

***The relationship between goal orientation and subject choice of a  
group of standard 7 pupils***

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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 Faculty of Education of the Potchefstroomse Universiteit vir Christelike Hoër Onderwys.

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## *OPSOMMING*

Die doel van die studie was om:

1. met behulp van 'n literatuurstudie vas te stel wat die verskillende tipes doelwitoriëntasies is, asook wat die interaktiewe verband tussen doelwitoriëntasie, vakkeuse en akademiese prestasie is;
2. op 'n empiriese wyse die verband tussen doelwitoriëntasie, vakkeuse en prestasie van standerd 7 leerlinge, te bepaal;
3. op 'n empiriese wyse die verband tussen die doelwitoriëntasie van standerd 7 leerlinge en veranderlikes binne die skool te bepaal, en
4. op 'n empiriese wyse die verband tussen doelwitoriëntasie en leerlingouderdom van standerd 7 leerlinge te bepaal.

Die literatuuroorsig het aan die lig gebring dat daar verskillende doelwitoriëntasies is en dat dit vakkeuse en akademiese prestasie beïnvloed. Leerlinge met 'n leer- of bemeesteringsgerigte oriëntasie wil graag hulle vermoëns verbeter en verkies dus uitdagende take en presteer goed. Leerlinge met 'n prestasiegerigte oriëntasie, daarenteen, wil graag aan ander wys waartoe hulle in staat is en kies dus makliker take en presteer dikwels swakker.

'n Sterk verband bestaan tussen doelwitoriëntasie en die attribusiestyl. Leerlinge met 'n bemeesteringsoriëntasie skryf hulle sukses aan interne, stabiele veranderlikes soos vermoë, toe. Hulle voel trots op wat hulle vermag en het 'n goeie selfbeeld. Leerlinge met 'n prestasie oriëntasie skryf beide sukses en mislukking aan stabiele, onbeheerbare oorsake (soos vermoëns en onderrigmetodes) toe. In mislukkingsituasies beleef hulle skaamte en het 'n swak selfbeeld. 'n Verband tussen doelwitoriëntasies en veranderlikes binne die skool (soos die onderwyser se effektiwiteit, ondervinding en opleidingsvlak) is ook gevind.

Die volgende gevolgtrekkings ten opsigte van die leerlinge in die studiegroep is uit die empiriese studie gemaak:

- by beide Wiskunde en Geskiedenis is daar geen verband tussen doelwitoriëntasie en vakkeuse nie;
- vir Wiskunde is daar 'n verband tussen doelwitoriëntasie en akademiese prestasie, maar nie vir Geskiedenis nie;
- daar is 'n verband tussen doelwitoriëntasie en die veranderlikes binne die skool, maar daar is geen verband tussen doelwitoriëntasie en die ouderdom van die leerlinge nie.

## ***SYNOPSIS***

The aims of the study were:

1. to determine the different types of goal orientation and the interactive relationships between goal orientation, subject choice and academic achievement, from a literature review;
2. to empirically determine the relationship between goal orientation, subject choice and the achievement of standard 7 students;
3. to empirically determine the relationship between the goal orientation of standard 7 students and the school variables, and
4. to empirically determine the relationship between goal orientation and the age of standard 7 students.

From the literature view it was evident that there are different orientations which influence subject choice and academic achievement. Students who are mastery/learning-oriented want to develop their competence, choose challenging tasks and perform better. Ego/performance-oriented students are interested in demonstrating to others that they are capable, choose easy tasks and they do not perform as well. A strong relationship was also evident between goal orientation and the attributional style of students. Mastery-oriented students attribute their success to internal, stable variables like ability or effort (an unstable but controllable cause), and experience high levels of self-efficacy and pride. Ego-oriented students attribute both failure and success to stable but uncontrollable causes (such as ability or teaching methods), and experience shame and decreased self-efficacy in the event of failure. A relationship was also evident between goal orientation and the school variables (such as the teacher's self-efficacy, experience and educational/training level).

The empirical study led to the following conclusions:

- there is no relationship between the goal orientation and subject choice of the students of this study, in both mathematics and history;
- there is a relationship between the goal orientation and academic achievement of the students who were used in this study in mathematics, but not in history;
- there is also a relationship between the goal orientation of the students of this study and the school variable, yet
- there is no relationship between goal orientation and the age of the students who were used in this study.

