ground, while some is on ships at sea or even on air planes. Now, there is also equipment on weather satellites that have been launched by the government.

2. SUMMARY : ----------

This exercise was supposed to help learners to concentrate on main points only and summarise as briefly as possible.

B. In addition to what was already done on identifying main ideas, learners were

requested to analyse a whole chapter from their literature prescribed book by using "AIDS IN IDENTIFYING MAIN IDEAS."

Learners were referred back to the section "AIDS IN IDENTIFYING MAIN IDEAS."

Session 7

Duration: 1 hour

4.8 TEST-TAKING

In this session the focus was on teaching the learners test-taking abilities as well as more deliberate review and study strategies.

4.8.1 Name of strategy: test-taking

4.8.1.1 Explanation of test-taking (5 minutes)

The facilitator made the following verbal explanation:

The written exam is the most prevalent means of evaluating learning - so be prepared! Everything you do in a course (except possibly work on assignments) will contribute to your performance on the final exam: this includes taking lecture notes and reading, as well as more deliberate review and study strategies.

4.8.1.2 Performance objectives (5 minutes)

As a result of the learning experiences in this session learners should be able to:

On the overhead projector:

1. Analyse and identify given questions on all levels.
2. Note any changes in their attitudes toward tests, test-taking procedures and performances.

3. List the steps in preparing for an exam and analyse their applications of these steps.
4. Analyse their test errors to discern patterns.

4.8.1.3 Tips to improve learners' test-taking skills (15 minutes)

The following tips to improve the learners' test-taking skills were handed out to learners in the form of hand-outs. These tips are meant to hone learners' test-taking abilities. Through these tips learners are also offered survival strategies for taking tests, guidelines for pre-examination preparation and environmental strategies to make them feel less anxious and more eager to reveal what they know when taking tests.

Hand-outs to the learners:

The researcher tells the learners to look at the following key words that normally occur in a written test or examination and note what each means:

Key words in a written test

Analyse	Identify parts or elements and look at them carefully, providing comments in your own words.
Compare	Point out both the similarities and differences between objects, ideas, points of view (sometimes the instruction includes "and contrast.") This should be done systematically i.e by completing one aspect at a time. Usually you will be required to use your own words.

Criticise	This does not mean to find fault, but to point out specific characteristics (of a poem for example) and provide you own opinion (evaluate).
Define	Give a short description or state the exact meaning of something. Very often, definitions have to be learned word for word.
Describe	Set out the characteristics of something in your own words.
Discuss	Comment on something in your own words. It often requires debating two points of view or possibilities. Must be done in an orderly way.
Distinguish	Point out the differences between two objects, different ideas, and point of view. Usually requires you to use your own words.
Explain	Clarify or give reasons for something, usually in your own words. It may be useful to use examples or illustrations.
List	Simply provide a list of names, facts or items asked for. A particular order or category may be specified.
Summarise	Give the key (most important) aspects of a topic. Must always be done in your own words.

The following hand-out was given to learners:

Survival strategies for taking tests

The following instructions appear on the hand-out:

Before you begin:

1. **Preview the test before you answer anything**

   This gets you thinking about the material. Make sure to note the point value of each question. This will give some ideas on budgeting your time.

2. **Do a mind dump**

   Using what you saw in this preview, make notes of anything you think you might forget, e.g. active/passive voice. Write down things that you used in learning the material that might help you remember. Outline your answers to discussion questions.

3. **Quickly calculate how much time you should allow for each section** according to the point value (you don't want to spend 30 minutes on an essay that counts only 5 points), e.g.

comprehension test	10 min
active / passive	10 min
direct / indirect	10 min
writing a short dialogue	15 min
going over answers	5 min

Taking a test:

4. **Read the directions** (Can more than one answer be correct? Are you penalised for guessing? etc.)
5. **Answer the easy questions first,** eg. comprehension
   This will give you the confidence and momentum to get through the rest of the test. You are sure these answers are correct.
6. **Go back to the difficult questions.** While looking over the test and doing the easy questions, your subconscious mind will have been working on the answers to the harder ones, eg. active/passive and direct/indirect tense. Also, later items on the test might give you useful or needed information for earlier items.
7. **Answer all questions** (unless you are penalised for wrong answers).
8. **Ask the instructor to explain any items that are not clear.** Do not ask for the answer, but phrase your questions in a way that shows the instructor that you have the information but are not sure what the question is asking for, e.g. What does a dialogue entail?
9. **Try to answer the questions from the instructor's point of view.** Try to remember what the instructor emphasised and felt was important, eg. Think like an adult when you answer the comprehension and dialogue.
10. **Use the margin to explain why you chose the answer** if the question does not seem clear or if the answer seems ambiguous.
11. **Circle key words in different questions.** This will force you to focus on the central point. This is in particular relevant to essay-type questions.
12. **Express difficult questions in your own words.** Rephrasing can make it clear to you, but be sure you don't change the meaning of the question.
13. **Use all of time allotted for the test.** If you have extra time, cover up your answers and actually rework the questions.

Another hand-out, guidelines and tips for pre-examination preparation, was handed out to learners.

Guidelines and tips for pre-examination preparation

1. Target your studying

Figure out what is important (for language) and will likely appear in the exam (e.g. active/passive), by looking at previous exam question papers and analysing what the teacher emphasises in class. This includes not only content, but also the level of learning of the questions, and the learning channel.

