

**THE RELATION BETWEEN SELF-EFFICACY, SELF-EVALUATION  
AND ACADEMIC ACHIEVEMENT IN ECONOMICS OF STANDARD 8  
STUDENTS IN QWAQWA**

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## **DECLARATION**

I declare that the relation between self-efficacy, self-evaluation and academic achievement in Economics of Standard 8 students in Qwaqwa is my own work. It is being submitted for the **MAGISTER EDUCATIONIS** degree to the Potchefstroom University for Christian Higher Education, Potchefstroom. It has not been submitted before for any degree or examination to any other University.

**MALAN PETRUS DLADLA**

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In gratitude I wish to give recognition to:

- The SAS computer-programmes which were used in the statistical analyses of the research data. Information of the programmes can be found in:

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The opinions that are expressed in this study and the conclusions that were reached, are those of the author and are not to be ascribed to the Graduate School of Education, of the Potchefstroom University for Christian Higher Education.

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## SUMMARY

The aims of this study were:

- to determine the relationship between self-efficacy, self-evaluation and academic achievement in Economics of Std. 8 students by means of a review of the literature;
- to empirically determine the relationship between self-efficacy and academic achievement; and
- to empirically determine the relationship between self-evaluation and academic achievement.

From the review of the literature it was concluded that there is a relationship between self-efficacy, self-evaluation and academic achievement. Students who hold a high sense of self-efficacy for learning participate more eagerly in their learning tasks, persist longer and achieve higher levels of performance than those who doubt their capabilities. Self-efficacious students intensify their efforts when performance in their learning tasks falls short of their goals and experience little in the way of stress reactions in taxing situations, while inefficacious students lower their aspirations, suffer much anxiety and dwell on their personal inadequacies.

Self-evaluation creates beliefs about students' capabilities. As students work on their learning tasks, they evaluate their progress and form certain beliefs about their capabilities. Positive self-evaluations of one's progress towards a learning goal or successes heighten self-efficacy and motivation, whereas negative self-evaluations create negative beliefs about one's own capabilities.

With the empirical study though:

- no relationship between respectively self-efficacy and academic achievement in Economics of Std. 8 students; and
- between self-evaluation and academic achievement in Economics of Std. 8 students could be established.

## OPSOMMING

Die studie het ten doel gehad om:

- die verband tussen selfdoeltreffendheid, selfevaluering en akademiese prestasie in Ekonomie van st. 8 leerlinge deur middel van 'n literatuuroorsig te bepaal;
- die verband tussen die selfdoeltreffendheid en akademiese prestasie; en
- tussen selfevaluering en akademiese prestasie empiries vas te stel.

Uit die literatuuroorsig kan die gevolgtrekking gemaak word dat daar 'n verband tussen selfdoeltreffendheid, selfevaluering en akademiese prestasie bestaan. Leerlinge wat 'n hoë mate van selfdoeltreffendheid om te leer handhaaf, neem meer gretig deel aan hulle leertake, volhard langer en bereik hoër vlakke van prestasie as die leerlinge wat aan hulle eie vermoëns twyfel. Selfdoeltreffende leerlinge verhoog die intensiteit van hulle pogings wanneer hulle nie hul doel tydens die afhandeling van leertake bereik nie. Hulle ervaar ook nie baie stres in uitdagende situasies nie, terwyl nie-selfdoeltreffende leerlinge hulle aspirasies verlaag, baie angs ervaar en oor hulle persoonlike tekortkominge tob.

Selfevaluering skep vertroue in leerlinge se vermoëns. Wanneer leerlinge aan hulle leertake werk, evalueer hulle vordering en vorm so 'n sekere vertroue in hulle eie vermoëns. Positiewe selfevaluering van 'n persoon se vordering op pad na die bereiking van 'n leerdoelstelling, of suksesse verhoog selfdoeltreffendheid en motivering, terwyl negatiewe selfevaluering 'n negatiewe effek op 'n leerling se vertroue in sy of haar eie vermoë het.

Met die empiriese komponent van die ondersoek kan daar nie 'n verband tussen die selfdoeltreffendheid en akademiese prestasie in Ekonomie van st. 8 leerlinge vasgestel word nie. Daar kon ook nie 'n verband tussen die selfevaluering en akademiese prestasie in Ekonomie van st. 8 leerlinge vasgestel word nie.

## CHAPTER ONE

### 1. THE PROBLEM AND ITS BACKGROUND

#### 1.1 INTRODUCTION AND STATEMENT OF THE PROBLEM

The failure rate in Economics as a subject among the Std. 8 students in the Qwaqwa region is high compared to their performance in other subjects. For example, statistics from the tests and examination schedules from various schools in the Qwaqwa region reveal that only 25% of Std. 8 students studying Economics achieve high marks in Economics tests and examinations, while the majority of students achieve low marks and fail Economics at the end of the year. This high failure rate in Economics is likely to reduce students' commitment to learning and to create a belief in some learners that Economics is one of the difficult subjects in school.

Although some students may work harder and persist longer than others to master their learning tasks, students in general are not conscious of the variables that influence their learning and achievement in Economics (Sadler, 1983:63). Students' awareness of variables such as self-efficacy, self-evaluation and learning strategies are believed to influence learning and academic achievement (Sadler, 1983:63).

Bandura (1986:391) defines *self-efficacy* as people's judgements of their abilities to organize and execute courses of action required to attain designated levels of performances. Self-efficacy is not concerned with the skills one has but with one's judgements of what one can do with whatever skills one possesses. In Schunk's (1994b:3) view, self-efficacy influences initiation of behaviour, effort and persistence in the face of obstacles and achievement. For example, the student who believes that he/she is capable of learning or mastering a specific learning task will expend greater effort, employ metacognitive skills such as planning, monitoring, etc. and devote more time to the learning task than students who have a low sense of efficacy. Thomas and Rohwer (1986:35) argue in this regard that students who have a low sense of personal efficacy may avoid studying intellectually challenging tasks. Bandura (1986:391) further holds that students with high self-efficacy also believe that they can do something to alter environmental events, while those with low self-efficacy regard themselves as essentially incapable of executing consequential behaviour.

*Self-evaluation* refers to learners' responses that involve systematically comparing their present performance level with a standard or goal (Zimmerman, 1989:333; Schunk, 1991a:86; 1994a:2). This view suggests that learners must evaluate their performances to ascertain whether or not there is any progress. For example, as a learner reads about international trade in Economics he/she can evaluate his/her understanding by answering end of chapter questions and comparing the answers with those given by the teacher or by his/her fellow students.

Self-evaluation is a learner initiated activity in that students become actively involved in setting goals and generating the criteria for measuring their progress (Boud, 1992:185; Woods, Marshall & Hrymak, 1988:107). Self-evaluation is thus intended to measure the degree to which learning goals are being met and to modify, if necessary, the strategies being used to facilitate goal attainment (Weinert & Kluwe, 1987:252).

Garrison and Magoon (1972:363) suggest that in a learning situation, the student should be encouraged to evaluate his/her performance in order to know his/her progress in learning and be helped to develop and to use strategies to evaluate his/her own learning performance.

Allowing students to evaluate their performance has been found to encourage motivated learning and to enable students to have more information about their work and goal progress (Seifert, 1983:346). Bandura (1986:467) also reports that students involved in selecting goals hold themselves responsible for progress and engage in self-evaluative mechanisms in the process of learning. Through self-evaluation, students can best know how good they are at various classroom activities.

Sadler (1983:63) explains that self-evaluation informs learners when progress has been made and that knowledge about one's progress towards a specific goal motivates learning, effort expenditure and develops favourable attitudes towards learning and schooling. Learners who evaluate their own progress in learning are more likely to acquire knowledge about what is to be achieved and to work towards ways of doing their learning tasks than learners who do not self-evaluate their progress (Sadler, 1983:63). Self-evaluation thus fosters the development of a wholesome and positive self-concept and above all, provides learners with an important lesson in self-understanding, because self-evaluation informs learners when progress has been made (Sadler, 1983:63). In Schunk's (1994a:3) view, judgement of progress and enhanced perceptions of capabilities heighten learners' initial sense of self-efficacy and motivation to

continue to improve or work harder, persist longer and to seek help from teachers or their fellow students.

Given this background, this study will therefore seek answers to the following questions:

- a. Is there a relationship between the self-efficacy and academic achievement in Economics of Std. 8 students?
- b. Is there a relationship between self-evaluation and the academic achievement in Economics of Std. 8 students?

## **1.2 AIM OF THE STUDY**

This study aims to determine the relation between self-efficacy, self-evaluation and academic achievement in Economics of Std. 8 students.

## **1.3 RESEARCH HYPOTHESES**

### **Hypothesis 1**

There is a relationship between self-efficacy and academic achievement in Economics of Std. 8 students.

### **Hypothesis 2**

There is a relationship between self-evaluation and academic achievement in Economics of Std. 8 students.

## **1.4 METHOD OF RESEARCH**

The method of research for this study consisted of a review of the literature and empirical research.

Literature in the field concerned was studied. Theses, journals and other primary and secondary sources of information related to the study were reviewed. A DIALOG-search was performed with the following keywords:

- self-efficacy;
- self-evaluation; and
- academic achievement.

An empirical investigation was undertaken to determine whether self-efficacy and self-evaluation influence academic achievement in economics.

## **1.5 ORGANIZATION OF THE STUDY**

As stated in paragraph 1.2, the aim of this study was to determine whether or not there is a relationship between self-efficacy, self-evaluation and academic achievement in Economics of Std. 8 students. To achieve this aim, it was necessary to undertake a literature study on how students learn and how self-efficacy and self-evaluation influence students' academic achievement. It is for this reason that in CHAPTER TWO learning is discussed. In CHAPTER THREE, the relation between self-efficacy, self-evaluation and academic achievement is discussed. The methodological procedures adopted to determine the relationship between self-efficacy, self-evaluation and academic achievement as well as the population, sample, and instruments are discussed in CHAPTER FOUR. CHAPTER FIVE presents the statistical analyses and interpretation of the results. In CHAPTER SIX, a summary of the study is given as well as the implications, limitations and the recommendations.

The masculine form is used throughout this dissertation for the sake of convenience. No disrespect is intended, and readers can substitute this with the feminine form if so preferred.

## CHAPTER TWO

### 2. LEARNING

#### 2.1 INTRODUCTION

Effective learning requires learners to self-evaluate the adequacy of their performance and to hold certain beliefs about their own capabilities (Assor & Connell, 1992:25). Knowing how one progresses in learning may influence such self-evaluations (see par. 2.7.1) and self-efficacy (see par. 3.2). The concepts of self-evaluation and self-efficacy will be put in the context of learning to explore how these variables (self-evaluation and self-efficacy) can affect learning and learners' academic achievement in Economics.

The aim of this chapter is to explore how effective learning in school may be achieved. The concept of learning will be defined, followed by a brief discussion of a cognitive view of learning (par. 2.2). The variables that influence effective learning will then be discussed (par. 2.3), followed by a discussion of some approaches to learning (par. 2.4), learning styles (par. 2.5), learning strategies (par. 2.6) and metacognition (par. 2.7).

#### 2.2 A COGNITIVE VIEW OF LEARNING

Woolfolk (1990:159; 1995:196) and Ormrod (1995:232) define learning as a relatively permanent change in behaviour that occurs as a result of practice and experience. These changes in behaviour bring about successful ways of dealing effectively with people and things (Ormrod, 1995:232). Woolfolk's (1990:159; 1995:196) definition and the definition of learning given by Bootzin, Loftus and Zajonc (1991:71) exclude changes that accrue from maturation, physical development and changes of a temporary nature.

In a broader sense, learning involves the acquisition and accumulation of knowledge, skills, strategies, beliefs, behaviour, interpretation and reinterpretation of experience and consists of change, adaptability and the ability to question and rethink (Cullingford, 1990:194; Schmeck, 1988:381).

Learning is said to have taken place when the learner has acquired knowledge or is capable of doing something that he/she could not do before learning took place (Schunk, 1991b:7).

According to Shuell (1988:277-278) learning is an active, constructive, cumulative and goal-oriented process that involves cognitive, metacognitive and affective processes which interact with one another in successful learning. Effective learning provides learners with new skills, improve existing ones, builds a store of information and develops interest and attitudes and ways of thinking (Shuell, 1988:278). Learning can thus be defined as the process of effecting change in a person's thoughts and observable actions as a result of experience.

Cognitivists view learning as referring to the acquisition or reorganization of knowledge based on the utilization of cognitive abilities such as perceiving, imaging, reasoning and problem solving (Woolfolk, 1995:241). Cognitive learning focuses attention on the learner receiving, perceiving and organizing the ideas of the tutor or teacher in a meaningful way (Woolfolk, 1995:241).

Feldman (1990:184) and Woolfolk (1990:197) report that cognitivists have developed approaches that focus on the unseen mental processes and view learners as active interpreters and processors of information from the environment. Cognitivists hold that the learning act requires the presence of several states in the learner, including information storage and retrieval capabilities, intellectual skills and cognitive strategies (Woolfolk, 1990:160).

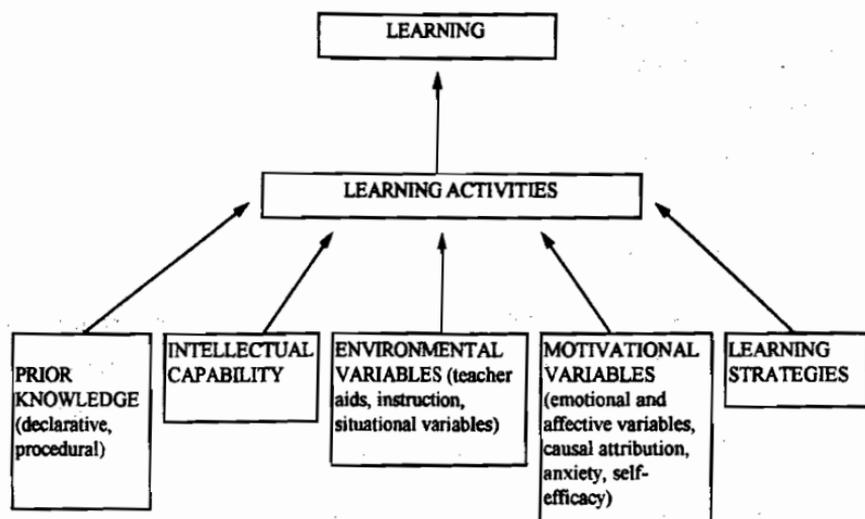
The behaviourists' conception of learning is incomplete because it ignores important aspects such as the individual's perceptions, past experiences, abilities and desires which are essential for learning (Woolfolk, 1990:160).

Cognitivists therefore view learning as a complex activity involving both the acquisition and transformation into a suitable form, as well as testing and checking the adequacy of the information.

### **2.3 VARIABLES THAT AFFECT LEARNING**

There are a number of variables that influence learning. Some variables are assumed to be internal (e.g. prior knowledge, intellectual capability, motivation), whereas others are external to the learner. Klauer's (1988:354) model of learning will be used to discuss some of the

variables that effect learning. According to Klauer (1988:354) effective learning is influenced by prior knowledge, intellectual capability, environmental variables, motivational (affective) variables and learning strategies (see Fig. 2.1).



**FIGURE 2.1: Model of learning (Klauer, 1988:354).**

Klauer's model (Fig. 2.1) illustrates that learning depends on learning activities which, in turn, depend on prior knowledge, the intellectual capability of the learner, environmental variables, motivational variables and learning strategies (Klauer, 1988:358). These variables are assumed to be interwoven and compensatory. For example, an appropriate teaching method may compensate for insufficient intellectual abilities and for the lack of prior knowledge, whereas motivational variables (par. 2.6.5) and learning strategies (par. 2.6) seem to be indispensable in every learning situation (Klauer, 1988:354).

### 2.3.1 Prior knowledge

Prior knowledge refers to information already stored in the learners' long-term memory (Van Meter & Pressley, 1994:402). Woolfolk (1995:337) views the meaningful acquisition and retention of knowledge as a function of prior knowledge. In Ford's (1981:362) view, the

learning of complex information and its transformation into understanding requires specialized prior knowledge to which new information can be related and in terms of which it can be understood. Prior knowledge may however, also interfere with, rather than facilitate, learning. For example, Shuell (1988:281) reports that learners may begin with misconceptions about the material they are studying and may apply rules that are inappropriate, like in subtraction where learners have learned that the smaller digit is subtracted from the larger one and apply the same rules in other situations where they are not applicable. This error thus originates from learners' pre-existing knowledge.

### **2.3.2 Intellectual capability**

Intellectual capability encompasses the learners' level of understanding and their ability to sequentially interpret, reinterpret, integrate and process new information (Woolfolk, 1990:142). Intellectual capability develops quite slowly over the years, but once developed, enables learners to deal effectively with their learning tasks (Kokong, 1991:26).

According to Discoll (1994:103), older learners can deal effectively with their learning activities because they are purposeful and plan their studies. In contrast, younger learners who are less organized require teacher assistance and constant instruction on when and how to use learning strategies in order to understand their learning tasks and to improve their academic performance (Discoll, 1994:103).

### **2.3.3 Environmental variables**

Environmental variables such as learners' socio-economic status, home background and instruction have been found to influence effective learning. Nelson-Le-Gall and Jones (1990:581), for example, report that learners from families below the middle socio-economic strata are not intrinsically motivated to learn and to take responsibility for their own learning because they are deficient in learning, emotionally unstable, lack independence, confidence, curiosity and the persistence necessary for problem-solving and mastery. In contrast, learners from rich families and the middle socio-economic strata are intrinsically motivated to learn and to take responsibility for their own learning (Nelson-Le-Gall & Jones, 1990:581). Variables resulting from low socio-economic strata, such as deficiency, emotional instability, and lack of

dependence, confidence, curiosity and persistence thus have a negative influence on learning (Nelson-Le-Gall & Jones, 1990:581).

Instruction involves teaching learners how to apply learning strategies to a variety of learning tasks (Schunk, 1988:9). Instruction is geared towards effectively accommodating individual differences in learners while helping each learner develop the skills required to master the learning tasks (Schunk, 1988:9; Weinstein & Underwood, 1985:249).

In summary, Klauer's (1988:354) prerequisite model for learning reveals a mutual relationship and interdependence between variables influencing learning such as prior knowledge, intellectual capability, environmental variables, motivational variables and learning strategies (see par. 2.6). For example, in a normal school setting effective learners employ learning strategies to their learning tasks and attempt to relate incoming information to their previously acquired store of knowledge to make their learning tasks easier to understand and remember (Weinstein & Underwood, 1985:248). Learners' ability to apply appropriate learning strategies heightens self-efficacy and motivation.

## **2.4 APPROACHES TO LEARNING**

Schmeck (1988:320) defines approaches to learning as the learning processes that emerge from learners' perceptions of academic tasks as influenced by their personal characteristics. Approaches to learning may also be viewed as different ways in which learners tackle their learning tasks (Weinert & Kluwe, 1987:77). For example, learners may view learning as the accumulation of facts or bits and pieces of information or they may view learning as involving the interpretation of experience (Schmeck, 1988:328). In Marton's (1988:75) view, approaches to learning are not "innate givings", but are something rooted in the learner's experience, and are intended to change the individual's experience, perception, or conception of things (Marton, 1988:75). Entwistle (1988:24) views a deep and a surface approach as the two basic approaches to learning.

### **2.4.1 A deep approach to learning**

According to Entwistle (1988:24) a deep approach to learning refers to learners' predispositions to focus attention on the content as a whole with the intention to see

connections between different parts of the learning tasks and to think about the logical connection involved. The definition of a deep approach to learning suggests that learners with a deep predisposition to learning take an active approach to learning.

Schunk (1988:321) reports that learners may take a deep approach to the learning task with the purpose to extract personal meaning that represents the communicative intent of the author or instructor. This encourages learners to challenge the ideas, evidence and arguments presented by the author, to identify their interrelationships and to seek links with personal experiences and the outside world (Entwistle, 1988:24).

A deep approach to learning seems to be closely related to intrinsic motivation. The learner taking a deep approach is found to be interested in learning, organizes the to-be-learned material better, structures notes prior to revision and spends more time studying than learners who have a quantitative conception of the process (Entwistle, 1988:24). Marton (1988:7) points out that learners who adopt a deep approach to learning are more likely to come up with a better understanding than learners with a surface approach to learning.