# **CHAPTER ONE**

## **CONTENT OF THE STUDY**

### **1.1 INTRODUCTION AND STATEMENT OF THE PROBLEM**

#### **1.1.1 Introduction**

Poor quality learning is manifested by the majority of Black secondary students in South Africa, especially rural students. Such a condition is brought about by a number of factors that prevail in their homes and also in their schools (Le Roux, 1993:106-108).

Poor learning is characterized by some repercussions such as lack of self-confidence, anxiety, resentment and embitterment that develops because of failure. It also leads to early school drop-out, wide agespan in classes, poor academic achievement especially in more difficult subjects, and a tendency to choose less difficult subjects and avoid subjects like mathematics and science (Le Roux, 1993:106-108). This is a tendency that the new South Africa can ill afford, since it needs a lot of technically trained students to develop and improve living conditions in the rural areas.

The socio-economic status of students influences their performance in schools. According to Sorensen (1994:10-35), South Korean students' socio-economic status, together with a strong family structure which is characterized by strong educational values and positive goals, motivate students to score well in the competitive national examination for high school and college admission. Lees (1994:75) observed that, in both France and England there is a strong link between parents' social background and the educational achievement of their children. The children from a poor socio-economic environment Lees (1994:65-87) discusses, achieve lower scores than children from a better socio-economic environment, where parents attach great value to learning and thus provide their children with a motivating and stimulating environment. In the South African context, Le Roux (1993:106-107) reported that Black students who come from a disadvantaged socio-economic background, lacking in various essential factors necessary for their intellectual stimulation, physical care, affective guidance, and motivation (such as clear moral guidance, adequate educational facilities, curricula and syllabi that are relevant to their immediate environment, and properly trained teachers)

perform poorly in schools when compared to students who come from better socio-economic environments.

Most of these causatory factors can only be eliminated in the long-term, and with financial aid. South African students, however, dare not wait for so many years before they can start improving their learning. They need to be taught to value what they learn, because it is only when they value the skills and the knowledge they learn at school, that they will develop the will to learn, notwithstanding their as yet poor circumstances.

Although there are many student factors (including ability, developmental level, aptitude, personality, etc.) and teaching-related factors (such as level and quality of teacher training, teaching media, number of students per class), that influence the quality of learning, the researcher will, in view of the fact that this is a mini-dissertation, only discuss motivational variables, and by name, goal orientation.

### ***1.1.2 Statement of the problem***

Although not always recognized by teachers, the quality of learning is very much influenced by the value students attach to what they perceive to be the goal of a specific learning task. Whereas one student would, for instance, perceive the grade he/she is going to be awarded for a test written on a learning task as the reason for learning the task, another student might perceive the skills and knowledge he/she gains from the task as more valuable than the test or the grade (Dweck, 1989:291). The value students attach to performing each learning task within different subjects influences not only their goal with the learning task, but most aspects of their learning and motivation, such as their approach to and intention with learning, persistence in performing tasks of a high difficulty level, the type of learning strategies they adopt, and their choice of tasks or subjects (Pintrich, 1988:76).

Better known to teachers is the influence student culture, gender and age have on achievement and subject choice. Mexican girls, for example, scored lower than boys on both mathematics (a difficult subject) and Spanish language tests, probably due to cultural values regarding the education of girls (Palafox, Prawda & Velez, 1994:167-180). British boys too are reported to score higher than girls in science (also a difficult subject), whereas French boys scored higher than girls in both mathematics and science (Lees, 1994:74). These differences are subject to age however. Between grades 3 to 6 girls outperformed boys on attention tasks and text planning, giving evidence of their

superior reading achievement (Warrick & Naglieri, 1994:693-701). The same researchers found no differences in mathematics quantitative ability between boys and girls at preschool and elementary school level. At secondary school and college level, however, boys appeared to outperform girls in problem-solving tasks (Warrick & Naglieri, 1994:693-701). Boys not only outperform girls on problem-solving tasks, but choose subjects in which such tasks abound, more than girls. According to Lees (1994:74-75) only a small percentage of British 16-year old girls select chemistry, physics, computer science and technical subjects, whereas a much larger percentage of boys select these subjects. The same tendency prevails in France for mathematics and science.