2. Practice appropriate activities

Studying for an exam should be seen as practising the activities you will have to perform in the exam, under exam conditions. For example, if you will have to do problems, practice doing problems from memory, within a time limit. Or, if you will have to write essays, practise writing essays from memory, within a time limit.

3. Keep up throughout the term

Hand-outs to learners

Tips for exams

1. Set up a time schedule
2. Preview through all the questions first
3. Do the long questions first
4. Underline the important words in the question
5. Outline the question in key words before answering

6. Take time to write an introduction and summary/conclusion

7. Reread your answer at the end

8. If not sure, qualify your answer

Multiple choice questions

1. Work out time allocated.
2. Work steadily and if you don't remember/aren't sure, leave it out and move on to the next.
3. Keep moving. At the end go back to fill in.

* Always read the instructions: e.g. circle, tick, etc.

* Key words

1. Absolutely true: all, always, every, never, none.
2. Limited truth: few, many, most, some, often, usually.
3. Spot the word 'not'.
4. Read statements logically if questions have more than one part.

Take educated guesses! If you don't know:

1. Eliminate the obviously untrue ones
2. If you can narrow it down to two, you have a 50% chance of being right!

4.8.1.4 Discussion (10 minutes)

The facilitator made the following statement to the learners:

Learners have little or no background in analysing the levels of questions that they are asked. If you understand the level of the question you are being asked, you also hold the key to how to think through the answer. Once again the focus is on teaching you "process". After introducing you to levels of questioning, teaching you how to prepare emotionally and mentally for taking tests is the next natural step.

By referring to an English language question paper the learners discussed the survival strategies that were handed out to them as tips.

The learners had to take note of the following points when taking a test:

The survival strategies will be taken into account and each survival strategy will be prepared or catered for in the test. While discussing the survival strategies we will refer to the test paper as example. We will go through the whole paper.

Learners had to discuss as a group why survival strategies are important. It was emphasised to the learners that all the survival strategies mentioned (tips) are important to remember because it:

- reduce their stress and anxiety level
- improve their overall skills reservoir and
- subsequently improve their academic achievement.

Learners were urged to keep in mind the guidelines for pre-examination preparation (handed out as tips). They discussed these tips as a group. The facilitator reminded them to keep the following in mind when preparing for the examination:

Review regularly throughout the term. Without regular review, you may have to re-learn a large portion of the course in the week or two before the final exam when you are most likely to be finishing up major assignments and studying for other courses. With regular review, you will likely do well in the exam even if you do not have much time to study.

During this part of the session was discussed in terms of previous question papers, e.g. English question papers were discussed. Learners were allowed to pause whenever necessary to clarify any questions or doubts they might have had.

4.8.1.5 Practice time (15 minutes)

A transparency of environmental strategies were placed on the overhead projector.

The facilitator read through environmental strategies with learners.

1. **Arranging consequences** - arrange for successful completion of goals by using strategies of self-reward, eg. Going to a movie, or self punishment (physical) e.g. elastic band around your wrist, withdrawing a reward or not going to a movie you had planned on.
2. **Environmental support** - request extra support and assistance from your family and friends to help you through anxious or stressful times or situations.
3. **Time out** - Take time out or private time from a stressful situation. Short breaks away from studying, etc. will help even out the stress.
4. **Avoidance** - If possible avoid situations which make you uptight or anxious.

Each learner received a hand-out on the Test-wise Exam-Error checklist.
Learners were supposed to refer back to the last test/exam that they had written and answer the following questions on the checklist.

Learners had with them the end of term test paper (in English; language and essay) as well as their answer sheet. Their responses were analysed realistically. Learners were told that the six columns provided for in the checklist could be used for any of the subjects that they are writing exams in.

Hand-outs to learners.

Checklist

Did you.....						
1. Learn the material incorrectly?						
2. Neglect to study the material?						
3. Take inadequate notes?						
4. Misread directions?						
5. Misread the questions itself?						
6. Accidentally miss a question?						
7.Consciously skip a question?						
8. Run short of time?						
9. Feel anxious about the exam?						
10. Other?						

In addition for essays did you..... .							
1. Forget to write an introduction?							
2. Inadequately develop the body?							
3. Forget to write a conclusion?							
4. Omit needed transitions?							
5. Ignore punctuation, grammar, legibility?							

The facilitator reminded the learners to keep these questions in mind before and during the next test or exam since it will assist them to become test-wise and eliminate unnecessary mistakes.

4.8.1.6 Activities (10 minutes)

Test prep log

Learners were given a handout labelled: Test Prep Log.

This type of exercise help learners avoid anxiety because of eleventh-hour test preparation.

Learners were requested to (each day) fill in the first line with their intended goal for that day (sample below).

Consequently what could seem an overwhelming task becomes instead a series of bite-size, manageable chunks. Learners will gain confidence in test-taking ability.

TEST PREP LOG

DATE/TIME?	GOAL?	OUTCOME?	REWARD?
Mon 8:00-8:45	Review half of class notes	Finished!	Call Tshepo

Since this will be an ongoing exercise until an examination or test is taken, learners were made aware that they should check themselves or by means of peer-checking stick to the exercise.

Three previous exam papers (English Language) were handed out to learners to be analysed in their own time.

4.9 INSTRUMENTATION

The Motivated Strategies for Learning Questionnaire (MSLQ) (adapted for Grade 10 learners) was used as the pretest to obtain information on strategy use, self-regulation, self-efficacy, intrinsic value and test anxiety. In addition the marks for the mid-year exam for English Second Language were used.