#### **2.4.2 A surface approach to learning**

Entwistle (1988:24) views a surface approach to learning as referring to the learner's predisposition to focus attention on the elements of the content, to see the task primarily as a memory task and to approach the task unthinkingly. In Entwistle's (1988:24) view, the learner taking a surface approach to learning focuses attention on the text and concerns himself with verbatim recall of the text, or facts or ideas presented. Marton (1988:7) reports that learners who adopt a surface approach to learning do not include arriving at a new conceptualization in their definition of learning and do not conceive knowledge as things to learn. A surface approach is found to be restricting personal engagement in the act of learning and promotes literal reproduction (Schmeck, 1988:321).

In Entwistle's (1988:24) view, learners adopting a surface approach often fail to identify the essentials of the material and to distinguish between principles and examples. The process of learning in a surface approach is sequential in that it excludes the crucial stage of reorganization and reinterpretation (Entwistle, 1988:24).

To summarize: learners may either adopt a deep or a surface approach to learning, depending on the nature of the learning task, their predisposition toward learning, the motive for engaging in the learning task and the demands of the learning task (Biggs & Rihn, 1984:281). For example, learners may adopt a surface approach to learning when learning for a short-term purpose such as passing a test or may adopt a deep approach to learning when learning with the purpose to derive meaning from the learning task (Biggs & Rihn, 1984:281).

## 2.5 LEARNING STYLES

Dembo (1991:79) views learning styles as personal ways in which individuals process information in the course of learning new concepts and principles. The term **learning style** suggests ways in which an individual learner likes to learn and reflects one's preferred learning strategies. For example, Child (1981:228) contends that learning styles incorporate human attributes such as motivation, attitude and cognitive style which help to determine and characterize one's preferred approach to learning. Learning style seems to be part of the personality of a person and concerns itself with the translation of personality and cognitive style characteristics into study behaviour (Schmeck, 1983:324; Warga, 1983:197).

Learning styles are the accustomed patterns used by learners in the acquisition of information, concepts and skills or the methods by which they come to know and understand their learning tasks. In Biggs and Rihn (1984:28), Laurillard (1979:396) and Singh's (1988:358) view, learning styles refer to a predisposition of some learners to adopt a particular learning strategy to structure their learning tasks in the way they think about their learning tasks and the way they relate one topic to another. In contrast, approaches to learning refer to how learners approach their learning tasks, what they are looking for and where their attention is focused (Laurillard, 1979:396).

Approaches to learning rely on learners' perceptions of the learning tasks, whereas learning styles rely on a cross-situational use of a particular learning strategy or regularity (consistency) in approaches to learning and involve the ways in which learners can learn best as well as the ways in which they prefer to learn (Biggs & Rihn, 1984:28; Singh, 1988:358).

Schmeck's model (1988:175) lists three dimensions of learning styles: **deep, elaborative, and shallow** (see Fig. 2.2).

Learning style	Learning strategy	Learning tactics	Learning outcome
Deep	Conceptualizing	Categorizing, comparing and contrasting categories, hierarchically organizing ideas in networks, abstracting.	Synthesis and analysis, evaluation of conclusions, subsumption, schema development, theory development.
Elaboration	Personalizing	Productive thinking, self-referencing concretizing generating examples, translating into personal language and images, relating current information to prior personal experience.	Application, personal growth personality development, development of social skill and understanding of people.
Shallow	Memorizing	Repetitive rehearsing of information using mnemonics, verbatim or literal encoding with little or no translation.	Description of what was studied, literal reproduction.

**FIGURE 2.2: A model of learning style with suggestions regarding causality (Schmeck, 1988:174).**

Learners with a deep learning style are likely to adopt a conceptualizing strategy and to profit most from conceptual retrieval cues in memory experiments (Schmeck, 1988:176). Learners who adopt a deep learning style, according to Schmeck's (1988:175) model (Fig. 2.2), are apt to believe that learning and education are concerned with the development and refinement of cognitive structures (Schmeck, 1988:175). The model postulates that during learning, learners with a deep learning style tend to analyze, synthesize and evaluate conclusions. The deep processors are found to be argumentative when reading, contrast opposing explanations, make comparisons, and are assumed to have a high sense of efficacy (Schmeck, 1988:175).

According to Schmeck's (1988:175) model, learners who adopt an elaborative learning style use self-reference as a learning strategy and employ personal engagement of the material, productive thinking and often relate new information to prior experience. Learners who employ a shallow learning style are found to adopt a rote learning strategy and a literal, verbatim description of what has been read (Schmeck, 1988:175).

In summary then, learning style involves ways in which learners perceive, organize, process and use information or the way they structure their learning tasks in terms of procedures (Collier & Hoover, 1987:6). Learning style varies according to the learners' preference, accessibility and task requirement (Collier & Hoover, 1987:6). For example, learners may adopt a shallow learning style when presented with a learning task that requires memorization or a literal description, or may adopt a deep learning style when presented with a learning task that requires learners to extract personal meaning or to think about the logical connections involved in the learning task.

## **2.6 LEARNING STRATEGIES**

Learning strategies can be defined as behaviours and thoughts that one engages in during learning and are intended to influence the way in which the learner selects, acquires, organizes or integrates new knowledge (Weinstein & Mayer, 1986:315). Learning strategies are strategies that learners employ on their own during learning without the aid of a teacher (Shuell, 1988:283). In school, learning strategies may best be demonstrated by learners who have the ability to identify the central idea of learning tasks and to organize these ideas in a logical and meaningful manner on their own or without guidance from a teacher. In Sherman's (1985:93) view, learners who apply learning strategies effectively are capable of selecting and using appropriate skills to master a learning task and may recognize specific content characteristics and task demands more accurately than those who do not apply learning strategies (also see Fig. 2.1).

Learners who can recognize their personal capabilities and coordinate their learning resources with task demands appear to have a greater chance of success because they are capable of

transforming the learning tasks in such a way that the material learned becomes easier to understand and to remember (Sherman, 1985:93; Weinstein & Underwood, 1985:243).

In contrast, learners who cannot recognize their personal capabilities and coordinate their learning resources with task demands have little chance of success because they are neither capable of transforming the learning tasks, nor of making the material learned easier to understand (Sherman, 1985:93; Weinstein & Underwood, 1985:243).

Weinstein and Mayer (1986:317) list the following major categories of learning strategies: rehearsal, elaboration, organization, comprehension monitoring and affective strategies.

### **2.6.1 Rehearsal strategies**

Rehearsal strategies include repeating the material aloud, copying the material, note-taking and underlining (Weinstein & Mayer, 1986:318). During rehearsal learners pay attention to important aspects of the passage and transfer the material into working memory (i.e. the process of selection and acquisition). Rehearsal strategies are helpful when learners are only asked to remember or recall information in prose or words in a passage (Weinstein & Mayer, 1986:318). However, rehearsal strategies cannot help learners to construct internal connections or integrate new information with prior knowledge because they see the learning task primarily as a memory task and approach the learning task unthinkingly (Weinstein & Mayer, 1986:319; Entwistle, 1988:24; Pintrich & Schrauben, 1992:160; also see par. 2.3.2).

### **2.6.2 Elaboration strategies**

Elaboration strategies involve adding some sort of symbolic construction to what the learner is trying to learn in an attempt to make learning tasks more meaningful (Weinert & Kluwe, 1987:592). The type of activities in which learners engage themselves when using elaboration strategies include summarizing, creating analogies, paraphrasing, note-taking and question answering (Weinstein & Mayer, 1986:320). Learners use elaboration strategies with the purpose to integrate new information presented with prior knowledge and to see connections between different parts of the learning tasks (Weinstein & Mayer, 1986:320; also see par. 2.3.1). Weinstein and Mayer (1986:320) report that a model of learning developed by Wittrock (1974, 1978, 1981) reveals that the integrative processes used by the learner to relate

new information to concepts already in semantic memory are the key determinants of new learning and performance (Weinstein & Mayer, 1986:320).

### 2.6.3 Organizational strategies

Organizational strategies refer to strategies which organize the learning materials into meaningful clusters or categories, resulting in deep processing and meaningful learning (Weinstein & Mayer, 1986:321).

Weinstein and Mayer (1986:321) also argue that the basic aim of organizational strategies is to group items into taxonomic categories. For example, items such as fork, pen, spoon, book, cat, rubber, dog, knife and goat can be organized into categories such as stationery ("book, pen, rubber"), cutlery ("knife, fork, spoon"), and animals ("cat, dog, goat"). The use of this kind of an organizing strategy requires learners to be actively involved in the learning tasks (Weinstein & Mayer, 1986:321).

In a study of free recall, Weinstein and Mayer (1986:321) found that two-year old children organized words most frequently on the basis of sounds (e.g. sun-fun), and three and four years old children used taxonomic category (e.g. leg-hand), while the serial ordering reached its peak at the age of five because the ability to memorize 12 words is sufficiently developed at the age of five.

Organizational strategies are intended to aid recall (Weinstein & Mayer, 1986:322). In secondary school, learners organize information in a particular way that facilitates encoding and recall. Outlining and organizing the to-be-learned materials are commonly used by learners to transfer information into working memory and to construct relations among ideas in the working memory (Weinstein & Mayer, 1986:322; Woolfolk, 1995:345). For example, when reading a drama, learners may outline the main characters and events, use vocabulary in different parts of speech and compare and contrast different episodes (Weinstein & Mayer, 1986:322). Students who have been trained to apply organizational strategies in their learning tasks are more able to recall and remember their learning tasks than students who received no training in the use of organizational strategies.

#### **2.6.4 Comprehension monitoring**

Comprehension monitoring is assumed to be derived from the general area of metacognition (see par. 2.7). Bonds, Bonds and Peach (1992:56) have argued that comprehension monitoring is an important aspect of metacognition which allows learners to control their learning effectively. For example, in school, comprehension monitoring takes place when the learner applies metacognitive strategies such as rereading, referring back to determine if he/she has misread a word (Bonds *et al.*, 1992:56). The use of this metacognitive strategy is thus operationalized as comprehension monitoring (Weinstein & Mayer, 1986:323). According to Weinert and Kluwe (1987:252), comprehension monitoring involves establishing learning goals, assessing the degree to which these goals are being met (see par. 3.3.2.6), and if necessary, modifying the strategies being used to facilitate goal attainment (Weinert & Kluwe, 1987:252). In Weinstein and Mayer's (1986:293) view, for learners to engage in comprehension monitoring, they need to know the task to be performed and the desired outcome. Research has shown that some learners are poor comprehenders because they do not monitor their understanding (Weinstein & Mayer, 1986:293).

#### **2.6.5 Affective (motivational) strategies**

Affective strategies encompass ways of dealing with those aspects of personality that have to do with emotions, attention and anxiety (Kokong, 1991:26). Learners who are motivated to learn seem to find their learning tasks meaningful and worthwhile because they pay attention to the learning tasks and persist even if they are not particularly interested in the learning task (Woolfolk, 1990:328-329) (see Fig. 2.1).

In Woolfolk's (1990:328-329) view, motivation enables learners to plan their learning tasks, concentrate on the learning goals, engage in the active search for new information and derive pride and satisfaction from achievement. Learners who are not motivated to learn tend to lose confidence in learning and suffer anxiety.

Motivational variables such as self-efficacy improve the quality of the learner's mental efforts (Woolfolk, 1990:329). For example, learners who are motivated to learn apply appropriate learning strategies such as summarizing, elaborating the basic ideas, outlining a passage in their

own words, etc. during learning, thereby improving their thinking ability and mastery of the learning tasks (Woolfolk, 1990:329).

Learners who employ affective strategies create and control a suitable learning environment and often focus attention on the strategies they use to maintain concentration, manage performance anxiety, establish and maintain motivation, and to manage time effectively (Weinstein & Mayer, 1986:324). Weinstein and Mayer (1986:324) also report that the learner's perception or appraisal of performance sometimes cause learners to be more anxious and stressed, and that many learners who worry about their success in school turn their attention inward and focus on self-criticism, feelings of incompetence, and expectations of failure. Such learners often direct their attention away from learning and studying and view themselves as inadequate (Weinstein & Mayer, 1986:325).

In summary, some learners may know about the learning strategies but fail to use them effectively. Teachers should give instructions on the use of learning strategies and motivate learners to use them.

## **2.7 METACOGNITION**

Jacobs and Paris (1987:258) define metacognition as knowledge about cognitive states or processes that can be shared between individuals. Metacognition as a deliberate conscious control of one's cognitive activities includes the awareness of one's own learning and memory capabilities, the use of effective and appropriate learning strategies, planning, monitoring, and effective strategies for retrieval (Ormrod, 1990:292).

Metacognition provides personal insight into one's thinking and fosters independent learning (Paris & Winograd, 1990:17).

Metacognition may be compartmentalized into self-appraisal and self-management of thinking, and is intended to help learners develop study skills (Paris & Winograd, 1990:17).

### **2.7.1 Self-appraisal**

Self-appraisal, self-evaluation (see par. 1.1) and evaluation as used in the context of metacognition are related terms and are used in this paper to refer to the assessment of what an individual knows about a given learning task and knowledge, or might involve evaluation of the learning tasks or consideration of learning strategies to be used (Jacobs & Paris, 1987:258).

Paris and Winograd (1990:17) broadly explain self-appraisal as personal reflections about one's knowledge states and abilities, and involves judgements about one's personal cognitive abilities and task variables that influence or impede performance. In Paris and Winograd's (1990:17) view, self-appraisal answers questions about **what** you know, (i.e. declarative knowledge), **how** you think (i.e. procedural knowledge) and **when** and **why** to apply knowledge and strategies (i.e. conditional knowledge). Self-appraisal provides learners with cognitive skills such as skimming, summarizing, paraphrasing, predicting and self questioning as one writes, reads, or solve problems (Paris & Winograd, 1990:22-23).

#### **2.7.1.1 Declarative knowledge**

Declarative knowledge may be viewed as a kind of knowledge that includes learner's knowledge about learning strategies, task characteristics, task goals (Alexander & Judy, 1988:376; Jacobs & Paris, 1987:259; Weinstein *et al.*, 1988:134). For example, learners may know that rereading influences reading speed and comprehension (Jacobs & Paris, 1987:259).

#### **2.7.1.2 Procedural knowledge**

Alexander and Judy (1988:376), Jacobs and Paris (1987:259) and Weinstein *et al.* (1988:134) view procedural knowledge as referring to an awareness of the processes of thinking, or the learner's understanding of how to perform various learning strategies, such as knowing how to skim, study, summarize, use context and find the main ideas while reading, and knowing how to take notes.

### 2.7.1.3 Conditional knowledge

Conditional knowledge refers to the learner's understanding of why strategies are effective, when they should be applied and when they are appropriate (Jacobs & Paris, 1987:259; Schunk, 1991b:181; Weinstein *et al.*, 1988:134). In Schunk's (1991b:182) view, learners who do not possess conditional knowledge about **when** and **why** a particular strategy is valuable may not employ it appropriately (Schunk, 1991b:182). Dembo (1991:294) reports that conditional knowledge consists of conditional **if-then** statements which take the form of **if** certain conditions apply, **then** a specific action is to be taken.

Knowledge about strategy characteristics is essential for identifying appropriate strategies for a specific task, and for the processes necessary for understanding and successful completion of tasks (Schunk, 1991b:182). Task accomplishment and strategy training are assumed to foster efficacy for learning. Believing that one can effectively apply a strategy leads to a greater sense of control over learning outcomes, which promotes efficacy (Jacobs & Paris, 1987:256).

### 2.7.2 Self-management

Self-management refers to the dynamic aspects of translating knowledge into action and comprises planning, evaluation or monitoring and regulation (Jacobs & Paris, 1987:259; Paris & Winograd, 1990:18). Learners who have acquired self-management skills are more likely to form good plans, use a variety of learning strategies and monitor their ongoing performances than learners who have not acquired self-management skills (Paris & Winograd, 1990:18).

Self-managed learners may translate knowledge into action through personal engagement of the learning tasks, asking questions about the learning tasks, rereading difficult material, or selecting learning strategies appropriate to a given learning task (Garner, 1987:25). When experiencing difficulty in learning, self-managed learners may need recourse to other learning strategies such as monitoring their performance (see par. 3.5), revising their plans or seeking help from others, whereas learners who lack self-management skills may easily give up rather than try alternative solutions (Weinstein, 1988:22).

Planning involves making an analysis of the learning tasks, the resources available to complete the task and on the basis of one's declarative, procedural and conditional knowledge set goals

and allocate time and effort to complete the learning tasks (Zimmerman, 1989:332). The plans learners create are usually contingent on goals that learners want to achieve and their knowledge about how to achieve these goals (Weinstein, 1988:52).

Evaluation (see self-evaluation, par. 3.5) is a measure against a standard and includes the monitoring of progress towards a learning goal, evaluation of understanding, assessing the effectiveness of different learning strategies and monitoring comprehension during learning (Pintrich, 1989:132; Zimmerman, 1989:332). According to Garner (1987:25) learners who have acquired self-management skills tend to monitor their ongoing performance, revise their learning strategies, perform at high levels and are more likely to determine what to learn and how to learn strategically than their counterparts. For example, skilled learners allocate more time to studying the learning tasks for which they will be tested in greater detail and allocate less time to studying the learning tasks for which less detailed tests will be administered (Garner, 1987:23). Evaluation of the quality of learning is essential because learners become aware of their deficiencies in learning.

Regulation refers to the ability of learners to follow their chosen plan and to monitor its effectiveness. During regulation, strategies which are ineffective and inefficient are discarded or modified and those which are effective and efficient are maintained (Borkowski, Carr, Rellinger & Pressley, 1990:81). Learners can monitor their progress in learning and adjust their learning and standards of comprehension according to the purpose of the learning tasks (Jacobs & Paris, 1987:259).

## **2.8 CONCLUSION**

CHAPTER TWO focused on learning with the purpose to investigate how learners learn and how they achieve mastery of the learning tasks. Variables influencing effective learning such as prior knowledge, intellectual capability, environmental variables, motivation and learning strategies were discussed. Approaches to learning such as deep and surface approaches as mechanisms for improving learning were also discussed. In a nutshell, it can be said that learning involves selecting relevant information, interpreting and relating it to one's existing knowledge. Knowledge about the nature of the learning task and the understanding of the material being studied may enhance effective learning. Knowledge about metacognition is

essential for successful learning. Learners who employ metacognitive knowledge tend to attach personal meaning to the learning task, become inventive in their pursuit of knowledge, strategic in their problem solving behaviour, and to control and regulate learning activities, affect and emotion (Dansereau, 1987:4).

CHAPTER TWO revealed that the acquisition of cognitive tools such as learning strategies and metacognitive skills promotes effective learning and heightens self-efficacy for one's competence in learning and self-evaluation of one's performance. In CHAPTER THREE, the relation between self-efficacy, self-evaluation and academic achievement will be discussed.

## CHAPTER THREE

### 3. THE RELATION BETWEEN SELF-EFFICACY, SELF-EVALUATION AND ACADEMIC ACHIEVEMENT

#### 3.1 INTRODUCTION

Belief in one's capabilities (i.e. self-efficacy) and self-evaluative processes are hypothesized to influence academic achievement (Bandura, 1982:123; Brown, Lent & Larkin, 1989:65). In this chapter, an attempt is made to explore how self-efficacy and self-evaluation are related to academic achievement (paragraphs 3.2, 3.3 and 3.4)/ Attention will be focused on how self-efficacy and self-evaluation help learners to approach learning tasks in a way that improves their academic achievement, motivate them to learn, and to set goals for themselves.

#### 3.2 THE RELATION BETWEEN SELF-EFFICACY AND ACADEMIC ACHIEVEMENT

Self-efficacy is assumed to be a key variable that predicts academic achievement (Wilhite, 1991:696) / Self-efficacy refers to personal beliefs about one's capabilities to successfully perform the learning tasks and to implement the actions that will help attain designated levels of performance (Bandura, 1982:122; 1986:393; Brown, Lent & Larkin, 1989:65; Church, Teresa, Rosebrook & Szendre, 1992:498). According to Bandura (1982:122) self-efficacy concerns itself with judgements of how well one can achieve designated levels of performance with the skills one possesses

Self-efficacy has been found to affect/choice of activities (Schunk, 1994b:3). Learners who hold a low sense of efficacy for learning may avoid difficult learning tasks, whereas those who believe they are capable participate more eagerly in their learning tasks. Self-efficacy is also assumed to influence effort expenditure and persistence (Schunk, 1994b:3). For example, when facing obstacles, learners who hold a high sense of efficacy tend to work harder to master their learning tasks and persist longer than those who doubt their capabilities (Schunk, 1989:14). A belief in one's capabilities to perform difficult learning tasks successfully may,

therefore, promote the perseverance needed to succeed, whereas disbelief in one's capabilities may result in failure (Bandura, 1986:224).