With reference to the goals students perceive for learning, repeated experiences of not only the same type of learning outcomes, but also of how others interpret such outcomes (whether as skills and knowledge or as grades), initiate the development of a specific orientation towards what motivates students to learn. Dweck (1989:299) calls this the student's goal orientation.

Goal orientation thus refers to behaviour that is directed by the value students attach to the outcome of learning actions, and two goal orientations can be differentiated, namely a learning or mastery orientation and a performance, achievement or ego orientation (Ames, 1992:261; Dweck, 1989:289 and Schunk, 1991:243). A student with a learning orientation focuses on the intrinsic value of learning and the development of new skills and knowledge, and believes that effort leads to success (Ames, 1992:263 and Schunk, 1991:242). A student with a performance or achievement orientation, on the other hand, focuses on ability and a sense of self-worth, hoping to gain public recognition from performing better than others (Ames, 1992:263).

As stated, goal orientation not only reflects students' intention with learning, but also influences their approach to learning, information processing and subject choice. Schmeck (1988:32) states that, because students with a performance orientation wishes to protect their egos or sense of self-worth, they tend to approach learning with the intention of learning facts, procedures and algorithms, and thus prefer subjects they perceive will give them ample opportunity to do so, such as history or biology. In the execution of learning tasks they will use a surface approach to information processing, and consequently endeavour to memorise as much ready-made knowledge as possible. In contrast, students who intend acquiring personal meaning from what they learn, will prefer subjects like mathematics and physical science, which in general consist of

challenging tasks requiring a deep or versatile (i.e. sometimes deep and sometimes surface) approach to information processing. A surface approach, meaning that the student does not process any information to the level of understanding, but simply to the level of acquisition and accumulation of information (notwithstanding the type of task), thus relates to an achievement or performance orientation. With a deep approach the student processes information to the level of understanding and problem-solving, whereas a versatile approach means that the student varies the approach in accordance with the type of learning task: an easy task, such as the learning of a definition, needs surface processing while a difficult task, such as applying a theorem to a problem, needs deep processing. Both the deep and versatile approaches relate to a learning orientation (Blumenfeld, 1992:277).

Value and goal orientation are interactive and the one influences the other. Students who are learning-oriented place value on mastery and tend to choose tasks that are challenging and which give the opportunity of procuring new skills. Students who are performance-oriented, on the other hand, value doing well and gaining social approval and support and, therefore avoid challenging tasks since such tasks leave too much room for possible failure (Ames, 1992:263; Dweck, 1989:293).

Goal orientation thus relates to specific types of tasks, and also subjects, since some subjects (such as history) lend themselves more readily to memorization and surface processing, than others (such as mathematics) (Jacob, 1982:227). Stable and Stable (1995:39-51), reported that some subjects like human sciences (sociology and both human and social biology) are perceived as being easy and ability is not seen as an important factor in academic achievement, whereas in subjects like physics, mathematics/statistics and art, ability is seen as an important factor. As a result students who doubt their ability to perform activities in these subjects avoid such subjects. As indicated by Ames (1992:263), students who are learning-oriented face failure or difficulties strategically and with persistence, whereas performance-oriented students become helpless in the face of failure or difficulties and lose the will to apply effortful strategies.

The question that now arises is whether all students who are performance-oriented notwithstanding cultural background or ethnicity, would tend to forego a difficult subject (namely mathematics) in favour of an easier one (namely history). Since some research has already been undertaken on other student and teacher-related variables that influence the subject choice and academic achievement of Black South African

secondary school students, amongst others by Kokong (1991), Mathebula (1992) and Mqwathi (1993)), this study was aimed at the influence of goal orientation only.

## **1.2 AIM OF THE STUDY**

The first aim of the study was to determine whether goal orientation (differentiating between a learning and a performance orientation) influences the choice Black students from a specific region in South Africa have to make between history and mathematics at the end of standard 7. A secondary aim was to control whether age and certain teacher characteristics, such as teaching experience, influence type of goal orientation. The second aim was to relate goal orientation to achievement in mathematics and history.