Motivated Strategies for Learning Questionnaire (MSLQ)

The MSLQ includes 44 items on motivation and learning strategies. The section on motivation tested the learners' motivation for attitudes towards the subject English. The section on self-regulated learning strategies tested the learners' learning strategies and study skills for English. Students were instructed to respond to the items on a 7-point Likert scale (1 = " not at all true of me" to 7 = "very true of me") in terms of their motivation for and attitudes towards the subject English.

Motivational items were analysed and showed three different motivational factors, namely intrinsic value, test anxiety and self- efficacy. The intrinsic value scale (Alpha = 0,87/0,47)* was formed by taking the mean score of the students' response to nine items regarding intrinsic interest in e.g., "It is important for me to learn what is being taught in this English class" (4) as well as preference for challenge and master goals e.g., "I prefer class work that is challenging so I can learn new things" (1). Four items e.g., "I am so nervous during a test that I cannot remember facts I have learned" (3), "When I take a test I think about how poorly I am doing" (22), concerning worry about and cognitive interference on tests were used in the Test Anxiety scale (Alpha = 0,75/0,37)* (Pinrich & De Groot, 1990 : 35).

The self-efficacy scale (Alpha = 0,89/0,62)* was made up of nine items in terms of

Footnote *: The alpha value before the slash is the value reported by Pintrich and De Groot while the alpha value after the slash is the value calculated for this specific study. Although these alpha values are low it was decided to use the MSLQ as there was no other test available and time did not allow developing an own instrument.

confidence in class work (e.g. "I expect to do very well in this class" (8), "I am sure that I can do an excellent job on the problems and tasks assigned for this class" (11), "I know I will be able to learn the material for this class" (19) (Pintrich & De Groot, 1990 : 350).

Derived from the results of the factor analysis two cognitive scales were constructed: cognitive strategy use, and self-regulation. The Cognitive Strategy Use scale (Alpha = 0,83/0,59) was made up of 13 items relating to the use of rehearsal strategies e.g., "When I read material for the science class, I say the words over and over to myself to help me remember" (41). Elaboration Strategies such as summarizing and paraphrasing e.g., "When I study for this English class, I put important ideas into my own words" (28) (Pintrich & De Groot, 1990:35).

The Self-Regulation scale (Alpha = 0,74/0,49) was made up of metacognitive and effort management items. The items on metacognitive strategies such as skimming, planning and comprehension monitoring are e.g., "I ask myself questions to make sure I know the material I have been studying" (25), "I find that when the teacher is talking, I think of other things and don't really listen to what is being said" (38) and 2I often find that I have been reading for class but don't know what it is all about" (37). The last two items were reflected before scale construction and were adapted from Weinstein *et al.* (1987) and Zimmerman and Pons (1986).They included students' persistence at difficult or boring tasks and working diligently e.g. "Even when study materials are dull and uninteresting, I keep working until I am finish" (33) and "When work is hard I either give up or study only the easy parts" (27), with the last item reflected before scale construction (Pintrich & De Groot, 1990 : 35).

4.10 VARIABLES

The independent variables were memory, summary and test-taking strategies. The dependent variables were the learners' effective use of learning strategies as measured by their GPA in their English Exam.

4.11 STATISTICAL PROCEDURES AND TECHNIQUES

Reliability of the MSLQ sub-scales was measured by using Cronbach's Alpha coefficient. Independent two sample t-tests were performed to determine if there is a statistically significant difference between the means of the experimental and the control groups. The statistical analysis was done by using SAS. (SAS INSTITUTE CARY, NC, 1996). An effect size (d) was calculated to determine the practical significance

between two independent groups as follows: $d = \frac{\text{mean 'e'} - \text{mean 'c'}}{SD}$ where

d = effect size

mean 'e' = mean of experimental group

mean 'c' = mean of control group

SD = the biggest standard deviation of the experimental or control group

if

d = 0.2 it is a small effect size

d = 0.5 it is a medium effect size

d = 0.8 it is a large effect size and practically significant (Steyn, 1999: 3).

4.12 CONCLUSION

Chapter four dealt with the procedure and the method followed when conducting the research to determine whether a learning strategies programme influence the use of learning strategies, academic achievement and the motivational level of learners. The following chapter will outline a discussion on the statistical analyses and interpretation of results.

CHAPTER 5

5. STATISTICAL ANALYSES AND INTERPRETATION OF RESULTS

5.1 INTRODUCTION

This chapter outlines the presentation of the statistical analyses and interpretation of results. The hypotheses that were investigated is described in paragraph 5.2. The procedure that was followed to analyse the data is described in paragraph 5.3 while the summary statistics are described in paragraph 5.4 to paragraph 5.6.

5.2 HYPOTHESES

The following hypotheses (see chapter 4) were to be investigated:

Hypothesis 1

Instruction in learning strategies will have a positive impact on the academic achievement (defined as GPA) of low achieving Black Secondary School learners.

Hypothesis 2

There is a relationship between learning strategy use, motivation and the academic achievement (defined as GPA) of low achieving Black Secondary School learners.

Hypothesis 3

Improved learning strategy usage will improve achievement in general, and in English in particular of low achieving Black Secondary School learners.

Hypothesis 4

Improved learning strategy usage will raise the level of motivation in low achieving Black Secondary School learners.