Bandura (1986:393) associates high self-efficacy with a high investment of cognitive effort and learning, and a low perceived self-efficacy with less investment of effort and poor learning. For example, self-efficacious learners tend to intensify their efforts when performance in their learning tasks falls short of their goals, approach potentially threatening learning tasks non-anxiously, and experience little in the way of stress reactions in taxing situations, whereas inefficacious learners shy away from difficult learning tasks, lower their aspirations, suffer much anxiety and dwell on their personal inadequacies (Bandura, 1986:395; Schunk, 1991a:93-94). Unsuccessful learners who view their failure as stemming from a lack of effort may intensify their efforts to pave their way to success, whereas learners who view lack of ability as the cause of their failure may avoid the learning tasks or reduce their commitment to learning, with the result that opportunities for skill development are stifled (Schunk, 1991:95).

Learners' beliefs about their ability to complete learning tasks give rise to subsequent academic achievement. Learners who hold high perceptions of their capabilities to complete their learning tasks are likely to persist longer at their learning tasks than learners who are sceptical about their ability to complete their learning tasks (Schunk, 1991a:93). According to Lent, Brown and Larkin (1984:265), learners who have a strong belief about their ability to complete designated learning tasks generally achieve higher grades in their subsequent performance, and are more likely to persist longer in their learning tasks than learners with low self-efficacy. Learners who do well in their monthly tests, or who are actively engaged in their learning tasks are apt to acquire more learning skills and to be more confident of their successes at the end of the year than learners who are not fully engaged in their learning tasks or who approach their learning tasks with less confidence (Lent *et al.*, 1984:265).

Successes and failures are believed to influence learners' self-efficacy. Bandura (1977:195) argues that successes at learning tasks heighten self-efficacy, and conversely, that repeated failures lowers it. In school, learners' successes at learning tasks may convey that learners are capable of performing well, whereas repeated failures may imply that learners are not capable. Learners who perceive themselves incapable due to repeated failures tend to expend little effort on their learning tasks and view learning as a boring activity. However, if learners' self-

efficacy is strengthened through motivation and repeated successes, unsuccessful learners may intensify their effort and do well at their learning tasks (Schunk, 1985:212).

### **3.3 SOURCES OF SELF-EFFICACY**

Sources of self-efficacy refer to variables through which self-efficacy information may be conveyed or to the variables that may serve as a means of creating and strengthening learners' self-efficacy (Bandura, 1982:142).

Bandura (1985:276) and Schunk (1989:14) assume that learners derive information about their self-efficacy from one or a combination of sources. Some sources are internal to the learner, e.g. performance accomplishments, physiological states, and attributions, whereas others are external to the learner, e.g. vicarious experiences, verbal persuasion, instruction, strategy training, rewards, performance feedback and goal setting

#### **3.3.1 Sources internal to the learner**

##### **3.3.1.1 Performance accomplishments**

Performance accomplishments refer to learners' acquisition of information about their own capabilities through personal engagement or actual performance in learning tasks (Bandura, 1977:195; 1982:128; Schunk, 1991a:93). Performance accomplishments are also assumed to be dependent on personal mastery experiences (Bandura, 1977:199; 1982:128; Schunk, 1991a:93). As learners engage in learning tasks or learn by doing, they acquire knowledge and skills required to help them understand themselves and interpret their learning tasks. Learning skills that lead to successes are retained and those that lead to failures are discarded (Schunk, 1991a:87). Learners who succeed in accomplishing their learning tasks become confident in that they have accomplished the desired level of performance without the aid of external factors (i.e. teacher assistance). Their successes convey that they are capable of performing well. Successes attained through personal engagement motivate learners to expend greater effort, engage in cognitive activities (such as rehearsal and integration) and to approach difficult learning tasks with confidence with the result that performance is further enhanced (Schunk, 1991a:87). On the other hand, learners who fail may conceive of themselves as incapable of performing and do little to improve their performance level. This argument is

consistent with Bandura (1977:195) and Schunk's (1985:212) views, namely that successes in achieving learning tasks may heighten self-efficacy, whereas failures may lower this self-efficacy, especially when failure occurs at the initial stage of learning. However, one failure after many successes may not have serious impact on performance (Schunk, 1985:212).

Failure after greater effort has been expended may promote learners' feelings of incompetency, such as may be the case when a student studies hard for a test, but concentrates on mere rehearsal to memorize while the test requires deep processing (Bandura, 1986:399). Learners tend to lower their commitment to learning in school, and view learning as a boring and tiresome activity when failure is experienced after greater effort has been expended. Learners' failure in this regard may convey that they are incapable of performing well and their success may rely solely on assistance from external factors (i.e. teacher assistance) (Bandura, 1986:399).

Knowledge acquired from new experiences due to personal engagement in learning tasks, may strengthen self-efficacy and afford learners the opportunity to integrate these new experiences with pre-existing ones (Bandura, 1986:399). When a strong sense of self-efficacy has been developed (through repeated successes) occasional failures may have little impact on learners' perceptions of their capabilities (Bandura, 1986:399). For example, learners may view their failure as stemming from insufficient effort and poor strategy implementation (Bandura, 1986:399). Ascribing failure to insufficient effort and poor strategy implementation may create a belief in learners that sufficient effort and the implementation of proper strategies may bring about future successes. On the other hand, unsuccessful learners, who believe that occasional failure can be overcome through persistence and determined effort, are apt to work harder, despite their failure because overcoming failure by determined effort conveys that one can eventually master even the most difficult learning tasks (Bandura, 1986:399).

Successful learning accomplished by oneself may promote self-efficacy better than learning completed with the help of others (Bandura, 1985:276). Task accomplishment due to external aid (e.g. teacher assistance) does little to promote self-efficacy (see par. 3.3.2.1). Bandura (1985:250) contends that learners experience greater pride in their accomplishments when they believe they succeeded on their own (ability, effort) rather than when they believe external factors, such as teacher assistance and easy learning tasks, were responsible.

It is evident from the preceding discussion that performance accomplishments provide important information about one's self-efficacy. On the basis of performance accomplishments learners may easily ascertain whether they are capable of performing or not.

### **3.3.1.2 Physiological states**

Physiological states refer to emotional symptoms such as trembling or sweating experienced in learning situations by learners who doubt their capabilities to perform well in the learning tasks (Schunk, 1984b:49).

Generally-speaking, a physiological state is assumed to be another constituent source of information that can affect learners' personal self-efficacy in coping with threatening situations (Bandura, 1977:198). Physiological states may be elicited by stressful and taxing learning tasks which learners perceive as potentially difficult, uncontrollable and exceeding their resources of learning (Bandura, 1977:198; Morgan, King, Weisz & Schopler, 1986:321). For example, perceived inefficacy in coping with potentially aversive events may give rise to both fearful expectations and avoidance behaviour. Physiological cues, such as sweating and trembling, may signal that learners are not capable of performing well (Schunk, 1988:8).

Fear reactions may heighten or debilitate performance and efficacy expectations (Bandura, 1986:425). In school situations high achievers (i.e. successful learners) view fear arousal or stress situations as facilitators, whereas low achievers (unsuccessful learners) regard fear arousal as a debilitator of performance. For example, low achievers who perceive their arousal as stemming from personal self-inefficacy are more likely to suffer distress, expend much effort in defense actions and adopt a negative attitude towards the learning tasks than learners who are confident that they will succeed, despite the difficulties experienced. In Bandura's (1986:425) view, low achievers who suffer distress may be reluctant to perform learning activities they find subjectively threatening even though they are objectively safe, or may even shun easily manageable activities because they view these activities as leading to more threatening events over which they have little or no control. Conversely, learners who do not suffer distress may challenge the learning tasks with confidence and work hard to achieve success (Bandura, 1986:425-426).

### 3.3.1.3 Attributions

Attributions are hypothesized to be important variables that influence learners' self-efficacy (Schunk, 1984:49). Attributions involve processes by which learners interpret the causes of their successes and failures in learning (Palmer & Goetz, 1988:46; Schunk, 1984b:49). Learners' successes and failures at learning tasks may be attributed to causes such as ability, effort, task difficulty and luck. These causes may be represented along dimensions of internal or external to learners, stable or unstable over time, and controllable or uncontrollable by learners (Palmer & Goetz, 1988:46; Weiner, 1984:25; Schunk, 1994b:3).

Ascribing learning successes to internal and stable causes, such as ability, may raise learners' expectations of success, whereas learning successes ascribed to external and unstable causes, such as luck, may discount self-efficacy for learning, motivation and future successes because luck implies that learners are not capable of learning (Schunk, 1994b:3). Conversely, ascribing learning failures to internal and stable causes such as low ability may lower expectancies of future successes more than failures ascribed to internal but unstable causes such as effort because effort can improve performance (Schunk, 1994b:3). Learners who believe that their successes at learning tasks are due to effort may expend greater effort to improve future performances, whereas learners who fail after greater effort has been expended may doubt their successes and suffer emotional distress (Schunk, 1994b:3).

Learners' ability to manage and control their learning may affect self-efficacy and motivation (Palmer & Goetz, 1988:46; Schunk, 1994b:3). Learners who believe that they have the ability to manage and control the variables that influence their learning are more likely to persist longer and expend greater effort than learners who believe that they have no control over the variables that influence their learning outcomes (Schunk, 1994b:3). Thus, learners who ascribe their successes and failures to causes over which they have little or no control (such as luck) may experience low expectations for future successes, whereas learners who attribute their successes to controllable causes (such as effort) may experience higher self-efficacy, motivation and persistence (Schunk, 1994b:3).

Attributional feedback may exert a strong motivational effect on self-efficacy and achievement (Schunk, 1984:1160). In school, learners who receive effort feedback for their early successes may develop a sense of self-efficacy for continued successes. Similarly, providing effort

feedback that learners' failures are due to lack of effort may encourage high commitment to learning tasks, skill development and effort expenditure (Schunk, 1984:1160).

Ability feedback influences learners' attributions and self-efficacy for learning (Schunk, 1994b:4). In Schunk's (1994b:5) view, learners who periodically receive ability feedback are more likely to demonstrate higher self-efficacy and skills than learners who periodically receive effort feedback because greater effort implies low ability. Learners' beliefs that ability is responsible for their successes may, therefore, heighten self-efficacy and motivation, whereas learners who achieve successes through greater effort may doubt their capabilities and regard effort expenditure as a sign of low ability (Schunk, 1994b:5).

### **3.3.2 Sources external to the learner**

Sources of self-efficacy that are external to the learner are mainly social and instructional in nature and have the propensity to enhance learners' self-efficacy beliefs while they are engaged in their learning tasks (Schunk, 1988:8). A discussion of seven sources of self-efficacy amongst many that are external to the learner follows, i.e. vicarious experiences, verbal persuasion, instruction, strategy training, performance feedback, rewards and goal setting (Schunk, 1985:214; 1988:9).

#### **3.3.2.1 Vicarious experiences**

Learners do not rely on personal performance accomplishment as a sole source of information concerning their levels of self-efficacy. They also acquire capability information from vicarious experiences (Schunk, 1991b:103). Bandura (1985:19) and Schunk (1991b:103), explain vicarious experience as knowledge and skills acquired through observation of one or more models, such as **live** and **symbolic** models. Live models refer to persons such as teachers and other learners (peer models) who convey information to learners while, on the other hand, symbolic models refer to the presentation of information to learners via oral or written instructions or pictures (Schunk, 1991b:105).

The capacity to learn by observation may enable learners to expand knowledge and skills on the basis of information exhibited or authorized by similar others (e.g. other learners) or teachers and may help formulate rules of behaviour which serve as guides for action (Bandura,

1986:47). For example, in school, learners learn by observing the actual performances of their classmates and the outcomes of such performances. Observing classmates perform successfully while attending difficult learning tasks can generate expectations in observers that they too will improve if they intensify and persist in their efforts. By the same token, observing classmates fail despite their high effort, lowers observers' self-efficacy (Bandura, 1977:197; 1985:277; Schunk, 1989:122).

Self-efficacy may be raised by using coping and mastery models. Coping models refer to learners who cope successfully with threatening and difficult learning tasks. At the initial stage of learning coping models seem to commit more learning errors and to have deficiencies but gradually improve their performance and gain confidence in themselves. Observers may benefit more from observing how coping models overcome their difficulties by determined coping effort than from mastery models (Bandura, Adams, Hardy & Howell, 1980:40; Schunk, 1987:54). If coping models succeed at learning tasks, observers are likely to have a reasonable basis for increasing their own sense of self-efficacy (Bandura *et al.*, 1980:40; Schunk, 1987:54).

Mastery models, on the other hand, include peer and teacher models who demonstrate faultless and skillful performance from the outset (Schunk, Handson & Cox, 1987:54). Observing skillful models perform successful actions may convey information to observers about the sequence of actions they should use to succeed (Schunk, 1991b:115).

Perceived similarity to models may improve observers' performance (Schunk, 1991b:116). Observing classmates succeeding at a difficult learning task or improving their skills through sustained effort and perseverance may benefit learners. The successes of similar models may provide information for assessing one's performance capabilities. In Schunk's (1991b:116) view, the more alike observers are to models, the greater the possibility to achieve higher performance levels.

Learners may also benefit from teacher models (Schunk, 1991b:116). In school, learners are likely to view teacher models as having special expertise which helps them achieve successes and mastery of learning tasks. They emulate teacher models, apply modelled strategies with the belief that they will eventually acquire the same skills and knowledge. Different teaching

strategies employed by teacher models may instill confidence in learners (observers) and further teach them effective strategies for dealing with challenging learning tasks.

### **3.3.2.2 Verbal persuasion**

Verbal persuasion refers to information that learners receive through suggestions or encouragement from credible sources such as teachers (Bandura, 1986:400).

Information received through suggestions is assumed to motivate and to inform learners about their own capabilities (Bandura, 1986:400). Telling learners that they possess the capabilities to master a given learning task may motivate or encourage learners to expend greater effort and develop the necessary skills for accomplishing designated levels of performance (Schunk, 1984b:49). For example, learners who are being persuaded of their capabilities by credible sources such as teachers are likely to engage in difficult learning tasks and strive for success, whereas learners who are not persuaded may doubt their capabilities and avoid difficult learning tasks (Schunk, 1984b:49).

Verbal persuasion is assumed to be related to the perceived status or authority of the persuader (Bandura, 1985:77). Learners who are being persuaded by credible sources such as teachers, are likely to mobilize greater effort because of their beliefs in the teachers' trustworthiness and expertise (Bandura, 1985:77). However, encouragement by other learners, such as classmates, may not necessarily raise learners' self-efficacy because they may be perceived as incredible and lacking the necessary expertise and experience to achieve a high performance level (Bandura, 1985:77). On the other hand, encouragement by the teacher, who has not mastered the subject or who is not confident of his teaching, may not raise learners' self-efficacy despite his authority. Teachers' mastery of the subject, therefore, motivates learners to work harder.

Verbal persuasion may be affected by the nature of the demands of the learning task (Schunk, 1985:213). Persuading learners about learning tasks which are difficult to be comprehended or far above learners' level of understanding may reduce learners' self-efficacy, irrespective of the persuader's expertise. However, the learning tasks which are within the learners' level of understanding may raise their self-efficacy (Bandura, 1982:127; 1986:277; Schunk, 1985:213).

Verbal persuasion alone may not promote learners' sense of efficacy for performing well on learning tasks (Bandura, 1977:198; Schunk, 1984b:49). Telling learners that they can cope successfully with learning tasks while providing them with provisional aids for effective learning, such as learning strategies, provision of study aids and the use of audio-visual aids, may boost learners' self-efficacy. However, verbal persuasion without provisional aids may reduce learners' self-efficacy (Bandura, 1977:198; Schunk, 1984b:49). Verbal persuasion is assumed to be effective when combined with successful performances and may convince learners to attempt an activity (Bandura, 1977:198; Schunk, 1984b:49). If performance is successful, both accomplishments and subsequent encouragements emanating from the persuader combine to increase future efficacy. However, verbal persuasion will not be effective when learners fail.

### **3.3.2.3 Instruction**

According to Wang and Lindvall (1984:161) instruction refers to educational interventions that are aimed at effectively accommodating individual differences in learners while helping each learner develop the skills required to master learning tasks. Instruction also involves the teacher's explanations and demonstrations along with learners' activities such as asking and answering questions, reading, writing and class discussions (Schunk, 1988:9). Learners' purposeful engagement in these activities depend on the meaningfulness of the instruction presented. For example, presenting instruction so that learners comprehend the learning material promotes self-efficacy for learning and effort expenditure, whereas instruction that does not appeal to learners' interests and understanding demotivates them and lowers performance and commitment to learning (Schunk, 1985:214; 1988:9).

During classroom instruction, an effective teacher demonstrates cognitive skills or utilizes symbolic models such as films, video tapes, computers and pictures (see par. 3.3.2.1), provides explanations to capture learners' concentration, and arouse their interest and curiosity, and also ensures learners' active participation in learning (Schunk, 1985:214). In Schunk's (1985:214) view, a combination of both teacher's explanations and cognitive modeling such as using symbolic models like films, videotapes etc. instills interest in learning and promotes skills development.

#### 3.3.2.4 Strategy training

Strategy training refers to the process whereby teachers instruct learners in learning strategies (Borkowski, Carr, Rellinger & Pressley, 1990:80). Strategy training is assumed to involve a set of sequenced operations that teachers apply when training learners to use learning strategies (Borkowski *et al.*, 1990:80; Schunk, 1985:215). Strategy training is geared towards facilitating learners' performance in school tasks as well as developing effective methods for implementing learning strategies taught in classrooms (Borkowski *et al.*, 1990:80; Schunk, 1985:215). For example, to master and understand learning tasks, learners must receive instruction on how to plan, monitor, revise and evaluate their progress. Some learners cannot acquire these tactics automatically (Borkowski *et al.*, 1990:80).

The fact that a learning strategy can be invented by learners cannot be refuted, but it is imperative to make learners aware of the fact that their strategies may possibly not be the optimal ones, and by informing them about a variety of learning strategies, the nature of the available strategies, their advantages and disadvantages may help learners avoid using inferior strategies of learning (Klauer, 1988:358). Learners who receive instruction or training in learning strategies acquire knowledge about declarative knowledge, procedural knowledge and conditional knowledge (see par. 2.7.1; Schunk & Swartz, 1993:348). Strategy training further equips learners with knowledge about how to motivate themselves, process and store information and how to provide themselves with information that can be retrieved and transferred, thereby reducing their dependence on teachers in their way (Schunk & Swartz, 1993:348).

Learners who receive explicit training in learning strategies are more likely to improve their skills and develop a sense of self-efficacy than learners who receive no strategy training (Borkowski *et al.*, 1990:78). Learners receiving strategy training learn to plan their study activities and monitor their understanding of reading because they believe that they are learning a useful strategy that is likely to give rise to self-efficacy for skill improvement (Borkowski *et al.*, 1990:78-79; Schunk & Swartz, 1993:348). In contrast, learners who do not believe in the usefulness of a strategy taught may not be confident about their learning and may reduce their commitment to learning tasks (Schunk & Swartz, 1993:339).

Strategy training enables learners to take responsibility for managing their own learning, providing knowledge of how to integrate and orchestrate knowledge, thought processes, motivational levels and actions needed for reaching learning goals (Weinstein, Meyer & Van Mater Stone, 1994:359). Learners who can manage their own learning are more likely to be inventive, strategic and persist more than learners who receive no strategy training (Borkowski *et al.*, 1990:80).

Strategy training requires that teachers be capable of identifying those strategies that pay off, and those that provide appropriate challenges, or that assist in the acquisition of material learners perceive as important (Borkowski *et al.*, 1990:81). Strategies that give rise to positive results motivate teachers to continue to teach strategies and create a belief in learners that learning strategies are useful, whereas strategies that produce negative results debilitate commitment to learning and instruction if they are not discarded (Borkowski *et al.*, 1990:81).

#### **3.3.2.5 Performance feedback**

Performance feedback refers to information acquired by learners, either from teachers (e.g. through vicarious experiences - par. 3.3.2.1) or learners themselves (e.g. through performance accomplishment - par. 3.3.1.1) about their own progress in school (Schunk, 1988:11). In school, teachers may initiate performance feedback by establishing situations in which learners are encouraged to make progress with their learning. For example, the teacher can ask questions and then provide information on the accuracy of learners' progress in a manner that will help learners to correct mistakes and modify their understanding of learning tasks which fosters development of self-efficacy beliefs. Performance feedback may also be derived from learners themselves through self-checking (see par. 3.4) of answers and self-feedback from completing learning tasks (Schunk, 1984b:57; 1993:8).