## **1.3 HYPOTHESES**

Four hypotheses were stated, namely:

- there is a relationship between goal orientation and the choice Black standard seven students in the Molopo region of the North West Province have to make between mathematics and history;
- there is a relationship between goal orientation and achievement in mathematics and history of Black standard seven students in the Molopo region of the North West Province;
- there is a relationship between teacher variables and the goal orientation of Black standard seven students in the Molopo region of the North West Province, and
- there is a relationship between student age and the goal orientation of Black standard seven students in the Molopo region of the North West Province.

## **1.4 METHOD OF RESEARCH**

Two methods of research were used, namely a literature review (described in chapter 2) and an *ex post facto* empirical study (described in chapters 3 and 4).

The literature study consisted of a review of literature pertaining to goal orientation and its various categories, as well as its effects on various aspects of learning, including

subject choice and academic achievement. Attention was also given to the other aspect of the value-expectancy theory of motivation, namely expectancy, with its sub-components of attributions, control and self-efficacy. Lastly other factors influencing task choice and goal orientation, namely the teacher, the type of task and student gender were investigated.

Teachers who had a longer (4 year) training programme differ from those who had a shorter (3 year) training period in that they possess sufficient content knowledge in their various subject areas and effective teaching skills which enhance their self-efficacy in teaching students with different developmental levels. Such teachers therefore, indirectly enhance their students' self-efficacy in the subject they teach, thus influencing their students' orientation as well as their subject choice. Researchers like Ryckman and Peckham (1987:120-125) noted that more girls attribute failure to a stable, internal factor like ability and success to an unstable, internal factor like effort than boys. Such an attribution style, together with the type of strategies female students tend to use, have an influence on subject choice. Hence, at university level female students tend to avoid science and mathematics in favour of language and arts, since they believe they have more control in such areas (Feather, 1988:381).

An *ex post facto* research design was used to determine the relationship between goal orientation, subject choice and academic achievement of Black standard seven students from the rural Molopo region in the North West Province in South Africa. In chapter three an exposition of motivational variables, including goal orientation, is given when describing the measuring instruments, namely the Motivated Strategies for Learning Questionnaire (MSLQ) (par. 3.5.1) and the Attribution Scale for Mathematics (par. 3.5.2). Information on the control variables (see par. 3.6) and the dependent variables, namely choice between mathematics and history and grades obtained in the two subjects (see par. 3.6.2), were obtained by means of a biographical questionnaire (see par. 3.5.3).

Statistical analyses that were used include Ward's Minimum-method which involves grouping students into clusters differing in fifteen variables that make up goal orientation. The multivariate analysis of variance (MANOVA) was used to simultaneously test the fifteen variables and consider their joint distribution. Several one-way analyses of variance (ANOVA) were conducted to identify differences between the means of the goal orientation variables for the groups. The Tukey test was then used to control the experimentwise error. Thereafter, the effect size was

computed to determine the educational significance of between-group differences in goal orientation variables.

In chapter 4 the results of the empirical research are given and discussed. The conclusions drawn from the results, together with a summary and limitations of the study are given in chapter 5.

## **1.5 CONCEPT CLARIFICATION OF MOTIVATION CONCEPTS**

Since motivation is such a complex concept, three constructs which form part of its social cognitive nature, namely goal orientation, self-efficacy and attributions will be briefly clarified.

### **1.5.1 Attributions**

Attributions can be defined as students' beliefs about causes of their learning outcomes, which develop as they endeavour to understand themselves and their environment (Weiner, 1985:548). Such an understanding enables students to determine whether the causes of their learning outcomes are controllable or uncontrollable. Students who perceive the cause as being beyond their control manifest negative emotions and their sense of self-efficacy decreases. Students who perceive the cause as being controllable, on the other hand, experience positive and motivating emotions and an increase in self-efficacy results.

### **1.5.2 Self-efficacy**

Self-efficacy refers to students' judgement of their ability to perform in any given task (Schunk, 1989:13-44). This judgement is influenced by factors such as goal orientation and attributions (Bandura, 1982:122). Learning-oriented students attribute causes of failure to lack of effort: an internal, controllable factor. Performance-oriented students attribute causes of their outcomes to external, uncontrollable factors, which is detrimental to their self-efficacy.