5.3 PROCEDURE

In order to investigate hypothesis 1 (see par. 5.2) independent t-tests were performed. Due to the reasons in paragraph 5.4.2 it was not possible to investigate hypotheses 2,3 and 4.

5.4 Explanation of the different tests used in the experimental design to investigate the hypotheses

5.4.1 Pre-test (Y_1)

The pre-test (Y_1) the MSLQ (par. 4.9.1) was administered to both the experimental and control groups to obtain information on the learners' level of strategy use and motivation. The mid-year examination mark for English was used as part of the pre-test to obtain data on learners' level of academic achievement in English.

5.4.2 Post-test (Y_2)

The end of year English examination mark was used as the post-test (Y_2). The post-test was used to assess whether the experimental group performed relatively better (based upon the experimental treatment of memory, summary and test-taking strategies) than the control group who did not undergo the learning strategies programme.

The MSLQ was also supposed to be administered during the post-test, but was not administered due to the unforseen unavailability of learners during the end of year examination period. The time at which the questionnaire was supposed to be administered was not suitable in terms of Department of Education regulations during the examination period. The onset of the school vacation immediately after the examinations also made it impossible to have the subjects answer the MSLQ.

Because the MSLQ could not be administered during the post-test it was not possible to

investigate hypotheses 2, 3 and 4. When the experimental design was planned, it was not forseen that because of departmental regulations it would not be possible to administer the MSLQ again.

5.5 DESCRIPTIVE DATA OF THE EXPERIMENTAL AND CONTROL GROUPS

The population constituted fifty Grade 10 learners, selected from PROTEC (Programme for Technological Careers). The learners at PROTEC are from various schools in and around the Molopo Area in the North West Province and attend PROTEC on a voluntary basis. Table 5.1 outlines the distribution of learners according to their sex.

TABLE 5.1: Sex distribution of subjects

GROUP	BOYS	GIRLS	TOTAL
Experimental group	24	26	50
Control group	29	21	50

TABLE 5.2 DESCRIPTIVE DATA OF EXPERIMENTAL GROUP

GROUP	N	MEAN ($\bar{x}$)	SD
Pre-test	50	52.34	11.64
Post-test	50	63.38	15.20
Age	50	15.64	1.16
Strategy use	50	5.59	0.76
Self-regulation	50	5.45	0.83
self-efficacy	50	5.99	0.70
Test anxiety	50	3.63	1.47
Intrinsic value	50	6.44	0.58

Key:

N = Number

$\bar{x}$ = Mean

SD = Standard Deviation

TABLE 5.3: DESCRIPTIVE DATA OF CONTROL GROUP

GROUP	N	MEAN($\bar{x}$)	SD
Pre-test	50	37.76	15.22
Post-test	50	42.70	12.50
Age	50	17.94	1.68
Strategy use	50	5.45	0.84
Self-regulation	50	4.89	0.88
Self-efficacy	50	5.37	0.92
Test anxiety	50	4.58	1.24
Intrinsic value	50	5.69	0.73

Key:

N : number of subjects

$\bar{x}$: mean

SD : Standard Deviation

The subjects of both the experimental and control groups were English Second Language learners. The subjects in the experimental group range in age from 13-18 years and those in the control group range in age from 15-22 years (see table 5.4).

TABLE 5.4: Age distribution of subjects

GROUP	13	14	15	16	17	18	19	20	21	22
Experimental group	1	5	20	13	7	4	-	-	-	-
Control group	-	-	2	8	9	19	4	2	4	2

5.6 THE DIFFERENCE BETWEEN THE EXPERIMENTAL AND THE CONTROL GROUPS

To determine whether there was a difference between the experimental and control groups on each of the variables at the onset of the programme a series of t-tests were calculated (see table 5.5).

From table 5.5 it can be inferred that there were practical significant differences between the experimental and control groups with relation to age, intrinsic value and academic achievement. It seems that the experimental group experienced more intrinsic value than the control group.

From table 5.5 it can be inferred that the control group had a higher mean age (i.e. 17.94 years) than the experimental group (i.e. 15.64 years). This difference in age is of practical or educational significance (d = 1.37).

With relation to strategy use, self-regulation, self-efficacy and test anxiety there were no practical significant differences between the experimental and control groups. It can therefore be inferred that the two groups were on the same level of strategy use, self-regulation, self-efficacy and test anxiety.

TABLE 5.5: SUMMARY STATISTICS OF THE EXPERIMENTAL AND CONTROL GROUPS ON THE PRE-TEST

VARIABLE	GROUP	MEAN($\bar{x}$)	SD	d-value
Age	E	15.64	1.16	1.37
	C	17.94	1.68	
Strategy use	E	5.59	0.76	0.16
	C	5.45	0.84	
Self-regulation	E	5.45	0.83	0.63
	C	4.89	0.88	
Self-efficacy	E	5.99	0.70	0.67
	C	5.37	0.92	
Intrinsic value	E	6.44	0.58	1.02
	C	5.69	0.73	
Test anxiety	E	3.63	1.47	0.64
	C	4.58	1.24	
Academic achievement	E	52.34	11.64	0.95
	C	37.76	15.22	

Small effect d = 0.2

Medium effect d = 0.5

Large effect d = 0.8

Key:

E = Experimental group

C = Control group

$\bar{x}$ = Mean

SD = Standard Deviation

d-value = effect size

5.7 THE EFFECT OF THE LEARNING STRATEGIES PROGRAMME ON THE ACADEMIC ACHIEVEMENT OF THE EXPERIMENTAL GROUP

Hypothesis 1: Improved learning strategy usage will improve achievement in general, and in English in particular of low achieving Black Secondary School learners.