Performance feedback may provide information about learners' progress in learning and influence self-efficacy by highlighting performance outcomes (Schunk, 1985:215). For example, providing feedback to learners that they are doing better or making progress towards their learning goal conveys to learners that they are acquiring appropriate skills and knowledge to accomplish their learning tasks, which can sustain motivation and enhance self-efficacy (Schunk, 1985:215). Conversely, giving no performance feedback demotivates and reduces

learners' commitment to learning and self-efficacy because learners lack information about their competence and successes in learning (Schunk, 1985:215-216).

Learners who periodically receive positive information about their own progress in school tend to be more confident in their pursuits of knowledge, strategic in their approach and tend to <sup>expend</sup> greater effort to accomplish their learning tasks than learners who receive negative information about their progress (e.g. "You need to work very hard") (Schunk, 1985:216).

Performance feedback perceived as credible may raise self-efficacy, motivation and performance (Schunk, 1993:17). Learners who do not believe that they are really progressing may discount performance feedback, regardless of the source, whereas learners who believe that they are making progress may perceive performance feedback as credible and work harder to improve their performance (Schunk, 1993:17).

Performance feedback may benefit learners in situations where progress in learning is unclear because in these situations learners who periodically receive information on their progress, acquire learning strategies, demonstrate high self-efficacy and skill, and judge effort as an important cause of their success (Schunk, 1988:11). In contrast, learners who receive no performance feedback or who cannot derive performance feedback on their own can be demotivated and doubt their capabilities to learn (Schunk, 1988:11).

Providing performance feedback linking learners' successes with learning tasks may induce learners' commitment to tasks and self-efficacy because success implies ability (Schunk, 1994b:5). However, performance feedback linking failure with lack of ability may stifle motivation and learning because learners may perceive themselves as incapable of learning. For example, learners who view their progress as deteriorating may be demotivated, reluctant to learn and fail to cope with the demands of the learning tasks (Schunk, 1994b:5).

### **3.3.2.6 Goal setting**

Goal setting is hypothesized to involve the establishment of a standard or goal for performance (Schunk, 1985:217; 1991a:86). Goals may either be established by teachers or learners themselves and can provide important information about learners' capabilities (Schunk & Rice, 1991:351). For example, learners who set, select and use realistic learning goals are more

likely to become conscious of their own capabilities than learners who set too difficult, unrealistic or no goals.

Self-efficacy influences goal attainment and commitment to learning tasks (Schunk & Rice, 1991:352). Learners who hold a strong sense of self-efficacy tend to set challenging goals, persist longer and expend greater effort to accomplish learning goals, whereas learners who doubt their capabilities may be reluctant to pursue learning goals (Schunk & Rice, 1991:352).

Self-efficacious learners can also engage in activities they believe will help them achieve learning goals, whereas learners who set no goals may doubt their capabilities due to lack of standards against which to gauge progress (Schunk & Rice, 1991:352; Schunk, 1994a:3).

Learning goals may raise self-efficacy and skill more than performance goals (Schunk, 1994a:3). Performance goals are mainly concerned with the quantity of learning tasks learners can complete and what learners can do or be able to achieve, whereas learning goals involve processes, techniques and strategies that learners employ to improve learning (Schunk, 1994a:3; Schunk & Rice, 1991:352; Schunk & Swartz, 1993:338). Learners who pursue learning goals are more likely to become proficient and confident in the use of strategies and skills to improve their learning than learners who pursue performance goals.

Learners who pursue learning goals tend to regard learning strategies as useful, approach learning tasks diligently, expend greater effort and are more motivated to learn, whereas learners who pursue performance goals may not feel confident about learning because they lack techniques and strategies essential for effective learning (Schunk, 1994a:3). Learners' knowledge and perceptions of strategy usefulness may, therefore, enhance self-efficacy for learning.

Goals may exert their effects on learning through their properties of specificity, goal difficulty and proximity (Schunk, 1985:217; 1991b:119-120; 1993:6; 1994a:2). Goals incorporating specific performance standards, such as giving learners specific tasks to be mastered or specifying the amount of effort required for success, may raise self-efficacy more than general goals (Schunk, 1991b:119; 1994a:2).

Pursuing difficult goals necessitates high levels of learning proficiency and skill (Schunk, 1991b:120). Learners who believe that they are skilful or proficient enough to accomplish a

difficult goal may expend greater effort and approach a learning task with confidence, whereas learners who doubt their capabilities may hold low expectations for success, reduce their commitment to goals and experience less self-efficacy for learning. Working towards difficult goals may, therefore, build a sense of self-efficacy because progress towards a difficult goal conveys that learners are capable of performing well (Schunk, 1994a:93).

Proximal goals which are close at hand may enhance performance more than distant goals because distant goals are general, difficult to gauge, lie far in the future and provide less information about learners' capabilities (Schunk, 1984b:52). Learners who observe their progress toward a proximal goal tend to feel self-efficacious and expend greater effort on learning because proximal goals lie near in time, are easy to gauge and enable learners to determine what has already been done and what still needs to be done to attain a goal (Schunk, 1984b:52; 1991a:92).

Proximal goals form an integral part of teachers' lesson planning (Schunk, 1991a:92). For example, breaking learning tasks, such as a syllabus for Std. 8 Economics, into small, manageable units or subgoals (short-term goals) enhances learners' performances and fosters skills development in that learners feel self-efficacious about completing and attaining each learning subgoal (Schunk, 1991a:92).

### **3.3.2.7 Rewards**

Schunk (1985:219) defines rewards as feelings of competence and control, self-satisfaction, task success or learners' pride in their learning accomplishments. Rewards may take the form of teachers' praise (see par. 3.3.2.2), successes at learning tasks (see par. 3.3.1.1), or anything concrete or symbolic that may be presented to learners as a token of appreciation for their outstanding performances or successes at learning tasks (Schunk, 1994b:48). Rewarding learners' successes at learning tasks may promote feelings of competence and enhance self-efficacy for learning, whereas no reward for learners' failures at learning tasks may cause distress and create feelings of incompetence in learners. For example, learners who cannot be rewarded, due to their failures at learning tasks, may conclude that they are not capable of learning or performing well (Schunk, 1984b:48).

Rewards promote self-efficacy when tied to learners' actual accomplishments (Schunk, 1984b:54; 1985:219). Telling learners that they can earn rewards based on what they accomplish may induce task commitment and create feelings of competence. However, rewards offered merely for learners' participation in learning tasks may convey negative efficacy information or feelings of incompetence because rewards offered for learners' participation and not for actual achievement imply that learners are not expected to learn (Schunk, 1988:54). Rewarding learners for their actual accomplishments may, therefore, lead to skills acquisition and higher levels of task accomplishments, whereas rewards offered for learners' participation in the learning tasks can reduce self-efficacy for learning.

### **3.4 SELF-EVALUATION AS A VARIABLE THAT INFLUENCES ACADEMIC ACHIEVEMENT**

Self-evaluation (see par. 1.1) refers to learners' responses that involve systematically comparing their performances with a standard or goal (Zimmerman, 1989:333). Learners engaged in learning tasks may use their previous levels of accomplishments as a standard for evaluating present performances or may compare their present performances with the performance levels of others and predict probable successes and failures in future learning activities (Bandura, 1985:271). Successes at learning tasks enhance self-evaluations of ability, whereas failures decrease these self-evaluations and produce feelings of inferiority, low aspirations and lack of motivation (Ames & Ames, 1984b:540).

Self-evaluation of one's competence improves learning (Bandura, 1986:357). Learners' self-evaluations of their own competence and abilities motivates learning, instills task commitment and encourages learners to take more responsibility and personal control over learning because of information that they are competent and capable. Conversely, learners who do not periodically evaluate their own performance lack awareness of their own competence and ability with the result that they become reluctant to learn, bored, uncertain about their capabilities and expend little effort to accomplish their learning tasks (Bandura, 1986:357).

Self-evaluation creates an awareness of one's self and promotes effective learning (Weinstein & Meyer, 1991:18). Learners who are aware of themselves as learners tend to acquire knowledge about how they learn and to apply the appropriate learning strategies to the

learning tasks. For example, successful learners know which learning styles they prefer, which learning tasks are easier or difficult for them to learn and what their best and worst times of day are for learning (Weinstein & Meyer, 1991:19). In contrast, learners who are not aware of themselves may not learn effectively because they have difficulty in selecting the appropriate learning strategies and thus do not know how to learn (Weinstein & Meyer, 1991:19).

Self-evaluation informs learners about their own personal competence and ability and affects learners' performance, self-efficacy and motivation (Marshall & Weinstein, 1984:302; McCombs & Whisler, 1989:277; Schunk, 1994a:2). Learners who evaluate their progress in learning as positive are more likely to approach their learning tasks with confidence, increase their commitment to learning and acknowledge responsibility for learning (Schunk, 1994a:4). Self-evaluation provides learners with the opportunity to become critical evaluators of their own performance and to inevitably acquire prerequisite skills necessary to approach their learning tasks diligently, such as applying learning strategies selectively and flexibly to the learning tasks with the result that their self-confidence, self-efficacy and performance are enhanced (Schunk, 1994a:4). According to Bandura (1986:345), learners' positive self-evaluations of their capabilities as learners encourage them to subscribe to high standards of performance, excel in whatever academic subjects they are pursuing and perceive high standards of performance as an important measure of adequacy. Conversely, negative self-evaluations may result in anxiety, withdrawal, demotivation, reduction of task commitment and lack of persistence in learners who doubt their capability to succeed at learning tasks (Schunk, 1994a:4). Self-evaluation of one's performance thus gives rise to effective learning and equips learners with a clear understanding of what is expected of them and encourages learners' involvement in the assessment of the nature and the quality of what is being taught. Conversely, learners who do not evaluate their own performance do not use the opportunity to learn about their strengths and weaknesses as learners, or their goal progress and, therefore, do not develop the appropriate skills for learning because they lack a clear understanding of what is expected of them (Tower & Broadfoot, 1992:139).

Self-evaluation creates beliefs about learners' capabilities (Schunk, 1994a:2-3; Zimmerman, 1989:334). As learners work on their learning tasks, they evaluate their progress and form certain beliefs about their capabilities. For example, school learners who hold positive self-evaluations about their progress towards a learning goal or successes, tend to experience a

heightened sense of self-efficacy and engage in appropriate learning activities such as attending to instructions, re-examining their answers, rating their answers in relation to those of other learners, persist longer and expend greater effort because perceptions of progress convey that learners are becoming more skilful (Schunk, 1994a:2-3; Zimmerman, 1989:334). Conversely, learners who are not asked to evaluate their progress and skills may not identify their progress towards learning goals, may form negative beliefs about their own capabilities and may not apply appropriate learning skills because they lack information about their progress in skill acquisition (Schunk, 1994a:10).

Self-evaluation depends upon accurate perceptions of learning outcomes (McCombs, 1988:3). According to Lehman, Taylor and Forde (1990:25) an accurate perception of learning refers to an accurate measure of learners' current performance levels, reinforcement of strengths and the identification of learners' deficiencies in learning, which help learners to improve their future performance. Learners who perceive their progress in learning as successful tend to demonstrate high self-evaluations and expend the effort required to succeed because they have a clear conception of the quality of their performance, whereas unsuccessful learners may be less interested in assessing their competence because self-evaluation exposes their inadequacy and incompetence in learning (Tower & Broadfoot, 1992:139).

Self-evaluation is enhanced when learners' performances are compared to the lesser attainments of others and diminishes when the accomplishments of the more talented are used as relative standards of adequacy (Bandura, 1986:347). In school, learners tend to select peers with similar characteristics such as ability and performance level, for comparison and downgrade the accomplishments of the more talented who threaten their self-evaluations (Bandura, 1986:347; Suls & Sanders, 1977:172). Comparing one's performance with the performance of the more talented or mastery models may lead to frustration, resentment and diminished interest in ability development, whereas comparing one's performance with the performance of similar others or coping models may sustain motivation, interest and create beliefs and feelings of competence in learning (Suls & Sanders, 1977:188).

Self-evaluation affects learners' self-efficacy beliefs (Bandura, 1982:123). The effect of self-efficacy on academic achievement is hypothesized to be influenced by the way in which

performance is evaluated (Bandura, 1982:123). In Bandura's (1989:334) view, accurate self-evaluations promote successful learning and self-efficacy of learning.

Misjudgement of self-efficacy also negatively affects self-evaluation and learning (Bandura, 1989:334). Misjudgement of self-efficacy is assumed to occur as a result of learners' lack of experience, lack of knowledge and skill to distinguish between important and less important facts and their inability to sequentially process efficacy information (Bandura, 1986:398). In school, learners may view their learning progress as positive, but complicate their progress by the way in which they cognitively select, combine and weigh the various efficacy informations available to them, and thus debilitate performance and motivation to learn.

Bandura (1986:276) proposed that the efficacy judgements that are most functional are those that slightly exceed what one can do and that self-efficacy judgements may lead learners to undertake realistically challenging tasks and provide motivation for progressive self-development of capabilities.

### 3.5 CONCLUSION

CHAPTER THREE focused on the relation between self-efficacy, self-evaluation and academic achievement. Variables influencing self-efficacy and different sources of self-efficacy such as performance accomplishments, vicarious experiences, verbal persuasion and psychological states were explored to unearth their relation to academic achievement. This chapter also explored how self-evaluation as an important tool and source of information about one's level of competence affects the learning process, self-efficacy beliefs, learning goals, motivation and commitment to learning.

In sum, it can be said that self-efficacy and self-evaluation influence academic achievement. Learners' perceptions of their efficacy to accomplish standards they set for themselves influence performance and motivation. Inefficacious learners are easily discouraged by failure whereas learners who are assured of their capabilities for accomplishment intensify their efforts when their performance fall short of standards and persist until they succeed.

In the final analysis, one can conclude that self-efficacy and self-evaluation are important variables influencing academic achievement. In CHAPTER FOUR an investigation to test the hypotheses formulated will be made.

## **CHAPTER FOUR**

### **4. METHOD OF RESEARCH**

#### **4.1 INTRODUCTION**

In this chapter the empirical procedures adopted for this study are discussed. The aim of the study is stated in paragraph 4.2 while the population and sample are described in paragraph 4.3, followed by a discussion of the questionnaires used (in par. 4.4). The research design is described in paragraph 4.5, while the procedures for collecting the data are discussed in paragraph 4.6. Finally, the statistical techniques used to analyse the data are outlined in paragraph 4.7.

#### **4.2 AIM OF THE RESEARCH**

As indicated in Chapter One (par. 1.2), the aim of this research project was to determine whether there is a relationship between self-efficacy, self-evaluation and academic achievement of Std. 8 students in Economics in the Qwaqwa region.

#### **4.3 POPULATION AND SAMPLE**

The subjects for this study were Std. 8 students who were pursuing Economics as a subject in Qwaqwa secondary schools at the time of the study. The accessible population consisted of 30 secondary schools from four (4) circuits with two thousand four hundred and seventy-three (N=2473) Economics students.

The schools rather than students were sampled in order to provide sufficient data for testing the hypotheses. From a list of 30 secondary schools ten of the schools were selected at random.

According to the records supplied by the four Qwaqwa circuit offices there were 551 Std. 8 students pursuing Economics in the ten schools selected (see Table 4.1).

**TABLE 4.1: Number of schools, classes selected in each school and the total number of students constituting the population.**

School code	Circuit	CLASSES				Total
		8A	8B	8C	8D	
01	West	-	35*	-	-	35
02	East	-	37	36*	-	73
03	North	-	-	32	42*	74
04	West	-	-	35*	38*	73
05	North	-	-	-	36*	36
06	East	-	-	-	19*	19
07	West	-	-	35*	39*	74
08	Central	-	-	24*	-	24
09	Central	-	35	33*	-	68
10	Central	-	-	40	35*	75
Total number of Std. 8 students in 10 selected schools		-	107	235	209	551

\* Classes constituting the sample for this study

The 10 schools had 16 classes which took Economics. Through random cluster sampling 12 of these classes (clusters) were drawn to constitute the sample for this study (see Table 4.2).

**TABLE 4.2: Classes and the number of students drawn by random cluster sampling.**

School code	Selected classes	Number of students tested	Number of students excluded
01	8B	29	6
02	8C	36	-
03	8D	42	-
04	8C & 8D	68	5
05	8D	29	7
06	8D	19	-
07	8C & 8D	74	-
08	8C	19	5
09	8C	33	-
10	8D	35	-
Total		384*	23*

\* Total number of Std.8. students in the 12 classes selected by means of random cluster sampling.

Although the responses of 23 students were excluded due to their absence from school, the data of the 384 remaining students can be accepted as representative of the population of Std. 8 students who pursue Economics as a subject.

#### **4.4 INSTRUMENTATION**

The following tests or questionnaires were used:

##### **4.4.1 Biographical Questionnaire**

The biographical questionnaire (see appendix A) consisted of 40 items, of which 3 required learners to respond to personal details such as name (1), age (2), and sex (3) and 15 items required learners to provide information about their family background, such as their father's highest level of education (4), etc. The remaining 12 items required learners to provide information about their learning behaviour and how they felt about learning, such as whether Economics is one of their difficult subjects at school (22), and whether they get extra tuition in Economics after school (23), etc.

##### **4.4.2 The Children's Multidimensional Self-efficacy Scales (CMSES)**

The Children's Multidimensional Self-efficacy Scales (CMSES) were developed by Bandura (1986) with the intention to assess learners' perceived capability to effectively and successfully perform a variety of learning related tasks. The Children's Multidimensional Self-efficacy Scales as used in this study consisted of 40 items (see Appendix B) describing behaviours related to learners' effective learning. For each item, learners were requested to rate their perceived capabilities according to a 7-point scale (ranging from 1 = "not well at all" to 7 = "very well") in terms of their behaviour in Economics classes.

As there were no right or wrong answers, subjects were requested to give their frank opinions and rate their perceived self-efficacy by making a cross on the numbers that most appropriately reflected their own judgements and confidence.

A description of each subscale is given in a nutshell as well as some sample items and their reliability coefficients (i.e. Cronbach's coefficient Alpha). The Cronbach Alpha reliability

coefficient of Mathebula (1995) for Std. 7 Vatsonga students is also given in parentheses. The following formula for Alpha was used:

$$a(\text{or } r_{xx}) = \left[ \frac{k}{k-1} \right] \left[ \frac{S_x^2 - E s_i^2}{S_x^2} \right]$$

Where:

K = number of items on test

$E s_i^2$  = sum of the variances of the item scores

$S_x^2$  = variances of the test scores (all K items).

(Ary, Jacobs and Razavieh, 1990:279).

Although the alpha coefficients were unsatisfactorily low the CMSES was nevertheless used as Mathebula (1995) reported alpha coefficients of 0,67-0,82 (given in parentheses) for the same CMSES with Vatsonga Std. 7 students and as no other self-efficacy questionnaire was available.

#### 4.4.2.1 Self-efficacy for social resources

Self-efficacy for social resources refers to the assistance that learners get from other people such as friends, fellow students and adults. For example, learners who get stuck or experience problems in their learning tasks seek help from their fellow students, teachers or adults. The assistance may take the form of explanation, guidance, teaching or discussions. These behaviours are likely to give rise to motivation, commitment to learning and heightened performance.

Self-efficacy for social resources as used in this study consisted of 6 items concerning how learners perceive their capability to get assistance from others, e.g. "How well can you get teachers to help you when you get stuck on schoolwork?" (9), "How well can you get your

brother(s) and sister(s) to help you with a problem?" (17), "How well can you get another student to help you when you get stuck on schoolwork?" (18), "How well can you get adults to help you when you have social problems?" (24) etc.

Coefficient alpha: 0,54 (0,67)

#### **4.4.2.2 Self-efficacy for academic achievement**

Self-efficacy for academic achievement involves personal beliefs about one's capabilities to successfully perform the learning tasks and to improve the actions that will help attain designated levels of performance. Learners who hold a high sense of self-efficacy for academic achievement (see par. 3.2.) participate more eagerly in their learning tasks than their counterparts who may avoid difficult learning tasks or reduce their commitment to learning (Bandura, 1982:122; 1986:393; Church *et al.*, 1992:98).

Self-efficacy for academic achievement in this study consisted of 9 items that measured learners' perceived capabilities to succeed at learning task. e.g. "How well can you learn Economics?" (5), "How well can you learn reading and writing language skills?" (10) etc.