From table 5.6 it can be inferred that although the mean academic achievement post-test scores of the two groups were higher than the pre-test scores only the improvement in academic achievement of the experimental group was of practical significance due to a d-value of 0.86 which is of large educational significance. Because the experimental group went through a learning strategies programme and not the control group the conclusion can be made that the improvement in the experimental group's academic achievement was due to strategy training.

On the basis of this conclusion hypothesis 1 can be accepted. It can therefore be inferred that instruction in learning strategies had a positive impact on the academic achievement of low achieving Black Secondary School learners.

TABLE 5.6: THE DIFFERENCE IN PRE- AND POST-TEST SCORES OF THE EXPERIMENTAL AND CONTROL GROUPS

GROUP	PRE-TEST SCORES	POST-TEST SCORES	MEAN DIFFERENCE	d-value
Experimental group	52.34	63.38	11.04	0.86
Control group	37.76	42.70	4.94	0.49

Effect size:

Small effect $d = 0.2$

Medium effect $d = 0.5$

Large effect $d = 0.8$

Hypotheses 2, 3 and 4: As explained in paragraph 5.4.2 it was not possible to investigate these hypotheses because of the unavailability of the MSLQ scores on strategy use and motivation.

5.8 CONCLUSION

It can thus be inferred from the discussion of the statistical analyses and interpretation of results that the improvement of the experimental group's academic achievement was due to strategy training. Chapter six will outline a discussion on the limitations of this research as well as recommendations for future research.

CHAPTER 6

6. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

6.1 INTRODUCTION

This chapter consists of a summary of the research. A statement of the problem is presented in paragraph 6.2. The review of literature is summarised in paragraph 6.3 and is followed by a summary of the method of research in paragraph 6.4. The procedure according to which the research was conducted is summarised in paragraph 6.5. The results of the research appear in paragraph 6.6. The limitations of the study are discussed in paragraph 6.7 and the recommendations are presented in paragraph 6.8. The chapter is then concluded with brief remarks on the whole research in paragraph 6.9.

6.2 STATEMENT OF THE PROBLEM

Due to cultural and educational deprivation, low socio-economic status as well as the ineffective or non-use of proper learning strategies, most learners have developed a negative attitude towards English as a subject as they regard it as difficult.

There are some learners who are motivated to learn but they constitute only a small percentage when compared to those who lack motivation. Learners who are motivated choose challenging tasks and they engage in learning with enthusiasm. More so, if they effectively use learning strategies it can make learning more efficient and effective. This can be achieved through the combined use of cognitive and metacognitive strategies such as rehearsal, elaboration, planning and monitoring, to name but a few.

Learners, both achievers and non-achievers, need to be made aware of the different

learning strategies and how they can be applied in order to improve their academic achievement.

The aim of this research was, therefore, to determine whether a learning strategies programme had an influence on the academic achievement of low achieving Black Secondary School learners.

6.3 REVIEW OF LITERATURE

6.3.1 The relationship between learning strategies and academic achievement

Learning strategies are defined as the cognitive processes learners use to process information that enhances comprehension, to learn and to retain information as well as to integrate new information with existing knowledge (see par. 2.5.1). The use of learning strategies influence learners' engagement in learning tasks.

Learning strategies play an important role in supporting and facilitating one's learning (see par. 2.5). Learning is a human activity that engages mental structures or memory stores to acquire knowledge. Acquisition of knowledge is seen as the result of organisation, coding, rehearsal and storage of information in the memory system (see par. 2.1). All new information acquired later is then incorporated into the existing stored information so that the old and new are integrated into one knowledge structure (see par. 2.4).

The purpose of learning strategies is to affect the way in which the learner selects, acquires, organizes and integrates new information with existing knowledge, i.e. information processing. Training learners in learning strategies and in monitoring their own learning, makes them good processors of information and leads to high levels of achievement (see par.2.5.1).

Learning strategies describe either cognitive or metacognitive activities. A learner

without metacognitive approaches are essentially learners without direction and ability to review their progress as well as future learning directions (see par. 2.5.1).

Learning strategies perform a variety of functions with reference to student learning. They help a learner to attend to tasks, monitor his/her progress, retrieve information from memory, create and maintain a favourable climate conducive to learning (see par. 2.5.1).

Training learners in metacognitive strategies such as planning, monitoring and self-regulation increases the learners' use of cognitive strategies. A cognitive learning strategy is a plan for orchestrating cognitive resources, such as attention and long-term memory, to help reach a learning goal (see par. 2.5.2.1). Good management of resources such as time and study environment supports learning and provides an atmosphere conducive to learning so that the learner is able to use cognitive and metacognitive strategies successfully to achieve high performance.

Three types of cognitive strategies were identified, namely, rehearsal strategies, elaboration strategies and organisational strategies (see par. 2.5.2.1). Rehearsal strategies are used to repeat information in order to facilitate verbatim recall or to hold on to information so that it does not fade before being committed to memory (see par. 2.5.2.1). A distinction is made between rehearsal strategies used for basic tasks and rehearsal strategies used for complex tasks. Rehearsal strategies used for basic tasks are those used for reciting or repeating the information during learning, with the aim of verbatim reproduction, for example, when one repeats a telephone number just before it is dialled or written down (see par. 2.5.2.1). Rehearsal strategies for complex tasks are used to actively say, write or point to parts of the learning material presented earlier. The aim of using such strategies is to select important aspects from the main text and make sure that acquisition of the information occurs. Strategies used for rehearsing complex tasks are highlighting or underlining and taking notes (see par. 2.5.2.1).