Coefficient alpha: 0,54 (0,77)

#### **4.4.2.3 Self-efficacy for self-regulated learning**

Self-efficacy for self-regulated learning involves learners' perceived capability to use a variety of self-regulated learning strategies such as planning, skimming, etc. (Zimmerman, Bandura & Martinez-Pons, 1992:667; Pintrich & De Groot, 1990:35). Learners who use learning strategies effectively tend to have the ability to transform the learning tasks in such a way that the material learned become easier to understand and remember. These behaviours instill confidence, motivation and heighten self-efficacy for learning.

Self-efficacy for self-regulated learning in this study consisted of 11 items. e.g. "How well can you concentrate on school subjects?" (1), "How long can you participate in class discussions?" (2), "How well can you take class notes of class instruction?" (6) etc.

Coefficient alpha: 0,72 (0,82).

#### **4.4.2.4 Self-efficacy to meet others' expectations**

Self-efficacy to meet others' expectations involves learners' willingness to live up to certain expectations such as those of their parents, teachers, and peers, as well as the expectations of themselves for academic achievement.

The self-efficacy to meet others' expectations scale as used in this study consisted of 4 items. e.g. "How well can you live up to what your parents expect of you?" (7), "How well can you live up to what teachers expect of you?" (12) etc.

Coefficient alpha: 0,59 (0,70).

#### **4.4.2.5 Social self-efficacy**

Social self-efficacy involves learners' preparedness to socialize themselves with others or adapt to society. These behaviours include developing friendships with others (including the opposite sex), working and living with other people in the environment.

Social self-efficacy as used in this study consisted of 4 items. e.g. "How well can you work in a group?" (3), "How well can you carry on conversations with others?" (16), "How well can you make and keep friends of the opposite sex?" (21) and "How well can you make and keep friends of the same sex?" (31).

Coefficient alpha: 0,41 (0,71).

#### **4.4.2.6 Self-assertive self-efficacy**

Self-assertive self-efficacy involves learners' decision to stand up for themselves against the unfair treatment or behaviours of their fellow students or classmates. These behaviours include learners' ability or preparedness to deal with annoying situations or situations in which their feelings are hurt, as well as to stand firm to others who may force them into doing something unreasonable and to demonstrate a strong and confident personality when other classmates disagree with them.

Self-assertive self-efficacy consisted of 4 items, e.g. "How well can you express your opinion when other classmates disagree with you?" (8), "How well can you stand firm to someone who is asking you to do something unreasonable or inconvenient?" (13), "How well can you stand up for yourself when you feel you are being treated unfairly?" (25), "How well can you deal with situations where others are annoying you or hurting your feelings?" (30).

Coefficient alpha: 0,53 (0,72)

#### **4.4.2.7 Self-efficacy for enlisting parents and community support**

Self-efficacy for enlisting parents and community support involves learners's initiative to seek help from others. such as consulting their parents, brothers and sisters to help solve the problems. Learners may also encourage their parents and other people outside the school such as churches, community groups and other organizations to take part in school activities and to show interest in their schools. The involvement of parents and other people outside the school may enhance a state of mutual support, ensure effective utilization of learners' potential and motivate learning.

Self-efficacy for enlisting parents and community support in this study consisted of 3 items, e.g. "How well can you get people outside the school to take an interest in your school (for example, community group, churches)?" (4), "How well can you get your brother(s) and sister(s) to help you with a problem?" (18), "How well can you get your parents to take part in the school activities?" (22).

Coefficient alpha: 0,47 (0,69).

#### **4.4.3 Self-evaluation**

The self-evaluation questionnaire (appendix C) was intended to establish whether learners engaged in monitoring activities, evaluated the effectiveness of the learning strategies, sought recourse to other learning strategies when the learning strategies used were ineffective and whether they revised their study plans when necessary.

The self-evaluation questionnaire was composed of certain items from the Motivated Strategies for Learning Questionnaire (MSLQ) developed by Pintrich and De Groot (1990). Items from the Cognitive Strategy Use and the Self-Regulation Subscales of the MSLQ were used as well as some items used by Lehr (1982:246) and Newman and Goldin (1990:92).

The Cognitive Strategy Use scale consisted of 8 items. e.g. "When I study Economics I put important ideas into my own words" (5), "When I study for an Economics test I try to remember as many facts as I can" (6), "When reading I try to connect the things I read about with what I already know" (7), etc. Out of 8, one item was used by Newman *et al.*, (1990:92). e.g. "Sometimes I want to ask questions about something I do not understand in Economics, but I don't ask" (13).

Coefficient alpha: 0,36 (0,77)

The Self-Regulation Scale was constructed from metacognitive and effort management items. The Self-Regulation Scale consisted of 10 items from the MSLQ, 4 items used by Lehr (1982:246) as well as 2 items used by Newman *et al.* (1990:92) regarding the learners' use of metacognitive strategies such as "When I study Economics I ask myself questions to make sure I know the material I have been studying" (8), "I often find that I have been reading for class but I don't know what is all about"(12) etc. The self-regulation items were adapted from Weinstein *et al.* (1987) and Zimmerman and Martinez-Pons (1986), whereas the effort management strategies such as "Even when study materials are dull and uninteresting I keep on working until I finish" (10), "When work is difficult I either give up or only study material I have been studying" (17) etc. were adapted by from Weinstein *et al.* (1987) and Zimmerman and Martinez-Pons (1986) respectively.

Coefficient alpha: 0,74 (0,82)

The self-evaluation questionnaire as used in this study thus consisted of 24 items (see appendix C) related to learners' reflection on their own learning and achievement. Learners were instructed to respond to the items on a 5-point scale (ranging from 1 = "not at all like me" to 5 = "very much like me") in terms of their behaviour during learning and studying.

Item numbers 1, 2, 3, 12, 14, 16, and 17 were reflected before scale construction (ranging from 5 = "very much like me" to 1 = "not at all like me").

## **4.5 EXPERIMENTAL DESIGN**

An *ex post facto* design was used to determine the relation between the self-efficacy, self-evaluation and academic achievement of Std. 8 students (in Economics).

## **4.6 VARIABLES USED IN THIS STUDY**

### **4.6.1 Independent variables**

- self-efficacy for academic achievement
- self-efficacy for self-regulated learning
- self-efficacy for social resources
- self-efficacy to meet others' expectations
- social self-efficacy
- self-assertive self-efficacy
- self-efficacy for enlisting parents and community support
- self-evaluation
- educational level of parents
- parents' employment status
- sibsize
- birth order
- aspirations
- brothers and sisters in high school
- place of study
- extra tuition in economics
- homework expectations
- goal setting

- socio-economic status
- place of work
- family size
- time spent on/used for homework
- Economics considered as being a difficult subject
- satisfied with academic achievement in Economics

#### **4.6.2 Dependent variable**

Academic achievement in Std. 8 Economics.

#### **4.7 PROCEDURE**

The researcher visited the four circuit offices in the Qwaqwa region with the purpose to identify the schools in which Economics was offered as a subject to Std. 8 students. The headmasters of the selected schools were also visited and requested to provide information regarding classes in which the research was to be conducted.

407 Subjects were selected (par. 4.3) from a population of 551 Std. 8 students pursuing Economics as a subject in the Qwaqwa region.

The actual testing was done in September 1995.

In all the schools, the subjects first completed the biographical questionnaire after which the CMSES and the Self-Evaluation Questionnaires were completed. As the majority of the subjects in the sample had language deficiencies and they did not understand some of the concepts, etc., the researcher explained difficult words and/or concepts from the items or statements and illustrated by means of examples how the scales used should be completed. The subjects were not allowed to discuss items or answers with each other as this would influence their responses to items.

#### 4.8 STATISTICAL PROCEDURE AND TECHNIQUES

The data was processed with the mainframe computer of the PU for CHE using the SAS computer programmes.

Descriptive Statistics were calculated with FREQ-procedure and the MEANS procedure of the SAS (SAS INSTITUTE INC, 1985) to determine the means and standard deviations of the variables listed in paragraph 4.6 and table 5.2.

To determine the collective and individual influence of the independent variables on the dependent variables multiple regression analysis was performed. The BMDRP-9R computer programme (Dixon & Brown, 1979) was used for the collection of the multiple regression analysis.

Multiple regression is a method for analysing the collective and separate contributions of two or more independent variables  $X_1, X_2, X_3, \dots$  to the variation of a dependent variable,  $Y$  (Kerlinger & Pedhazur, 1973:3 and Kerlinger, 1966:360; 1969:187; 1975:659). This method is appropriate in this research in which the collective and the separate contributions of self-efficacy and self-evaluation on academic achievement in Economics are to be determined.

Multiple regression analysis also helps to "explain" the variance of a dependent variable and also to study the influence of several independent variables on academic achievement (Kerlinger *et al.*, 1973:4).

One-way analysis of variance (ANOVA) was performed with the GLM procedure of SAS (SAS INSTITUTE INC, 1988) to determine whether different groups of students differed significantly on the same variable. Practical or educational significance (effect size) was calculated. To determine the educational significance of the difference between two groups' means (Table 5.3), the following effect sizes were used:

$$d = \frac{\bar{X}_1 - \bar{X}_2}{S_{\max}}$$

where  $d$  = effect size,

$\bar{X}_1$  = mean of group 1,

$\bar{X}_2$  = mean of group 2,

$S_{\max}$  = maximum of  $S_1$  and  $S_2$ ,

where  $S_1$  = standard deviation of group 1 and

$S_2$  = standard deviation of group 2.

Small effect  $d = 0,2$

Medium effect  $d = 0,5$

Large effect  $d = 0,6$

If  $d$  is negative, the sign is ignored to apply the above criteria.

To determine the educational significance of a correlation, the following criteria are relevant (Cohen, 1977:413-414):

small effect  $r = 0,1$

medium effect  $r = 0,3$

large effect  $r = 0,5$

For negative correlations, the sign is ignored to apply these criteria.

To determine the educational significance of the contribution of a single variable to  $R^2$ , the following equation was used.

$$f^2 = \frac{\text{Contribution to } R^2}{1 - R^2}$$

(Cohen, 1977:410; Steyn, 1990:13-23)

The following criteria of Cohen (1977) was used to determine the educational significance of the contribution to  $R^2$  (effect size) of every independent variable:

Small effect	$f^2 = 0,02$
Medium effect	$f^2 = 0,15$
Large effect	$f^2 = 0,35$

To determine the educational significance (effect size) of the difference between group means as with ANOVA's, the following effect sizes were used:

$$f^2 = \sqrt{(k - 1) F / (N - k - 1)}$$

where  $k$  = number of groups  
 $N$  = number of students  
 $F$  = f-value from the analysis of variance;  
 $f$  = effect size.

(Cohen, 1977:280-288)

Small effect	$f^2 = 0,1$
Medium effect	$f^2 = 0,25$
Large effect	$f^2 = 0,4$

#### 4.9 SUMMARY

In this chapter the methods and procedures adopted in this research were described. The primary aim of the empirical investigation was to collect data that could be used to determine the relationship between self-efficacy, self-evaluation and academic achievement in Economics.

The population and sample used in this study were described in paragraph 4.3. The questionnaires used in this study were discussed in paragraph 4.4, while the experimental design used was described in paragraph 4.5.

Both dependent and independent variables were listed in paragraph 4.6. Finally, the statistical techniques used were discussed in paragraph 4.8.

In CHAPTER FIVE the statistical analyses of the data will be discussed and the results interpreted.

## **CHAPTER FIVE**

### **5. STATISTICAL ANALYSIS AND INTERPRETATION OF RESULTS**

#### **5.1 INTRODUCTION**

As mentioned in paragraph 1.2. the aim of this study was to determine the relationship between self-efficacy, self-evaluation and academic achievement (of Std. 8 students) in Economics in Qwaqwa. In this chapter, the hypotheses (par. 5.2) are described, data analysed and results interpreted.

#### **5.2 HYPOTHESES**

The following hypotheses were investigated.

##### **Hypothesis 1**

There is a relationship between self-efficacy and academic achievement in Economics of Std. 8 students.

##### **Hypothesis 2**

There is a relationship between self-evaluation and academic achievement in Economics of Std. 8 students.

#### **5.3 STATISTICAL PROCEDURES**

The summary statistics for each variable and correlation coefficient with academic achievement in economics were first calculated. A one-way analysis of variance (ANOVA) and t-tests were also calculated to determine the influence of individual variables on academic achievement in economics. The relationship between self-efficacy and academic achievement in Economics (i.e. hypothesis 1, see par. 5.5) and the relationship between self-evaluation and academic achievement in Economics (i.e. hypothesis 2, see par. 5.6) were then determined by means of multiple linear regression analysis.

It is necessary to mention that although efforts were made to ensure that the subjects understood the tests, some subjects did not complete all the items, resulting in missing data which in turn affected the number of the subjects per analysis. Secondly, some items in the biographical questionnaire were structured in such a way that subjects could only complete either the next or the preceding item. For example, all subjects who lived with both parents were not expected to complete the item that followed (e.g. "if not, indicate with a cross with whom you are living"). The total number of the subjects was 384, but in most of the tables the numbers of the subjects vary because of the missing data.

#### 5.4 DISCUSSION OF SUBJECTS

On the basis of the information from the biographical questionnaire a detailed description of the subjects was possible. The relationship between the different biographical variables and the subjects' academic achievement in Economics were determined (see Table 5.1).

**TABLE 5.1: Summary statistics for each variable and correlation coefficient with Economics.**

Variables	Nr. of subjects	Mean	SD	SV	LV	r
Age	384	17,90	2,22	14	33	-0,14*
Sex	384	1,54	0,50	1	2	-0,03
Father's highest level of education	298	1,74	1,56	1	7	0,09
Mothers' highest level of education	340	1,94	1,76	1	7	0,18*
Living with both parents	382	1,61	0,49	1	2	-0,00
Living with single parents, relatives, friends or alone	157	1,67	0,91	1	5	0,09
Parents' employment status	370	1,24	0,43	1	2	0,13*
Parent who is employed	233	1,55	0,50	1	2	-0,08
Father's place of work	214	1,37	0,48	1	2	0,18*
Mother's place of work	199	1,67	0,47	1	2	0,06
Parents' time of arrival from work	303	1,56	0,50	1	2	-0,02
Family size	380	6,48	2,06	2	10	-0,13*
Sibsize	380	3,94	2,02	0	7	-0,12*
Birth order	383	2,08	2,05	0	7	-0,11*
Brothers and sisters in high school	364	2,06	0,28	2	5	0,01
Place of residence	382	2,91	0,39	1	5	-0,03
Electricity in home or not	380	1,19	0,39	1	2	0,09
Encouraging subjects to study	382	1,95	0,23	1	2	0,04
Expectations to do homework	383	1,81	0,40	1	2	0,02
Study area	318	1,87	0,34	1	2	-0,03

Help with homework	380	1,40	0,49	1	2	0,14*
Time spent on homework	382	2,07	0,82	1	5	0,05
Economics as one of the different subjects	381	1,27	0,44	1	2	-0,18*
Extra tuition in Economics	382	1,10	0,31	1	2	0,04
Highest marks subjects would be happy with	383	173,50	30,24	90	400	0,12*
Lowest marks subjects would be happy with	383	105,86	26,16	50	200	0,10
Satisfied with the marks received for Economics	384	105,86	26,16	50	200	0,21
Socio-economic status	384	5,40	2,73	1	10	-0,15*
Self-efficacy for social resources	384	1,79	0,51	1	4	0,01
Self-efficacy for academic achievement	384	39,00	7,87	15	60	0,07
Self-efficacy for self-regulated learning	384	50,27	9,38	19	77	0,10
Self-efficacy to meet others' expectations	384	21,34	4,09	4	28	0,01
Social self-efficacy	384	19,19	4,71	6	28	0,01
Self-assertive self-efficacy	384	17,08	5,40	4	28	0,04
Self-efficacy for enlisting parents and community support	384	18,30	5,07	4	28	-0,06
Self-evaluation	384	80,23	7,20	61	98	0,12*
Goal-setting	383	139,68	23,37	84	250	0,14*
Academic achievement in Economics	384	88,64	31,85	4	178	

SD - Standard Deviation

SV - smallest value

LV - largest value

r - correlation coefficient with Economics

\* Statistically significant on 5% level

+ Educationally significant ( $r \geq 0,5$ )

13% of the 37 variables had correlations that were statistically significant at a 5% level, but they were not educationally significant.

#### 5.4.1 Age of the subjects

TABLE 5.2: Age distribution of subjects.

Age in years	14	15	16	17	18	19	20	21	22	23	24	25	27	33
Number of subjects	8	35	68	71	67	49	46	26	4	3	4	1	1	1

An analysis of Table 5.2 reveals that the age of Std. 8 students who were pursuing Economics ranges between 14 and 33. The average age of Std. 8 students who started school at 6 or 7 years and never failed a year ought to be 15 years. As the mean age of the subjects was 18 years it can be concluded that the majority of students either failed more than one year, missed school for one or more years, or started schooling at a later age than 6 or 7 years.

No statistically significant difference was found between the age of students with respect to their academic achievement in Economics (see Table 5.5).

#### 5.4.2 Family characteristics

Family characteristics as one of the many variables that may influence students' academic achievement in Economics will be explained on the basis of Table 5.3.

**TABLE 5.3: Family characteristics.**

Fathers' highest level of education	Std. 5 or lower	6	7	8	9	10	Post matric		
Number of subjects	297	49	9	10	4	3	16		
Mothers' highest level of education	Std. 5 or lower	6	7	8	9	10	Post matric		
Number of subjects	232	41	11	18	4	17	17		
Whom the child is living with	Both parents	Mother	Father	Relative	Friend	Alone			
Number of subjects	234	102	16	28	1	1			
Parents' employment status	Both employed	Mother	Father	Both unemployed					
Number of subjects	89	106	127	62					
Fathers' place of work	In the neighbourhood	Far							
Number of subjects	79	135							
Mothers' place of work	In the neighbourhood	Far							
Number of subjects	133	66							
Parents' time of arrival	Before sunset	After sunset							
Number of subjects	134	169							
Family size	2	3	4	5	6	7	8	9	10
Number of subjects	9	13	48	62	65	60	52	32	39
Sibsize	0	1	2	3	4	5	6	7	
Number of subjects	14	32	67	50	59	59	47	52	
Birth order	0	1	2	3	4	5	6	7	
Number of subjects	120	67	54	52	35	23	15	17	
Brothers and sisters in high school	2	3		4		5			
Number of subjects	345	17		1		1			
Place of residence	Farm	Town	Village	Squatter camp	Others				
Number of subjects	3	37	334	7	1				
Hours spent on homework	1	2	3	4	5 or more				
Number of subjects	96	181	92	9	4				

0 indicates a single or only child

1 indicates one brother or sister

2 indicates two brothers and/or sisters etc.

**TABLE 5.4: Means, standard deviations, and t-values of parents' employment status, educational support and academic achievement in Economics.**

Variables	Nr. of subjects	Mean	SD	T-value	DF	P-value	Effect size (d)
Both parent's employed	89	95,96	27,31	-2,59	368,0	0,0101**	0,4+
One parent employed	281	86,01	32,86				
Fathers' place of work in the neighbourhood	79	97,38	29,85	-2,62	212,0	0,0095*	0,4+
Fathers' place of work not in the neighbourhood	135	86,27	30,03				
Mothers' place of work in the neighbourhood	133	94,67	29,61	-0,89	197,0	0,3732	0,1
Mothers' place of work not in the neighbourhood	66	90,53	33,08				
Arrive before sunset	134	94,57	32,02	2,06	212,0	0,0095*	0,2
Arrive after sunset	169	87,02	31,40				
Helping subjects with homework	153	94,21	30,11	-2,68	378,0	0,0076*	0,3
Nobody helps with homework	227	85,32	32,66				
Economics is one of the difficult subjects	101	79,33	30,13	3,55	379,0	0,004*	0,4+
Economics is not one of the difficult subjects	280	92,19	31,63				
Satisfied with the mark received for Economics	148	97,17	34,21	-4,25	382,0	0,0000*	0,05
Not satisfied with the mark received for economics	236	83,29	29,10				
Subjects encouraged to study	361	89,12	30,82	-0,50	380,0	0,4885	0,2
Subjects not encouraged to study	21	84,19	44,34				
Subjects expected to do homework	309	89,11	30,68	-0,30	381,0	0,7463	0,04
Subjects not expected to do homework	74	87,78	35,47				
Subjects provided with a place to study	276	89,31	30,55	0,56	316,0	0,5731	0,09
Subjects not provided with a place to study	42	92,21	34,61				
Subjects who get extra tuition after school	40	92,48	32,83	-0,83	380,0	0,4062	0,1
Subjects who do not get extra tuition after school	342	88,04	31,78				
		* p < 0,01	Small effect		d = 0,2		
		** p < 0,05	+ Medium effect		d = 0,5		
			++ Large effect		d = 0,8		

#### 5.4.2.1 Fathers' highest level of education

An analysis of Table 5.3 reveals that the fathers' level of education is low (i.e. 207 fathers have passed Std. 5 or lower, 49 Std. 6, 19 Std. 7 and 8, 7 Std. 9 and 10 and only 16 fathers have gained a post-matric qualification. A one-way analysis of variance (ANOVA) (Table 5.5) revealed no statistically significant difference in the academic achievement in Economics between the students whose fathers' level of education is high and the students whose fathers' level of education is low -  $F(6,291) = 0,93; p > 0,05$ .

**TABLE 5.5: Summary of analysis of variance.**

Independent variables	F-value	P-value	Effect size
Age	1,41	0,19	0,17
Father's highest level of education	0,93	0,47	0,12
Mothers' highest level of education	2,71	0,01*	0,21+
Family size	1,59	0,13	0,18
Number of brothers and sisters	1,54	0,15	0,17
Birth order	1,51	0,16	0,17
Brothers and sisters in high school	0,99	0,40	0,09
Hours spent on homework	1,11	0,35	0,11
The self-efficacy for social resources scale	0,66	0,62	0,08
The self-efficacy for academic achievement scale	1,81	0,13	0,14
The self-efficacy for self-regulated learning scale	1,71	0,32	0,11
The self-efficacy to meet others' expectations scale	0,80	0,53	0,09
The social self-efficacy scale	0,43	0,79	0,07
The self-assertive self-efficacy scale	0,49	0,74	0,07
The self-efficacy for enlisting parents and community support scale	0,79	0,53	0,09
Self-evaluation	2,54	0,04**	0,16
	* $p < 0,01$	Small effect	$f = 0,1$
	** $p < 0,05$	+ Medium effect	$f = 0,25$
		++ Large effect	$f = 0,4$

#### 5.4.2.2 Mothers' highest level of education

An analysis of Table 5.3 reveals that the mothers' level of education is also low (i.e. 232 mothers have passed Std. 5 or lower, 41 Std. 6, 29 Std. 7 and 8, 21 Std. 9 and 10 and only 17 mothers have passed a post matric course. Mothers with a college education have a positive influence on their children's education (Caldas, 1993:206). Such mothers can manage the education of their children by giving them guidance on how to study and to do homework.

A one-way analysis of variance (ANOVA) revealed a statistically significant difference in the academic achievement in Economics of subjects whose mothers' level of education is high and those subjects whose mothers' level of education is low -  $F(6,333) = 2,71$ ;  $p < 0,01$ ;  $d = 0,21$ . This difference only approaches medium educational significance (see Table 5.5). It can be concluded that the subjects whose mothers' level of education is high achieved higher marks in Economics than the subjects whose mothers' level of education is low. To explain this relationship, one may make an assumption that the mothers who have higher educational levels are more able to monitor their children's progress in school, help them with homework when stuck, give guidance and instruction on the use of effective learning strategies than the mothers who have passed Std. 6 or lower.

#### **5.4.2.3 Whom the child was living with**

It can be inferred from Table 5.3 that 234 of the subjects lived with both parents, whereas 148 lived with single parents, relatives, friends or alone. No statistically significant differences in the academic achievement in Economics were found with regard to the subjects living with both parents, single parents, relatives, friends or alone (see Table 5.1).

#### **5.4.2.4 Parents' employment status**

An analysis of Table 5.3 reveals that only 89 of the subjects' parents were both employed, 106 of the subjects' mothers and 127 fathers were employed, while 62 of the subjects' mothers and fathers were not employed. It can be inferred from Table 5.4 that students whose parents are employed achieved higher marks in Economics ( $t = -2,59$ ;  $p < 0,05$ ;  $d = 0,4$ ) than students whose parents are not employed (see Table 5.4). This statistical difference though is only of some practical significance because of the small to medium effect size ( $d = 0,4$ ).

#### **5.4.2.5 Fathers' place of work**

An analysis of Table 5.3 reveals that 135 of the subjects' fathers' place of work is not in their neighbourhood, while 79 of the subjects' fathers' place of work is in their neighbourhood.

Subjects whose fathers' place of work is in their neighbourhood achieved higher marks in Economics ( $t = -2,62$ ;  $p < 0,01$ ;  $d = 0,4$ ) than subjects whose fathers' place of work is not in their neighbourhood. Though there is a statistically significant difference in the academic achievement in Economics with regard to fathers' place of work, this difference only approaches medium educational significance (see Table 5.4).

#### **5.4.2.6 Mothers' place of work**

An analysis of Table 5.3 reveals that 133 of the subjects' mothers' place of work is in their neighbourhood, while 66 mothers' place of work is not in their neighbourhood. No statistically significant difference was found in academic achievement in Economics with regard to subjects' mothers' place of work (see Table 5.4).

#### **5.4.2.7 Parents' time of arrival after work**

It can be inferred from Table 5.3 that 169 of the subjects' parents who were employed arrived home after sunset, while 134 of the subjects' parents who were employed arrived before sunset. Subjects of whom both parents arrived home from work before sunset achieved higher marks in Economics ( $t = 2,06$ ;  $p < 0,01$ ;  $d = 0,2$  (see Table 5.4) than subjects of whom both parents arrived after sunset. This difference though is only of small educational significance.

#### **5.4.2.8 Family size**

Family size involves the number of people constituting a family or living together in one shelter (dwelling). An analysis of Table 5.3 reveals that 132 subjects lived with two to five people in one shelter while 248 subjects lived with six people and above).

A one-way analysis of variance (ANOVA) revealed no statistically significant difference in the academic achievement in Economics between the students from a bigger family and students from a smaller family -  $F(8,371) = 1,59$ ;  $p > 0,05$  (see Table 5.5).

#### **5.4.2.9 Sibsize**

Sibsize refers to the number of the subjects' blood brothers and sisters in the family. It can be inferred from Table 5.3 that 9 subjects have two brothers and sisters, 13 three, 48 four, 62 five, 65 six, 60 seven, 52 eight, 32 nine and 39 ten brothers and sisters. No statistically significant relationship between sibsize and academic achievement in Economics was found (see Table 5.5).

#### **5.4.2.10 Birth order**

Birth order refers to the relative rank of the child in the age hierarchy among the siblings in the family (Steelman, 1985:354). An analysis of table 5.3 reveals that 120 of the subjects are first-born, or have no brothers and sisters, 67 are second born, 54 third born, 52 fourth born, 35 fifth born, 23 sixth born, 15 seventh born and 17 eight born. No statistically significant relationship in the academic achievement in Economics with regard to birth order of students was found (see Table 5.5).

#### **5.4.2.11 Brothers and sisters in high school**

An analysis of Table 5.3 reveals that 345 of the subjects have two brothers and sisters in high school, 17 have three, one has four and another one has five brothers and sisters in high school.

A one-way analysis of variance revealed no statistically significant differences in the academic achievement in Economics with regard to subjects with brothers and sisters in high school -  $F(3,360) = 0,99; p > 0,05$  (see Table 5.5).

#### **5.4.2.12 Place of residence**

It can be inferred from Table 5.3 that 3 of the subjects lived on a farm, 37 in town, 334 in the village and 7 live in the squatter camps, while only 1 subject has no specific place of residence. No statistically significant relationship in the academic achievement in Economics with regard to the subjects' place of residence was found (see Table 5.5).

#### **5.4.2.13 Encouraging the subjects to study**

An analysis of Table 5.4 reveals that 361 of the subjects get help and support from their parents and are being encouraged and motivated by their parents to study, while 21 subjects are not encouraged by their parents to study. No statistically significant difference in the academic achievement in Economics with regard to encouraging or not encouraging students to study was found (see Table 5.4).

#### **5.4.2.14 Expectations to do homework**

An analysis of Table 5.4 reveals that of the 309 subjects, 361 are expected by their parents or relatives to do homework after school, while 74 subjects indicated that their parents show little or no interest in their schoolwork (homework). Subjects whose parents expected them to do homework after school did not achieve higher marks in Economics than subjects whose parents did not expect them to do homework after school.

#### **5.4.2.15 Study area**

It can be inferred from Table 5.4 that the parents of 276 subjects provide a quiet area or space for the subjects to study, while 42 subjects are not provided with a quiet area or space for studying. No statistically significant difference in the academic achievement in Economics was found with regard to the study area (see Table 5.4).

#### **5.4.2.16 Help with homework at home**

It can be inferred from Table 5.4 that 227 of the subjects did not get assistance at home with their homework, while 153 of the subjects got assistance with their homework. It can be concluded from Table 5.4 that subjects who got assistance with their Economics homework achieved higher marks in ( $t = -2,68$ ;  $p < 0,01$ ;  $d = 0,3$ ) than the subjects who did not get any help with their homework. The difference although of statistical significance is of low educational significance because of the low effect size (0,3) (see Table 5.4).

#### **5.4.2.17 Hours spent doing homework**

An analysis of Table 5.3 reveals that 181 subjects spent two hours, 92 three hours, 9 four hours and 4 five hours or more doing homework every day, while 96 subjects spent only one hour every day to do homework. An analysis of variance though revealed no statistically significant differences in academic achievement in economics with regard to the time students spend to do their homework.  $F(4,378) = 1,11$ ;  $p > 0,05$ .

#### **5.4.2.18 Extra tuition**

An analysis of Table 5.3 reveals that of 382 subjects only 40 got extra tuition in economics after school hours. No statistically significant relationship in the academic achievement with regard to whether students received extra tuition in Economics or not was found (see Table 5.4).

#### **5.4.3 Summary**

The analysis of the biographical questionnaire reveals that effective learning is positively influenced by variables such as the mothers' level of education (par. 5.4.2.2), parents' employment status (par. 5.4.2.4), fathers' place of work (par. 5.4.2.5), parents' time of arrival at home after work (par. 5.4.2.7), and the assistance that subjects get from their parents with homework when stuck (par. 5.4.2.16).

### **5.5 INVESTIGATION OF THE HYPOTHESES**

To test the hypotheses, a multiple regression analysis was first performed on the following variables with Economics as dependent variable to identify the best subset of variables that contributed the most to variance in academic achievement in Economics:

- age
- sex
- SES

- family characteristics - Family characteristics is a composite variable composed of the following variables: family size, sibsize, birth order, and the number of brothers and sisters in high school (see par. 5.4.2).
- support - Support is defined as the mean of the following variables: encouraging the subjects to study, expectations to do homework, study area and help with homework at home.
- time spent on/used for homework
- satisfaction with academic achievement in Economics,
- goal setting - Goal setting is defined as the mean between the mark subjects would like to obtain and the lowest mark they would be happy with.
- self-efficacy for social resources,
- self-efficacy for academic achievement
- self-efficacy for self-regulated learning
- self-efficacy to meet others' expectations,
- self-efficacy for social resources
- self-efficacy for enlisting parents and community support,
- self-assertive self-efficacy and
- self-evaluation.
- Economics considered as being one of the difficult subjects
- satisfaction with marks obtained/received in Economics

A total of 18 independent variables were thus included in the equation for the multiple regression analysis. These 18 independent variables explained 15,19 percent ( $R^2 = 0,1519$ ) of the variance in academic achievement in Economics. By applying the Cp criterion (see Table 5.6), the following subset of variables that made the largest contribution to the academic achievement in Economics was identified: family characteristics, Economics considered as being one of the difficult subjects, satisfaction with marks obtained/received in Economics, goal setting, self-efficacy for self-regulated learning, and self-efficacy for enlisting parents and community support.

**TABLE 5.6: The collective and individual contribution of the independent variables to R<sup>2</sup> CRITERION: Academic achievement in Economics of Std. 8 students.**

$R^2 = 0,1326$  ( $R^2_a = 0,1175$ );  $N=344$

Variables	Regression coefficient	Contribution to R <sup>2</sup>	F-Value	Effect size f <sup>2</sup>
Family characteristics	-3,36	0,0173	6,88*	0,02
Economics is one of the difficult subjects in school	-13,08	0,0304	12,04*	0,04
Satisfied with the marks received in Economics	14,95	0,0510	20,24*	0,06
Goal setting	0,16	0,0140	5,56**	0,02
Self-efficacy for self regulated learning	0,61	0,0043	1,69	0,01
Self-efficacy for enlisting parents and community support	-2,04	0,0075	2,96	0,01
	* p < 0,01	Small effect	f <sup>2</sup> = 0,02	
	** p < 0,05	Medium effect	f <sup>2</sup> = 0,15	
		Large effect	f <sup>2</sup> = 0,35	
Intercept: 75,0530				

An analysis of Table 5.6 reveals that the six independent variables comprising the best subset of variables collectively explain 13,26 percent ( $R^2 = 0,13263$ ;  $R^2_a = 0,11750$ ) of the variance in the academic achievement in Economics of Std.8 students. An analysis of Table 5.6 also reveals that family size, Economics as being one of the difficult subjects, satisfaction with marks obtained/received in economics, and goal setting each makes a statistically significant contribution to R<sup>2</sup>. Family size explains 1,73 percent (contribution to R<sup>2</sup> = 0,0173;  $F(1.344) = 6.88$ ;  $p < 0,01$ ;  $f^2 = 0,02$ ) of the variance in academic achievements in Economics. Economics as one of the difficult subjects explains 3,04 percent (contribution to R<sup>2</sup> = 0,0304;  $F(1.344) = 12,04$ ;  $p < 0,01$ ;  $f^2 = 0,04$ ) of the variance in the academic achievement in Economics, satisfaction with marks received for Economics explains 5,10 percent (contribution to R<sup>2</sup> = 0,0510;  $F(1.344) = 20,24$ ;  $p < 0,01$ ;  $f^2 = 0,06$ ), and goal setting explains 1,40 percent (contribution to R<sup>2</sup> = 0,0140;  $F(1,344) = 5,56$ ;  $p < 0,05$ ;  $f^2 = 0,02$ ) of variance in the academic achievement in Economics.

The effect sizes of family size ( $f^2 = 0,02$ ), Economics as one of the difficult subjects ( $f^2 = 0,04$ ), satisfied with marks obtained/received in Economics ( $f^2 = 0,06$ ), and goal setting ( $f^2 = 0,02$ ) are small. Thus, though the contribution of these variables to R<sup>2</sup> are statistically significant, these contributions are of little educational or practical significance.

With reference to hypothesis 1 (that there is a relationship between self-efficacy and academic achievement in Economics of Std. 8 students) an analysis of Table 5.6 reveals that only two self-efficacy variables i.e. self-efficacy for self-regulated learning and self-efficacy for enlisting parents and community support are included in the best subset of variables that predict academic achievement in Economics.

The contribution of these variables to  $R^2$  though are not statistically significant. The hypothesis can therefore not be accepted. A relationship between self-efficacy and academic achievement in Economics could therefore not be established with this research.

With reference to hypothesis 2 (that there is a relationship between self-evaluation and academic achievement in Economics of Std. 8 students) an analysis of Table 5.6 reveals that no self-evaluation variables were included in the best subset of variables that influence academic achievement. The hypothesis can therefore not be accepted.

## 5.6 CONCLUSION

Hypothesis 1 (that there is a relationship between self-efficacy and academic achievement in Economics of Std. 8) could not be accepted because of the small educational significance of the relationship between the self-efficacy variables and academic achievement in economics of Std. 8 students). Hypothesis 2 (that there is a relationship between self-evaluation and academic achievement in Economics of Std. 8 students) was also not accepted because self-evaluation variables were excluded from the best subset of variables. Thus, it could not be established whether self-evaluation was an important variable that influenced the academic achievement in Economics of Std. 8 students in this research, or not.

## CHAPTER SIX

### 6. SUMMARY, RECOMMENDATIONS AND CONCLUSION

#### 6.1 INTRODUCTION

This chapter consists of a summary of the research. A statement of the problem is given in paragraph 6.2. The review of literature is summarized in paragraph 6.3, followed by a discussion of the method of research in paragraph 6.4 and the results in paragraph 6.6. The limitations of the study are discussed in paragraph 6.8.

#### 6.2 STATEMENT OF THE PROBLEM

The failure rate in Economics as a subject among the Std. 8 students in the Qwaqwa region is high compared to their performance in other subjects. This poor performance may reduce students' commitment to learning and create a belief in some learners that Economics is one of the difficult subjects in school.

Students in general are not conscious of the variables that influence their learning and achievement in Economics. Students' awareness of variables such as self-efficacy, self-evaluation and learning strategies are believed to influence learning and academic achievement (Lent *et al.*, 1984:265; Weinstein *et al.*, 1985:243; Bandura, 1986:357).

The aim of this study was therefore to establish whether the following variables influence academic achievement in Economics of Std. 8 students in the Qwaqwa region.

- Self-efficacy and
- Self-evaluation

#### 6.3 REVIEW OF THE LITERATURE

##### 6.3.1 The relation between self-efficacy and academic achievement

Self-efficacy (par. 3.2) refers to personal beliefs about one's capabilities to successfully perform the learning tasks and to implement the actions that will help attain designated levels

of performance (Bandura, 1982:122; 1986:393). Self-efficacy has been found to affect choice of activities (Schunk, 1994a:3).

According to Schunk (1994a:3) learners who hold a low sense of self-efficacy for learning may avoid difficult learning tasks whereas learners who have a high sense of self-efficacy participate more eagerly in their learning tasks. Efficacious learners were found to work harder and persist longer than those who doubted their capabilities (Schunk, 1989:14). A belief in one's capabilities to perform difficult learning tasks successfully is, therefore, more likely to promote the perseverance needed to succeed than disbeliefs in one's capabilities (Bandura, 1986:224).

### **6.3.2 The relation between self-evaluation and academic achievement**

Self-evaluation (par. 3.5) refers to the process of measuring one's progress toward specific goals and centres in one's self-observation and self-judgement (Johnson, 1979:124). Self-evaluation as a process regulates behaviour which is assessed and modified in terms of evaluative standards of adequacy (Bandura, 1988:467). According to Boud (1992:186) self-evaluation provides opportunities for learners to make their own assessment of how successful or unsuccessful they are in meeting their learning goals. Learners who perceive their progress in learning as successful are motivated to apply learning strategies selectively and flexibly, excel in whatever academic subjects they are pursuing and perceive high standards of performance as an important measure of adequacy (Bandura, 1988:467). In contrast, unsuccessful learners reduce their commitment to learning and avoid challenging learning tasks as well as potentially rewarding activities.

Successful learners who periodically self-evaluate their progress in learning are more likely than their counterparts to become critical evaluators of their own performance and gain self-confidence in learning with the result that their self-efficacy and academic achievement are enhanced.

### **6.3.3 The relation between self-efficacy and self-evaluation**

Self-evaluation (see par. 2.8.1) refers to learners' assessment of their performance level, such as by comparing their present performance levels with a goal or standard to determine progress (Schunk, 1991a:86; 1994a:2) whereas self-efficacy (see par. 3.2) refers to personal beliefs

about one's capabilities to successfully perform learning tasks and to implement the actions that will help attain designated levels of performance (Bandura, 1982:122; 1986:393; Brown *et al.*, 1985:65; Church *et al.*, 1992:498).

Self-evaluation influences learners' self-efficacy and motivation (Marshall & Weinstein, 1984:302; McCombs *et al.*, 1989:227). In school, learners who hold positive self-evaluations about their progress towards learning goals or successes tend to experience a heightened sense of self-efficacy and to engage in appropriate learning activities, such as attending to instructions, etc., because perceptions of progress convey that learners are becoming more skilful (Schunk, 1994a:2-3; Zimmerman, 1989:334).

Self-efficacy theory highlights the significance of accurate self-evaluation in promoting successful learning (Bandura, 1989:334). According to Bandura (1989:334) and Brown *et al.*, (1985:65) learners who overestimate their ability to successfully perform their learning tasks may be tempted to attempt learning tasks that are well beyond their reach and suffer distress and failure, whereas learners who underestimate their ability to perform well at the learning tasks may avoid potentially rewarding pursuits and prevent personal skills development.