Elaboration is the process of expanding upon new information by linking it with what one already knows. Elaboration strategies help the learner by creating symbolic

construction, which is either imaginable or verbal. Elaboration strategies are also divided into strategies for basic and complex tasks. Elaboration strategies for basic learning tasks include paired-associate learning and the keyword method for acquiring foreign language vocabulary. Elaboration strategies for complex tasks help learners store information in long-term memory (LTM) by connecting new information with prior knowledge (see par. 2.5.2.1).

Organisational strategies is the grouping of information according to its relation with the short-term memory to prepare it for long-term storage. The benefits of organisation derive both from the processing that the learner involves himself/herself in when organising the learning material and from the structure that is ultimately formed. Organisation strategies used for learning basic tasks sort things according to their common features or attributes. Organisational strategies for basic tasks include listing items or grouping them into categories. Organisational strategies for complex tasks help the learner select appropriate information and construct connections among the information to be learned (see par. 2.5.2.1).

Metacognitive learning strategies include knowledge about cognition as well as regulation of cognition or planning, monitoring and evaluating a learning activity (see par. 2.5.2.2). The extensive use of metacognitive strategies by learners suggest that there is considerable reflection on learning and the use of learning strategies. Metacognitive strategies include planning, monitoring and evaluation.

Planning is the careful pulling together of all possible ways of attaining the learning goal. Planning strategies entail a learner's attempts to set goals when studying, generating questions before reading the text, skimming and doing a task analysis of the problem. Learners plan their use of strategies with the help of these activities to facilitate the processing of information and activate relevant aspects of prior knowledge that make organising and comprehending the material easier (see par. 2.5.2.2).

Monitoring and evaluation strategies are essential aspects of metacognition. Monitoring

activities (such as tracking one's attention as one reads) help the learner to understand the material as well as integrate it with prior knowledge. Evaluation, which is also a form of monitoring, is a process whereby learners evaluate the effectiveness of their strategic actions (see par. 2.5.2.2).

Resource management strategies (see par. 2.5.2.3) are the strategies that learners use to control their environment and the resources available so that a climate conducive to learning prevails. These strategies do not have a direct influence on learning, but are general in the sense that they can aid or hamper learning. Resource management strategies include effort management, affective strategies, help seeking, time management and study environment (see par. 2.5.2.3).

The three types of learning strategies , namely cognitive, metacognitive and resource management strategies are all equally important. Metacognitive learners integrate all three types of strategies and achieve good academic results (see par. 2.5.2.4).

6.3.2 The relationship between motivation and academic achievement

Motivation (see par. 3.2.1) is defined as the process of instigating and sustaining goal-directed behaviour. There is a significant relationship between learners' motivation and academic achievement (see also par. 3.1). Learners should not only have strategic knowledge about learning strategies but should also know *how* to use them and at the same time have the motivation to use them. Students are more likely to learn if they believe they will succeed if they apply reasonable effort.

Motivation processes involved in student learning are expectancy, self-efficacy and attributions. Expectancy (see par. 3.5.1) which is defined as the belief learners have about their future expectancy of success predicts learning behaviour. A learner who regards himself as less competent in a particular task does not involve himself in that particular task. Instead he chooses another task that he can succeed in.

Motivation processes such as expectations and attributions are regulated by self-efficacy. Self-efficacy is an important variable in understanding motivated learning and enables one to explain a student's use of learning strategies and motivation to learn (see par. 3.5.1). A high self-efficacious learner attributes his failures to factors from within himself like lack of effort so that he stays in control of his learning. Thus students who regard themselves as efficacious generates positive thinking as opposed to those who feel inefficacious and are therefore able to shape their own future.

Learning behaviour is also influenced by attributions which is defined as the system of beliefs one holds about the reasons one gives for one's failures and successes. Personal and environmental factors (e.g. effort, task difficulty, luck and lack of aptitude) influence an individual's behaviour (see par. 3.5.2.2). The type of attributions one mentions for failure determines whether one hopes to succeed in future or not. A learner who perceives lack of aptitude as a reason for his failure has no hope for improving his academic achievement, since aptitude is fixed and stable. In this case the learner accepts that he is a failure. Attributing one's failure to an unstable but controllable factor like effort (see par. 3.5.2.2.2) indicates one's hope that the performance can be improved with more effort and other changes in one's approach to the learning task.

Motivation to learn refers to the motivation that sustains later performance as well as the covert processes that occur during learning. A learner who is motivated choose to be involved in learning tasks. They use cognitive, metacognitive and resource management strategies (se par. 2.5.2). As a result good strategy use results in high academic achievement.

6.4 METHOD OF RESEARCH

6.4.1 Subjects

The subjects for the experimental group were Grade 10 learners ranging in age between 13 to 18 years were taken from PROTEC (Programme for Technological Careers) which

they attended on a voluntary basis on Saturdays to improve their overall academic achievement. The subjects (N = 50) were all low achieving students and were subjected to a learning strategies training programme to see if their academic achievement defined as Grade Point Average (GPA) could be influenced. The subjects of the control group were also Grade 10 learners ranging in age from 15-22 years. The subjects of the control group attended their normal school programme and did not undergo the learning strategies programme as did the experimental group.