## **6.4 METHOD OF RESEARCH**

### **6.4.1 Subjects**

The sample for this study consisted of Std. 8 students (N=384, see Table 4.2.) who were pursuing Economics as a subject in Qwaqwa secondary schools. In this study, 30 secondary schools rather than students were sampled (i.e. random cluster sampling) in order to provide sufficient data for testing the hypotheses. From a list of 30 secondary schools approximately 30% of the schools were selected by means of random cluster sampling.

Of the 30 secondary schools in the Qwaqwa region ten (10) schools were thus selected. The ten secondary schools had 16 classes which took Economics. Through random cluster sampling 12 classes were drawn (see Table 4.2.).

## **6.4.2 Instrumentation**

The following questionnaires were used.

### **6.4.2.1 Biographical questionnaire**

The biographical questionnaire (par. 4.4.1) was developed to obtain information pertaining to the subjects and their families. The biographical questionnaire required the subjects to give information on age, sex, family size, parents' level of education, parents' employment, parents' participation in their children's education, the size of the dwelling and their conditions (see par. 4.5.4).

### **6.4.2.2 Children's Multidimensional Self-efficacy Scales**

The Children's Multidimensional Self-efficacy Scales (CMSES) developed by Bandura, (1986) was used in this study to assess the subjects' perceived capabilities to effectively and successfully perform a variety of related learning tasks. The Children's Multidimensional Self-efficacy Scales as used in this study consisted of 40 items on a 7- point scale (ranging from 1 = "not well at all" to 7 = "very well") in terms of their behaviour in Economics class.

The Children's Multidimensional Self-efficacy Scale consisted of the following subscales (see par. 4.4.2).

#### **The self-efficacy for social resource scale**

The self-efficacy for social resources scale involves the assistance that learners get from other people such as friends, fellow students and adults when they get stuck or experience problems in their learning tasks.

#### **The self-efficacy for academic achievement scale**

The self-efficacy for academic achievement scale involves personal beliefs about one's capabilities to successfully perform learning tasks and to improve the actions that will help attain a designated level of performance.

#### **The self-efficacy for self-regulated learning scale**

The self-efficacy for self-regulated learning scale involves learners' perceived capability to use a variety of self-regulated learning strategies such as planning, skimming, comprehension monitoring etc. (Zimmerman *et al.*, 1992:667; Pintrich & De Groot, 1990:35).

#### **The self-efficacy to meet others' expectations scale**

The self-efficacy to meet others' expectation scale involves learners' willingness to live up to certain expectations such as those of their parents, teachers, peers, as well as the expectations of themselves for academic achievement.

#### **The social self-efficacy scale**

The social self-efficacy scale involves learners' preparedness to socialize with others or adapt to society.

#### **The self-assertive self-efficacy scale**

The self-assertive self-efficacy scale involves learners' decision to stand up for themselves against the unfair treatment or behaviour of their fellow students or classmates (see par. 4.4.2.6).

#### **The self-efficacy for enlisting parents and community support scale**

The self-efficacy for enlisting parents and community support scale involves learners' initiative to seek help from others, such as consulting their parents, brothers and sisters to help solve the problems.

#### **6.4.2.3 Self-evaluation**

The self-evaluation questionnaire was intended to establish whether or not learners engaged in monitoring activities, evaluated the effectiveness of the learning strategies and whether they revised their study plans when necessary or not.

The self-evaluation questionnaire was composed of certain items from the Motivated Strategies for Learning Questionnaire (MSLQ). Items from the Cognitive Strategy use and the Self-regulation subscales of the MSLQ were used as well as some items used by Lehr (1982:246) and Newman *et al.*, (1990:92).

The self-evaluation questionnaire as used in this study consisted of 24 items related to learners' reflection on their own learning and achievement. Learners were requested to respond to the items on a 5-point scale (ranging from 1 = "not at all like me" to 5 = "very much like me") in terms of their behaviour during learning and studying. Items number 1, 2, 3, 12, 14, 16 and 17 were reflected before scale construction (ranging from 5 = "very much like me" to 1 = "not at all like me").

## **6.5 PROCEDURE**

The subjects in each class received instruction on how to record their responses or how to complete the scales. Unfamiliar and difficult words used in the items or statements were then explained in the subjects' own mother tongue to ensure their understanding of the statements.

Questionnaires were then distributed and the subjects were requested to respond to all items and to give their frank opinions. The subjects first completed the biographical questionnaire after which the CMSES and self-evaluation questionnaires were completed.

## **6.6 RESULTS**

### **6.6.1 Hypothesis 1**

Hypothesis 1, (that there is a relationship between self-efficacy and academic achievement) in Economics of Std. 8 students) was not accepted because the contribution of self-efficacy variables, i.e. self-efficacy for self-regulated learning and self-efficacy for enlisting parents and community support, to the academic achievement in Economics was not of educational significance.

### **6.6.2 Hypothesis 2**

Hypothesis 2, (that there is a relationship between self-evaluation and academic achievement in Economics of Std. 8 students) was also not accepted because self-evaluation variables were excluded from the best subset of variables that influence academic achievement in Economics.

## 6.7 DISCUSSION OF RESULTS

Subjects whose mothers' level of education was high achieved higher marks in Economics than the subjects whose mothers' level of education was low. According to Jubber (1994:137) the mothers with a post matric qualification are more able to encourage their children to do homework and even help them with homework while the less educated mothers are not able to help their children with homework. The children of the less educated mothers rely heavily on the school for the appropriate educational inputs, whereas children with university or college educated parents have complementary and equally qualified sources of stimulation (Jubber, 1994:138). The results reveal that mothers' level of education accounts for an improvement in academic achievement in Economics of Std. 8 students.

The analysis of the biographical questionnaire also indicates that subjects whose fathers' place of work was in the neighbourhood and whose parents arrived before sunset achieved higher marks in Economics, whereas subjects whose fathers' place of work was not in the neighbourhood and whose parents arrived after sunset achieved low marks in Economics. Subjects whose fathers' place of work is not in the neighbourhood and whose parents arrive after sunset achieve low marks because their parents arrive late from work, being tired due to long traveling and long working hours and can thus not help their children with homework when stuck (Jubber, 1994:8). The results of the investigation indicate that giving assistance to learners with homework when stuck improves learner's academic achievement.

The results of the analysis of the biographical questionnaire further revealed that parents' expectations for children to do homework (see par. 5.4.2.14) improve academic achievement. According to Jubber (1994:8) parents' expectations to do homework play a motivating and directing role in the education of children. When subjects notice that their parents expect of them to do homework they become motivated to learn, committed to learning and expend greater effort on learning tasks with the purpose to improve their academic achievement, whereas subjects whose parents do not expect of them to do homework show little commitment to learning (Jubber, 1990:8). The results reveal that parents' expectations to do homework encourages effective learning.

An analysis of Table 5.6 revealed that there were only two self-efficacy variables i.e. self-efficacy for self-regulated learning and self-efficacy for enlisting parents and community

support which were included in the best subset of the variables that predict academic achievement in Economics. Hypothesis 1 (that there is a relationship between self-efficacy and academic achievement in Economics of Std. 8 students) was not accepted because the contribution of these variables to the academic achievement in Economics was not of educational significance.

An analysis of Table 5.6 also revealed that no self-evaluation variables were included in the best subset of variables that predict academic achievement in Economics. Hypothesis 2 (that there is a relationship between self-evaluation and academic achievement in Economics of Std. 8 students) was not investigated.

## **6.8 CONCLUSION**

From the analysis of the results pertaining to the relationship between self-efficacy and academic achievement in Economics of Std. 8 students, it can be concluded that there is no such a relationship and with regard to hypothesis 2 (that there is a relationship between self-evaluation and academic achievement in Economics of Std. 8 students) it was not possible to investigate the relationship.

## **6.9 LIMITATIONS**

Self-efficacy and self-evaluation questionnaires were used for the first time in the Qwaqwa region and as a result they may have had some limitations. i.e.

- The subjects may have not been familiar with the terms self-efficacy and self-evaluation which may have resulted in the subjects not responding properly to the items.
- The self-efficacy and self-evaluation questionnaires were not written in the subjects' mother tongue and this may have also resulted in the students not responding well to the items.
- The subjects did not know how to self-evaluate and/or were not aware that they can evaluate their own progress in learning and as a result they did not respond well to the items.

## **6.10 RECOMMENDATIONS FOR FURTHER RESEARCH**

The research was aimed at exploring the influence of self-efficacy and self-evaluation on academic achievement, and to identify the relationship with academic achievement.

It is recommended that:

- further research be conducted in constructing a measuring instrument to measure students' self-evaluations;
- similar research be conducted in all districts in the Qwaqwa region;
- questionnaires be written in the subjects' mother tongue to avoid the problem of subjects not responding properly to items; and
- a programme be developed to train teachers on how to improve the self-efficacy and self-evaluation perceptions of students and to help them improve their ability to exercise control over their learning activities.

## **6.11 FINAL STATEMENT**

Learners' knowledge about how to self-evaluate their own progress in learning and the perceptions they hold about their own capabilities are essential for effective learning.

Teachers must play an active role in providing learners with this knowledge. It is hoped that this research will shed more light on how variables such as self-efficacy and self-evaluation influence academic achievement.

## BIBLIOGRAPHY

- ALEXANDER, P.A. & JUDY, J.E. 1988. The interaction of domain-specific and strategic knowledge in academic performance. *Review of educational research*, 58(4):375-404.
- AMES, C. & AMES, R. 1984. System of student and teacher motivation. toward a qualitative definition. *Journal of educational psychology*, 76(4):535-556.
- ARY, D., JACOBS, L.C. & RAZAVIEH, A. 1990. Introduction to research in education. New York : Holt, Rinehart and Winston.
- ASSOR, A. & CONELL, J.P. 1992. The validity of students' self-reports as measures of performance affecting self-appraisals. (In Schunk, D.H. & Meece, J.L., eds. Student perceptions in the classroom. Hillsdale, NJ : Lawrence Erlbaum. p. 25-42.)
- BANDURA, A. 1977. Self-efficacy: toward a unifying theory of behavioural change. *Psychological review*, 84(2):191-215.
- BANDURA, A. 1982. Cognitive learning theory: theories of personality. New York : Holt, Rinehart and Winston.
- BANDURA, A. 1985. Cognitive learning theory. (In Feist, J. Theories of personality. New York : Holt, Rinehart and Winston. p. 261-291.)
- BANDURA, A. 1986. Social foundations of thought and action: social cognitive theory. Englewood Cliffs, NJ : Prentice-Hall.
- BANDURA, A., ADAMS, N.E., HARDY, A.B. & HOWELL, G.N. 1980. Test of the generality of self-efficacy theory. *Cognitive therapy and research*, 4(2):39-66.
- BIGGS, J.B. & RIHN, B.A. 1984. The effects of intervention on deep and surface approaches to learning. (In Kirby J., ed. Cognitive strategies and educational performance. New York : Academic Press. p. 279-293.)
- BOUD, D. 1992. The use of self-assessment schedule in negotiated learning. *Studies in higher education*, 17(2):185-197.

- BONDS, C.W., BONDS, L.G. & PEACH, W. 1992. Metacognition: developing independence in learning. *The clearing house*, 66(1):56-58.
- BOOTZIN, R.R., LOFTUS, E.F. & ZAJONC, R.B. 1991. Psychology today: an introduction. New York : McGraw-Hill.
- BORKOWSKI, J.G., CARR, M., RELLINGER, E. & PRESSLY, M. 1990. Self-regulated cognition: interdependence of metacognition, attributions, and self-esteem. (In Jones, B.F. & Idol, L., eds. *The dimensions of thinking and cognitive instruction*. Hillsdale, NJ : Erlbaum. p. 53-85.)
- BROWN, S.A., LENT, R.W. & LARKIN, K.C. 1989. Self-efficacy as a moderator of scholastic aptitude- academic performance relationship. *Journal of vocational behaviour*, 35:64-75.
- CALDAS, S.J. 1993. Reexamination of input and process factor effects on public school achievement. *The journal of educational research*, 86(4):206-214.
- CHILD, D. 1981. Psychology and the teacher. New York : Holt, Rinehart and Winston.
- CHURCH, A.T., TERESSA, J.S., ROSEBOOK, R. & SZENDRE, D. 1992. Self-efficacy for careers and occupational consideration in minority high school equivalency students. *Journal of counseling psychology*, 39(4):495-508.
- COHEN, L. 1977. Educational research in classroom and schools: a manual of materials and methods. London : Harper & Row.
- COLLIER, C. & HOOVER, J.J. 1987. Cognitive learning strategies for minority handicapped students. Texas : Hamilton.
- CULLINGFORD, C. 1990. The nature of learning. London : Cassell Educational.
- DANSEREAU, D.F. 1987. Learning strategies. (In O'Neil, H.F., ed. *Learning strategies*. New York : Academic Press. p. 3-4.)
- DEMBO, M.H. 1991. Applying educational psychology in the classroom. New York : Longman.

- DISCOLL, M.P. 1994. Psychology of learning for instruction. London : Allyn and Bacon.
- DIXON, W.J. & BROWN, M. 1979. Biomedical computer programs. Berkely, California : University of Calif. (P. series).
- ENTWISTLE, N.J. 1987. Explaining individual differences in school learnings. (In De Corte, E., Lodewijks, H., Parmentier, R. and Span, P., eds. Learning and instruction. New York : Leuven University Press. p. 69-131.)
- ENTWISTLE, N.J. 1988. Motivational factors in student approaches to learning. (In Schmeck, R.R., ed. Learning styles and learning strategies. New York : Plenum Press. p. 21-51.)
- FELDMAN, R. 1990. Understanding psychology. New York : McGraw-Hill.
- FONTANA, D. 1988. Psychology for teachers. Leicester : British Psychology Society.
- FORD, N. 1991. Recent approaches to the study and teaching of effective learning in higher education. *Review of educational research*, 51(3):345-377.
- GARNER, R. 1987. Metacognition and reading comprehension. NJ : Ablex.
- GARRISON, K.C. & MAGOON, R.A. 1972. Educational psychology: An integration of psychology and educational practice. Columbus : Merrill.
- JACOBS, J.E. & PARIS, S.G. 1987. Children's metacognition about reading: Issues in definition, measurement, and instruction. *Educational psychologist*, 22(3&4):255-278.
- JOHNSON, D.W. 1979. Educational psychology. Englewood Cliffs, NJ : Prentice-Hall.
- JUBBER, K. 1990. The home and family environment and its impact on school achievement. *South African journal of sociology*, 21(1):1-11.
- JUBBER, K. 1994. The early home environment and its influence on Std. 4 and Std. 10 school performance. *South African journal of education*, 14(3):135-140.
- KERLINGER, F.N. 1966. Foundations of behavioural research. New York : Holt, Rinehart and Winston.

- KERLINGER, F.N. 1969. Foundations of behavioural research. Educational and psychological enquiry. New York : Holt, Rinehart and Winston.
- KERLINGER, F.N. 1975. Foundations of behavioural research. 2nd ed. New York : Holt, Rinehart and Winston.
- KERLINGER, F.N. & PEDHAZUR, E.J. 1973. Multiple regression in behavioural research. New York : Holt, Rinehart and Winston.
- KLAUER, K.J. 1988. Teaching for learning-to-learn: a critical appraisal with some proposals. *Instructional science*, 17:351-367.
- KOKONG, M.M. 1991. The relationship between reading ability and achievement in English as second language and other subjects at matric level. Potchefstroom : PU for CHE. (Mini-dissertation-(M.Ed.)
- LAURILLARD, D. 1979. The process of student learning. *High school education*, 8:395-409.
- LEHMAN, M.C., TAYLOR, G.S. & FORDE, C.N. 1990. Experimental approach to performance appraisal. *Business educational forum*, 44(5):25-29.
- LEHR, M.T. 1982. Student responsibility as a factor in determining learning achievement. *The clearing house for the contemporary education in middle and secondary schools*, 56(12):245-249.
- LENT, R.W., BROWN, S.D. & LARKIN, K.C. 1984. Relations between self-efficacy expectations to academic achievement and persistence. *Journal of counseling psychology*, 31(3):356-362.
- MARSHALL, H.H. & WEINSTEIN, R.S. 1984. Classroom factors affecting students' self-evaluation: An interactional model. *Review of educational research*, 54(3):301-325.
- MARTON, F. 1988. Describing and improving learning. New York : Plenum Press.

- MATHEBULA, M.J. 1992. The influence of self-efficacy, attributions and learning strategies on academic achievement in English Std. 7 Vatsonga students. Potchefstroom : PU for CHE. (Dissertation-M.Ed.)
- McCOMBS, B.L. 1988. Self-evaluation of competence and control: academic processes and outcomes underlying student's abilities for self-regulation. (Paper presented in April 1988 at the annual meeting of the Educational Research Association. New Orleans.) (Unpublished).
- McCOMBS, B.L. & WHISLER, J.S. 1989. The role of affective variables in autonomous learning. *Educational psychologist*, 24(3):277-306.
- MORGAN, C.T., KING, R.A., WEISZ, J.R. & SCHOPLER, J. 1986. An introduction to psychology. 7th ed. New York : McGraw-Hill.
- NELSON-LE-GALL, S. & JONES, E. 1990. Cognitive motivational influences on the task related to help-seeking behaviour of black children. *Child development*, 6:581-589.
- NEWMAN, R.S. & GOLDIN, L. 1990. Children's reluctance to seek help with school work. *Journal of educational psychology*, 82(1):92-100.
- ORMROD, J.E. 1990. Human learning: theories, principles, and educational application. New York : McMillan.
- ORMROD, J.E. 1995. Educational psychology: principles and applications. Englewood Cliffs, NJ : Merrill.
- PALMER, D.J. & GOETZ, E.T. 1988. Selection and use of study strategies: The role of the studier's beliefs about self and strategies. (In Weinstein, C.E., Goetz, E.T. & Alexander, P.A., eds. Learning and study strategies: issues in assessment, instruction, and evaluation. New York : Academic press. p. 41-55.)
- PARIS, S.G. & WINOGRAD, P. 1990. (in press). How metacognition can promote academic learning and motivation. (In Jones, B.F & Idol, L., eds. Dimensions of thinking and cognitive instruction. Hillsdale, NJ : Lawrence Erlbaum. p. 15-51.)

- PINTRICH, P.R. 1989. Student learning and college teaching. (In Young, R.E. & Eble, K.E., eds. College teaching and learning. Preparing for new commitments. New directions for teaching and learning. San Francisco : Jossey-Bass. p. 132-145.)
- PINTRICH, P.R. & SCHRAUBEN, B. 1992. Students' motivational beliefs and their cognitive engagement in classroom. (In Schunk, D.H., & Meece, J.L., ed. Student perceptions in the classroom: causes and consequences. Hillsdale, NJ : Lawrence Erlbaum. p. 149-182.)
- PINTRICH, P.R. & V. DE GROOT, E. 1990. Motivational and self-regulated learning components of classroom academic performance. *Journal of educational psychology*, 82(1):33-40.
- SADLER, D.R. 1983. Evaluation and the improvement of academic learning. *Journal of higher education*, 50(1):60-79.
- SAS INSTITUTE INC. 1985. SAS user's guide. 5th ed. Cary, N.C.
- SAS INSTITUTE INC. 1988. SAS/STAT user's guide. 6th ed. Cary, N.C.
- SCHMECK, R.R. 1983. Learning styles of college students. (In Dillon, R.F. & Schmeck, R.R., eds. Learning strategies and learning styles. New York : Academic Press. p. 317-347.)
- SCHMECK, R.R. 1988. Strategies and styles of learning: An integration of learning perspective. (In Schmeck, R.R., ed. Learning strategies and learning styles. New York : Plenum Press. p. 340-368.)
- SCHUNK, D.H. 1984a. Enhancing self-efficacy and achievement through rewards and goals: motivational and informational effects. *Journal of educational psychology*, 78(1):29-34.
- SCHUNK, D.H. 1984b. Self-efficacy perspective on academic behaviour. *Educational psychologist*, 19(1):48-58.
- SCHUNK, D.H. 1985. Self-efficacy and classroom learning. *Psychology in the school*, 22:208-220.