6.4.2 Instrument

The following instrument was used:

6.4.2.1 The motivated strategies for learning questionnaire (MSLQ)

The MSLQ (see par. 4.9 and Appendix A) includes 44 items on motivation and learning strategies. Students responded to the items on a 7- point Likert scale (1 = "not at all true of me" to 7 = "very true of me") in terms of their motivation for and attitudes towards the subject English. Three sub scales were included, namely intrinsic value, test anxiety and self-efficacy (see also par. 4.9).

6.5 PROCEDURE

The learners in the experimental group were subjected to a learning strategies training programme over a period of seven weeks. The MSLQ was administered to the fifty learners in the experimental group as well as the fifty learners in the control group as part of the pre-test. The mid-year English Exam mark also constituted part of the pre-test. Tests were marked and scored and were analysed by means of the SAS system.

6.6 RESULTS

There was a practical significant difference between the experimental and control groups

with relation to test-anxiety and academic achievement. The experimental group experienced less test-anxiety than the control group.

The experimental and control groups were on the same level of strategy use, self-regulation, self-efficacy and intrinsic value since there was no practical significance with relation to strategy use.

Because the experimental group went through a learning strategies programme and not the control group it can be concluded that the improvement in the experimental group's academic achievement was due to strategy training.

6.7 LIMITATIONS

This research had some limitations some of which impacted seriously on the results. These limitations were:

1. Post-test problems were experienced whereby the Motivated Strategies for Learning Questionnaire (MSLQ) was not administered as part of the post-test (see par.5.4.2). As a result hypotheses 2, 3 and 4 (see par. 5.2) could not be investigated.

2. The period of time that was used to administer the experimental treatment was too short. Due to the short time (seven weeks) learners did not have enough time to practice and apply what they have learned.

3. It should also be considered that only one hour per Saturday was spent on the administration of the learning strategies programme. A longer period of training is needed so that learners could learn to use strategies more spontaneously in order to benefit more from their learning.

4. Another limitation was the time of the year that the research was undertaken. Since it was very close to the end of year examination period the post-test could not be administered (in the form of the MSLQ) and thus impacted on the results of the research.

6.8 RECOMMENDATIONS

It is recommended that learning strategy instruction should be given over a longer period of time to allow sufficient time for learners to acquire independent use of the learning strategies that were taught. No similar research has been conducted before in the Molopo Area. It is therefore recommended that the research be repeated on a larger sample. The longer time period recommended suggest that more time should be used in administering the treatment, an activity that would require that teachers at the different schools where the experiment is conducted be used as researchers.

These teachers shall have to know the purpose of such an intervention so that they can support and enhance the process. This involvement will also expose them to knowledge of the learning strategies and the methods of teaching these strategies to learners. Attempts should be made to make learners aware that learning strategies is an important variable which influence academic achievement.

It is recommended that all teachers should receive strategy training in order to incorporate strategic instruction into the subjects they teach. A programme should be developed to improve students' self-efficacy, attributions and knowledge and the use of learning strategies to help them take responsibility for their own learning and improve their academic achievement.

6.9 CONCLUDING REMARKS

In this research learning strategy variables that influence academic achievement in English were investigated. Although the main goal to determine whether there is a

relation between learning strategies, motivation and academic achievement could not be attained, it is hoped that the findings of this research concerning learning strategy training will be useful in dealing with the low academic achievement in English of Black Secondary School learners. This can be solved by changing the learners' attitude towards English where a negative attitude towards the subject has been observed. It is also believed that by teaching learners how to use learning strategies their self-efficacy in performing tasks will be improved and that they will then become motivated for learning.

APPENDIX A

MOTIVATED STRATEGIES FOR LEARNING QUESTIONNAIRE

(HIGH SCHOOL)

MSLQ - HS

MOTIVATED STRATEGIES FOR LEARNING QUESTIONNAIRE
(HIGH SCHOOL)

National Center for Research to Improve Postsecondary Teaching and Learning
(NCRIPTAL)

School of Education, The University of Michigan, Ann Arbor, Michigan

Adapted by
J.L. de K. Monteith (Potchefstroom University for CHE)
and
Zelbia Sprang
for
Grade 10 learners

The questionnaire asks you about your study habits, your learning skills, and your motivation for learning or studying.

THERE ARE NO RIGHT OR WRONG ANSWERS TO THE QUESTIONNAIRE. THIS IS NOT A TEST.

We want you to respond to the questionnaire as accurately as possible, reflecting your attitudes and behaviours in this course.

PART A. MOTIVATIONAL BELIEFS

The following questions ask about your motivation for and attitudes about this class. **Remember there are no right or wrong answers, just answer as accurately as possible.** Use the scale below to answer the questions.

Not at all true of me	1	2	3	4	5	6	7	Very true of me

If you think the statement is very true of you, cross out 7; if a statement is not at all true of you, cross out 1. If the statement is more or less true of you, find the number between 1 and 7 that best describes you. Cross out this number.