- SCHUNK, D.H. 1988. Perceived self-efficacy and related social cognitive processes as predictors of student academic performance. (Paper presented in April 1988 in a symposium entitled, "Self-regulated learning processes": emerging evidence of a key role in student motivation and achievement at the annual meeting of the American Educational Research Association. New Orleans.) (Unpublished).
- SCHUNK, D.H. 1989. Self-efficacy and cognitive skill learning. (In Ames, R.E & Ames, C., eds. Research on motivation in education. Vol. 3. Goals and cognitions. San Diego, SA : Academic. p. 13-44.)
- SCHUNK, D.H. 1991a. Goal setting and self-evaluation: a social cognitive perspective on regulation. (In Maehr, M.C. & Pintrich, R.P., eds. Advances in motivation and academic achievement. Vol. 7. Greenwich, C.T. : JAI Press. p. 85-113.)
- SCHUNK, D.H. 1991b. Learning theories: an educational perspective. New York : Maxwell MacMillan.
- SCHUNK, D.H. 1993. Self-efficacy, motivation, and performance. (Paper presented at the annual meeting of the Association for the Advancement of Applied Sports Psychology, Montreal, October 1993. p. 1-26.)
- SCHUNK, D.H. 1994a. Goal and self-evaluative influence during children's mathematical skill acquisition. Presented at the annual meeting of the American Educational Research Association, New Orleans.
- SCHUNK, D.H. 1994b. Motivating self-regulation of learning: the role of performance attribution. (Paper presented at the annual meeting of the American Educational Research Association in April 1994. New Orleans.) (Unpublished.)
- SCHUNK, D.H. & HANSON, A.R. 1985. Peer models: Influence of children's self-efficacy and achievement. *Journal of educational psychology*, 77(3):313-322.
- SCHUNK, D.H. & RICE, J.M. 1991. Learning goals and progress feedback during comprehension instruction. *Journal of reading behaviour*, xx11(3):351-364.

- SCHUNK, D.H. & SWARTZ, C.W. 1993. Goals and progress feedback: effects on self-efficacy and writing achievement. *Contemporary educational psychology*, 18:337-354.
- SCHUNK, D.H., HANDSON, A.R. & COX, P.D. 1987. Peer model attributes and children's achievement behaviour. *Journal of educational psychology*, 79(1):54-61.
- SEIFERT, K. 1983. Educational psychology. Boston, NJ : Houghton Mifflin.
- SHERMAN, L.W. 1985. Developing perceptions of control: Cross-sectional and longitudinal analyses. (Paper presented in August at the meeting of the American Psychology Association. Toronto, Ontario.) (Unpublished.)
- SHUELL, T.J. 1988. The role of the student in learning from instruction. *Contemporary educational psychology*, 13:276-295.
- SINGH, B.A. 1988. Cognitive styles, cultural pluralism and effective teaching and learning. *European journal of education*, 34(3):355-369.
- STEELMAN, L.C. 1985. A tale of two variables: A review of the intellectual consequences of sibship size and birth order. *Review of educational research*, 55(3):353-386.
- STEYN, H.S. 1990. Praktiese statistiek vir die geesteswetenskappe. Potchefstroom : PU vir CHO.
- SULS, J. & SANDERS, G.S. 1977. Self-evaluation through social comparison: a development analysis. (In Wheeler, L., eds. Review of personality and social psychology. London : Sage Publishers. p. 171-189.)
- THOMAS, J.W. & ROHWER, W.D. 1986. Academic studying: the role of learning strategies. *Educational psychologist*, 21(1&2):19-41.
- TOWER, L. & BROADFOOT, P. 1992. Self-assessment in the primary school. *Educational review*, 44(2):137-151.
- VAN METER, P. & PRESSLEY, M. 1994. Encoding instruments when 10-to-14-year-olds process isolated instrument-implicit sentences. More evidence of improved encoding during childhood resulting from elaborative instructions. *Journal of educational psychology*, 86(3):402-412.

- WANG, M.C. & LINDVALL, C.M. 1984. Individual differences and school learning environments. *Review of research in education*, 11:161-225.
- WARGA, R.G. 1983. Personal awareness. a psychology of adjustment. Boston, NJ : Houghton Mifflin Company.
- WEINER, B. 1984. Principles for a theory of student motivation and their application within an attributional framework. (In Ames, R. & Ames, C., eds. Research on motivation in education. Vol. 1. Student motivation. New York : Academic Press. p. 15-38.)
- WEINERT, F.E. & KLUWE, R.H. 1987. Metacognition, motivation, and understanding. Hillsdale, NJ : Lawrence Erlbaum.
- WEINSTEIN, C.E. 1988. Executive control processes in learning: why knowing about how to learn is not enough. *Journal of college reading and learning*, 21:48-56.
- WEINSTEIN, C.E. & MAYER, R.E. 1986. The teaching of learning strategies. (In Wittrock M.C., ed. Handbook of research on teaching. 3rd ed. New York : MacMillen. p. 315-327.)
- WEINSTEIN, C.E. & MEYER, D.K. 1991. Cognitive learning strategies and college teaching. (In Menges, R.J. & Svinieki, M.D., eds. College teaching: from theory to practise. New directions for teaching. San Francisco : Jossey Bass. 45:15-25.)
- WEINSTEIN, C.E. & UNDERWOOD, V.L. 1985. Learning strategies: the how of learning. (In Segal, J.W., Chipman, S.F. & Glaser, R., eds. Thinking and learning skills: relating instruction to research. Hillsdale, NJ : Lawrence Erlbaum. p. 241-258.)
- WEINSTEIN, C.E., GOETZ, E.T. & ALEXANDER, P.A. 1988. Learning and study strategies: Issues in assessment, instruction and evaluation. San Diego, CA : Academic Press.
- WEINSTEIN, C.E., MEYER, D.K. & VAN MATER STONE, G. 1994. Student learning strategies and the implementations for college teaching. (In McKeachie, B., eds. Teaching tips. D.C. Health and Company. p. 359-367.)

- WILHITE, S.C. 1990. Self-efficacy, locus of control, self-assessment of memory ability, and study activities as predictors of college course achievement. *Journal of educational psychology*, 82(4):696-700.
- WITTRICK, M.C. 1974. Learning as a generative process. *Educational psychologist*, 11:87-84.
- WITTRICK, M.C. 1978. The cognitive movement in instruction. *Educational psychologist*, 13:15-29.
- WITTRICK, M.C. 1981. Reading comprehension. (In Pirozzolo, F.J. & Wittrock, M.C., eds. *Neuropsychological and cognitive processes in reading*. New York : Academic Press.)
- WOODS, D.R., MARSHALL, R.R. & HRYMAK, A.N. 1988. Self-assessment in the context of the McMaster problem solving programme. *Assessment and evaluation in higher education*, XIII(2):107-127.
- WOOLFOLK, A.E. 1990. Educational psychology. 4th ed. Englewood Cliffs, NJ : Prentice-Hall.
- WOOLFOLK, A.E., 1995. Educational psychology. 6th ed. London : Allyn & Bacon.
- ZIMMERMAN, B.J. 1989. A social cognitive view of self-regulated academic learning. *Journal of educational psychology*, 81(3):329-339.
- ZIMMERMAN, B.J. & MARTINEZ-PONS, M. 1986. Development of a structural interview for assessing student use of self-regulated learning strategies. *American educational research journal*, 23(4):614-628.
- ZIMMERMAN, B.J., BANDURA, A. & MARTINEZ-PONS, M. 1992. Self-motivation for academic attainment: The role of self-efficacy beliefs and personal goal setting. *American educational research journal*, 29(30):663-676.

**APPENDIX A.**

**BIOGRAPHICAL QUESTIONNAIRE (BQ)**

1996

Graduate School of Education

Potchefstroom University for Christian Higher Education

## BIOGRAPHICAL QUESTIONNAIRE

Questionnaire number: 

--	--	--

 (1-3)

Card number: 

1
---

 (4)

1. Name of student: \_\_\_\_\_

2. Age: 

--	--

 (5-6)      

--	--

 (7-8)  
Years Months

3. Sex:    Male    

1
---

  
           Female    

2
---

 (9)

4. Indicate with a cross your father's highest level of education.

Std 5 or lower	1	(10)
Std 6	2	
Std 7	3	
Std 8	4	
Std 9	5	
Std 10	6	
Post matric qualification	7	

5. Indicate with a cross your mother's highest level of education.

Std 5 or lower	1	(11)
Std 6	2	
Std 7	3	
Std 8	4	
4 Std 9	5	
5 Std 10	6	
Post matric qualification	7	

6. Are you living with both your father and mother?

No	1	(12)
Yes	2	

7. If not, indicate with a cross with whom you are living.

Mother	1	(13)
Father	2	
Relatives	3	
Friend	4	
Alone	5	

8. Are both your father and mother employed?

No	1	(14)
Yes	2	

9. If not, indicate with a cross which one is employed.

Mother	1	(15)
Father	2	

10. Is your father's place of work in your neighbourhood?

No	1	(16)
Yes	2	
Not applicable	3	

11. Is your mother's place of work in your neighbourhood?

No	1	(17)
Yes	2	
Not applicable	3	

12. When do your parents or the people you are living with arrive home from work?

Before sunset

1
---

After sunset

2
---

(18)

13. How many people (including yourself) live in your home?

02	03	04	05	06	07	08	09	10	11	12	13 or more
----	----	----	----	----	----	----	----	----	----	----	------------

 (19-2)

14. How many blood brothers and/or sisters do you have?

0	1	2	3	4	5	6	7	8	9 or more
---	---	---	---	---	---	---	---	---	-----------

 (21)

15. How many of your brothers and sisters are older than you?

0	1	2	3	4	5	6	7	8	9 or more
---	---	---	---	---	---	---	---	---	-----------

 (22)

16. How many of your brothers and sisters are in high school?

0	1	2	3	4	5	6	7	8	9 or more
---	---	---	---	---	---	---	---	---	-----------

 (23)

17. Where do you live?

Farm

1
---

Town

2
---

Village

3
---

Squatter camp

4
---

Other

5
---

If other, state where: \_\_\_\_\_

(24)

18. Do you have electricity in your home?

No

1
---

Yes

2
---

(25)

19. Do your parents encourage you to study?

No	1
Yes	2

(26)

20. Do your parents or the people with whom you live expect you to do homework (i.e. schoolwork) after school?

No	1
Yes	2

 (27)

21. If yes, do they provide a quiet area or place for you to study?

No	1
Yes	2

 (28)

22. Is there someone at home who helps you with your homework?

No	1
Yes	2

 (29)

22. How many hours do you spend doing homework every day?

1	2	3	4	5 or more
---	---	---	---	-----------

(30)

24. Is Economics one of your difficult subjects at school?

No	1
Yes	2

 (31)

25. Do you get extra tuition in Economics after school hours?

No	1
Yes	2

 (32)

26. What is the mark you would like to obtain in Economics?

--	--	--

(33-35)

27. What is the lowest mark you would be happy with in Economics?

--	--	--

(36-38)

28. Are you satisfied with the mark you received for Economics in the last test or exam?

No

1
---

Yes

2
---

(39)

29. School

--	--

(40-41)

30. Mark obtained in last exam

--	--	--

(42-44)

## **APPENDIX B.**

# **CHILDREN'S MULTIDIMENSIONAL SELF-EFFICACY SCALES QUESTIONNAIRE**

Developed by: Albert Bandura, Stanford University, Stanford, California

## CHILDREN'S MULTIDIMENSIONAL SELF-EFFICACY SCALES

Developed by:

ALBERT BANDURA  
Stanford University  
Stanford, California

This questionnaire is designed to help us get a better understanding of the kinds of things that are difficult for students. Please indicate your opinions about each of the statements below by crossing the appropriate number. Your answers will be kept strictly confidential and will not be identified by name. Please give your frank opinions.

1	2	3	4	5	6	7
---	---	---	---	---	---	---

Not well at all

Not too well

Pretty well

Very Well

1. How well can you concentrate on school subjects?
2. How well can you participate in class discussions?
3. How well can you work in a group?
4. How well can you get people outside the school to take an interest in your school (for example, community groups, churches)?
5. How well can you learn economics?
6. How well can you take class notes of class instruction?
7. How well can you live up to what your parents expect of you?
8. How well can you express your opinions when other classmates disagree with you?
9. How well can you get teachers to help you when you get stuck on schoolwork?
10. How well can you learn reading and writing language skills?
11. How well can you use the library to get information for class assignments?
12. How well can you live up to what your teachers expect of you?
13. How well can you stand firm to someone who is asking you to do something unreasonable or inconvenient?
14. How well can you learn general mathematics?
15. How well can you plan your school work?
16. How well can you live up to what your peers expect of you?
17. How well can you carry on conversations with others?
18. How well can you get your brother(s) and sister(s) to help you with a problem?

19. How well can you get another student to help you when you get stuck on schoolwork?
20. How well can you learn business economics?
21. How well can you finish homework assignments by deadlines?
22. How well can you get your parents to take part in school activities?
23. How well can you learn accounting?
24. How well can you make and keep friends of the opposite sex?
25. How well can you stand up for yourself when you feel you are being treated unfairly?
26. How well can you organize your school work?
27. How well can you get adults to help you when you have social problems?
28. How well can you learn to use computers?
29. How much can you get your parent(s) to help you with a problem?
30. How well can you deal with situations where others are annoying you or hurting your feelings?
31. How well can you study when there are other interesting things to do?
32. How well can you learn South Sotho?
33. How well can you arrange a place to study without distractions?
34. How well can you live up to what you expect of yourself?
35. How well can you get a friend to help you when you have social problems?
36. How well can you learn Afrikaans?
37. How well can you remember information presented in class and textbooks?
38. How well can you make and keep friends of the same sex?
39. How well can you learn English grammar?
40. How well can you motivate yourself to do school work?

Wait. Do not turn the page.

## **APPENDIX C.**

### **SELF-EVALUATION QUESTIONNAIRE**

1996

Graduate School of Education

Potchefstroom University for Christian Higher Education

## SELF-EVALUATION

### DIRECTIONS

The Self-Evaluation Questionnaire is designed to find out how you can evaluate your progress during learning and studying. On these pages you will find 24 statements about learning and studying. Read each statement and then mark one of these choices on the answer sheet:

1. NOT AT ALL LIKE ME
2. NOT VERY MUCH LIKE ME
3. SOMEWHAT LIKE ME
4. FAIRLY MUCH LIKE ME
5. VERY MUCH LIKE ME

To help you decide which choice to mark, we will explain what is meant by each one.

By **NOT AT ALL LIKE ME**, we do not necessarily mean that the statement would never describe you, but that it would be true of you only rarely. Cross out number 1 for this choice.

By **NOT VERY MUCH LIKE ME**, we mean that the statement would generally not be true of you. Cross out number 2 for this choice.

By **SOMEWHAT LIKE ME**, we mean that the statement would be true of you about half the time. Cross out number 3 for this choice.

By **FAIRLY MUCH LIKE ME**, we mean that the statement would generally be true of you. Cross out number 4 for this choice.

By **VERY MUCH LIKE ME**, we do not necessarily mean that the statement would always describe you, but that it would be true of you almost all the time. Cross out number 5 for this choice.

Try to answer according to how well the statement describes you, not how you think you should be or what others do. There are no right or wrong answers to these statements. Please work as quickly as you can without being careless and please answer all the items. Use a pencil or a ballpoint pen to cross out the numbers.

Wait. Do not turn the page.

## SELF-EVALUATION

The following statements are about self-evaluation. These statements are aimed at establishing whether self-evaluation of your progress in learning economics motivates and improves learning. **Remember, there are no right or wrong answers to these statements, just answer as accurately as possible.** Use the scale below to answer these statements.

KEY				
1	2	3	4	5
Not at all like me	Not very much like me	Somewhat like me	Fairly much like me	Very much like me

### STATEMENTS

1. I often prepare myself in advance for economics class through completion of assignments during my spare time.
2. I usually participate in class discussions, group discussions and other class activities.
3. I usually place greater emphasis upon what is to be learnt in the economics class rather than upon simply getting a grade or pass.
4. I like to ask my teacher questions on economics.
5. When I study economics I put important ideas into my own words.
6. When I study for an economics test I try to remember as many facts as I can.
7. When reading I try to connect the things I read about with what I already know.
8. When I study economics I ask myself questions to make sure I know the material I have been studying.
9. I work on practice exercises and answer end of chapter questions even when I don't have to.
10. Even when study materials are dull and uninteresting I keep on working until I finish.
11. Before I begin studying I think about things I will need to do to learn.
12. I often find that I have been reading for class but I don't know what it is all about.
13. Sometimes I want to ask questions about something I do not understand in economics, but I don't ask.
14. It is hard for me to decide what the main ideas are in what I read.
15. I always try to understand what my economics teacher is saying even if it does not make sense.
16. I often prepare myself for class tests, exams and other classroom activities rather than to resort to cramming and last minute effort.

17. When work is difficult I either give up or only study material I have been studying.
18. I know how other students in my class perform in economics.
19. I often evaluate my performance in economics tasks.
20. I compare my performance in economics with the performance of other students in my class.
21. I feel confident when my performance in economics is compared with the lesser attainments of other students in my class.
22. I feel more discouraged when my performance in economics is compared with the performance of the more talented students in my class.
23. Comparing my past performance in economics with my present performance helps me to identify my strengths and weaknesses and solve more problems.
24. I fail economics tests because I have difficulty in understanding what is being asked.

**APPENDIX D.**

**CHILDREN'S MULTIDIMENSIONAL SELF-EFFICACY  
SCALE AND SELF-EVALUATION ANSWER SHEET**

1996

# CHILDREN'S MULTIDIMENSIONAL SELF-EFFICACY SCALES

Card number 2 (1)

Please indicate your opinions about each of the statements by crossing the appropriate number.

KEY						
1	2	3	4	5	6	7
Not well at all		Not too well		Pretty well		Very well

- |     |   |   |   |   |   |   |   |      |     |   |   |   |   |   |   |   |      |
|-----|---|---|---|---|---|---|---|------|-----|---|---|---|---|---|---|---|------|
| 1.  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (2)  | 21. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (22) |
| 2.  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (3)  | 22. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (23) |
| 3.  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (4)  | 23. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (24) |
| 4.  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (5)  | 24. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (25) |
| 5.  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (6)  | 25. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (26) |
| 6.  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (7)  | 26. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (27) |
| 7.  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (8)  | 27. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (28) |
| 8.  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (9)  | 28. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (29) |
| 9.  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (10) | 29. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (30) |
| 10. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (11) | 30. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (31) |
| 11. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (12) | 31. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (32) |
| 12. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (13) | 32. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (33) |
| 13. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (14) | 33. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (34) |
| 14. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (15) | 34. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (35) |
| 15. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (16) | 35. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (36) |
| 16. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (17) | 36. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (37) |
| 17. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (18) | 37. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (38) |
| 18. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (19) | 38. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (39) |
| 19. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (20) | 39. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (40) |
| 20. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (21) | 40. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | (41) |

## SELF-EVALUATION

KEY				
1	2	3	4	5
Not at all like me	Not very much like me	Fairly much like me	Much like me	Very much me

- |     |   |   |   |   |   |      |     |   |   |   |   |   |      |
|-----|---|---|---|---|---|------|-----|---|---|---|---|---|------|
| 1.  | 1 | 2 | 3 | 4 | 5 | (42) | 13. | 1 | 2 | 3 | 4 | 5 | (54) |
| 2.  | 1 | 2 | 3 | 4 | 5 | (43) | 14. | 1 | 2 | 3 | 4 | 5 | (55) |
| 3.  | 1 | 2 | 3 | 4 | 5 | (44) | 15. | 1 | 2 | 3 | 4 | 5 | (56) |
| 4.  | 1 | 2 | 3 | 4 | 5 | (45) | 16. | 1 | 2 | 3 | 4 | 5 | (57) |
| 5.  | 1 | 2 | 3 | 4 | 5 | (46) | 17. | 1 | 2 | 3 | 4 | 5 | (58) |
| 6.  | 1 | 2 | 3 | 4 | 5 | (47) | 18. | 1 | 2 | 3 | 4 | 5 | (59) |
| 7.  | 1 | 2 | 3 | 4 | 5 | (48) | 19. | 1 | 2 | 3 | 4 | 5 | (60) |
| 8.  | 1 | 2 | 3 | 4 | 5 | (49) | 20. | 1 | 2 | 3 | 4 | 5 | (61) |
| 9.  | 1 | 2 | 3 | 4 | 5 | (50) | 21. | 1 | 2 | 3 | 4 | 5 | (62) |
| 10. | 1 | 2 | 3 | 4 | 5 | (51) | 22. | 1 | 2 | 3 | 4 | 5 | (63) |
| 11. | 1 | 2 | 3 | 4 | 5 | (52) | 23. | 1 | 2 | 3 | 4 | 5 | (64) |
| 12. | 1 | 2 | 3 | 4 | 5 | (53) | 24. | 1 | 2 | 3 | 4 | 5 | (65) |