1. I prefer class work that is challenging so that I can learn new things.
2. Compared with other students in this class I expect to do well.
3. I am so nervous during a test that I cannot remember facts I have learned.
4. It is important for me to learn what is being taught in this class.
5. I like what I am learning in this class.
6. I'm sure I can understand the ideas taught in this course.
7. I think I will be able to use what I learn in this class in other classes.
8. I expect to do very well in this class.
9. Compared with others in this class, I think I'm a good student.
10. I often choose topics I will learn from even if they require more work.
11. I am sure I can do an excellent job on the problems and tasks given for this class.
12. I have an uneasy, upset feeling when I take a test.
13. I think I will receive a good mark in this class.
14. Even when I do poorly on a test I try to learn from my mistakes.
15. I think that what I am learning in this class is useful for me to know.
16. My study skills are excellent compared with others in this class.
17. I think that what we are learning in this class is interesting.
18. Compared with other students in this class I think I know a great deal about the subject.
19. I know that I will be able to learn the material for this class.
20. I worry a great deal about tests.
21. Understanding English as a subject is important to me.
22. When I take a test I think about how poorly I am doing.

PART B. SELF-REGULATED LEARNING STRATEGIES

The following questions ask about your learning strategies and study skills for this class. **Again, there are no right or wrong answers. Answer the questions about how you study in this class as accurately as possible.** Use the same scale to answer the remaining questions.

Not at all true of me	1	2	3	4	5	6	7	Very true of me

If you think the statement is very true of you, cross out 7; if a statement is not at all true of you, cross out 1. If the statement is more or less true of you, find the number between 1 and 7 that best describes you. Cross out this number.

23. When I study for a test, I try to put together the information from the lesson and from the book.
24. When I do homework, I try to remember what the teacher said in class so I can answer the questions correctly.
25. I ask myself questions to make sure I know the material I have been studying.
26. It is hard for me to decide what the main ideas are in what I read.
27. When work is hard I either give up or study only the easy parts.
28. When I study I put important ideas into my own words.
29. I always try to understand what the teacher is saying even if it doesn't make sense.
30. When I study for a test I try to remember as many facts as I can.
31. When studying, I take down notes to help me remember material.
32. I work on practice exercises and answer end of chapter questions even when I don't have to.
33. Even when study materials are dull and uninteresting, I keep working until I finish.
34. When I study for a test I practice saying the important facts over and over to myself.
35. Before I begin studying I think about the things I will need to do to learn.
36. I use what I have learned from previous homework assignments and the textbook to do new assignments.

37. I often find that I have been reading for class but don't know what it is all about.
38. I find that when the teacher is talking I think of other things and don't really listen to what is being said.
39. When I am studying a topic, I try to make everything fit together.
40. When I'm reading I stop once in a while and go over what I have read.
41. When I read material for English, I say the words over and over to myself to help me remember.
42. I outline the chapters in my book to help me study.
43. I work hard to get a good mark even when I don't like a class.
44. When reading I try to connect the things I am reading about with what I already know.

APPENDIX B

ANSWER SHEET

MSLQ - HS

If you think the statement is very true of you, cross out 7; if a statement is not at all true of you, cross out 1. If the statement is more or less true of you, find the number between 1 and 7 that best describes you. Cross out this number.

Not at all true of me	1	2	3	4	5	6	7	Very true of me

PART A: MOTIVATION

1	1	2	3	4	5	6	7	(18)
2	1	2	3	4	5	6	7	(19)
3	1	2	3	4	5	6	7	(20)
4	1	2	3	4	5	6	7	(21)
5	1	2	3	4	5	6	7	(22)
6	1	2	3	4	5	6	7	(23)
7	1	2	3	4	5	6	7	(24)
8	1	2	3	4	5	6	7	(25)
9	1	2	3	4	5	6	7	(26)
10	1	2	3	4	5	6	7	(27)
11	1	2	3	4	5	6	7	(28)
12	1	2	3	4	5	6	7	(29)
13	1	2	3	4	5	6	7	(30)
14	1	2	3	4	5	6	7	(31)
15	1	2	3	4	5	6	7	(32)
16	1	2	3	4	5	6	7	(33)
17	1	2	3	4	5	6	7	(34)
18	1	2	3	4	5	6	7	(35)
19	1	2	3	4	5	6	7	(36)
20	1	2	3	4	5	6	7	(37)
21	1	2	3	4	5	6	7	(38)
22	1	2	3	4	5	6	7	(39)

PART B: LEARNING STRATEGIES

23	1	2	3	4	5	6	7	(40)
24	1	2	3	4	5	6	7	(41)
25	1	2	3	4	5	6	7	(42)
26	1	2	3	4	5	6	7	(43)
27	1	2	3	4	5	6	7	(44)
28	1	2	3	4	5	6	7	(45)
29	1	2	3	4	5	6	7	(46)
30	1	2	3	4	5	6	7	(47)
31	1	2	3	4	5	6	7	(48)
32	1	2	3	4	5	6	7	(49)
33	1	2	3	4	5	6	7	(50)
34	1	2	3	4	5	6	7	(51)
35	1	2	3	4	5	6	7	(52)
36	1	2	3	4	5	6	7	(53)
37	1	2	3	4	5	6	7	(54)
38	1	2	3	4	5	6	7	(55)
39	1	2	3	4	5	6	7	(56)
40	1	2	3	4	5	6	7	(57)
41	1	2	3	4	5	6	7	(58)
42	1	2	3	4	5	6	7	(59)
43	1	2	3	4	5	6	7	(60)
44	1	2	3	4	5	6	7	(61)

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