### **1.5.3 Goal orientation**

Scott (1991:36) defines goal orientation as belief systems that determine how students will approach, accept and commit themselves to different goals. A specific goal

orientation develops through a series of repeated experiences, during which the same type of performance results occur. Goal orientation is thus closely linked to goals, which are the internal standards students set themselves for evaluating goal attainment.

Dweck (1986:1040) suggests that goal orientation entails two goals, namely learning and performance goals. In the first case, students aim at competence and understanding of the new information while students with performance goals seek to gain social approval and to show others that they are capable.

## **1.6 SUMMARY**

Research was necessary to determine whether there is a relationship between goal orientation and subject choice. A literature study and empirical research were undertaken to test this hypothesis. The literature review will be discussed in chapter 2.

## **CHAPTER TWO**

### **GOAL ORIENTATION IN THE CONTEXT OF MOTIVATION**

#### **2.1 INTRODUCTION**

Motivation is one of the most important prerequisites for learning, since it forms the driving force of the student's willingness to put effort into learning. This willingness, however, is a product of many factors, ranging from intrinsic needs, cognitions and personality characteristics, to extrinsic environmental factors, such as type of task, teaching method and classroom setting (Slavin, 1991:318). Motivation answers the question why students learn, or don't learn. The thought processes provoked by this question generate affective reactions, which form part of the stimulus or driving force for behaviour (Weiner, 1984:16-17). In a classroom context the cognitive, affective and conative (i.e. will-direction) aspects of motivation are furthermore greatly influenced by social factors (Bandura, 1986:369). Motivation is thus a very complex concept and the fact that it cannot be measured directly imposes the need for a good definition and description (see par. 2.2), as well as a specific theoretical framework (see par. 2.3). The value-expectancy theory organises the cognitive, affective and social factors that determine a student's motivation to learn in a classroom context (Pintrich, 1988:75). Expectancy relates to the question, "Can I perform the task?" and is determined by the student's perceptions of how able or competent he/she is to execute the behaviours that are to lead to the specified outcomes (Pintrich & De Groot, 1990:33). The answer to this question involves constructs such as attributions, perceptions of control, self-efficacy and self-worth and level of anxiety (Pintrich, 1988:75), which will all be discussed in paragraph 2.4.

The value a student attaches to learning, on the other hand, relates to his/her specific goal orientation and answers the question, "Why am I doing this task?" (Pintrich & De Groot, 1990:33; Dweck, 1986:299). It is this question that forms the main thrust of this research. Goal orientation, as a motivational construct, will be outlined in paragraph 2.5.

Since goal orientation influences and reflects the value a student attaches to learning a specific task/subject, the hypothesis can be formulated that it will also influence subject choice. Much research, amongst others that done by Scott (1991:71), Dweck (1986) and Jacob (1982:227-228), underpins the hypothesis that there is a relationship between

personal goals and the type of tasks and subjects a student chooses. The general consensus amongst American researchers is that students who are learning- or mastery-oriented, choose difficult subjects, while those who are performance-oriented avoid such subjects in favour of less challenging ones (Bandura, 1986:476). This aspect will be discussed in paragraph 2.5.3. In the final paragraph (2.7) factors that influence goal orientation, such as age, sex, prior achievement of the student, and the educational level and teaching experience of the teacher will be discussed.

## **2.2 DEFINITION AND DESCRIPTION OF MOTIVATION TO LEARN**

### **2.2.1 Value as a basis for motivation**

Motivation is a process that provides students with a need or a desire to act in a particular way. This desire is a product of environmental influences and different beliefs or attitudes students hold and is also based on a specific value system. A Christian value system for example, is based on the principle of responsibility and self-control gained through self-evaluation. God created man and gave him the task of ruling well over God's creation. In order to do so, man needs to know how capable he is, he needs to evaluate his actions. This he can do by looking at his actions and evaluating his actions and competencies, in the light of what God endowed him with and his perseverance to develop these abilities (Scott, 1991:63). He can, on the other hand, also evaluate his actions merely by contrasting them to those of others (a more humanistic and less Christian evaluation). In this process, however, man is apt to devalue what he is endowed with, in favour of what others are endowed with and thus becomes dissatisfied with his own abilities. He then starts to value overt achievements since these heighten his value in the eyes of others (Mann, 1969:76). The modern tendency of focusing on achievement in all spheres of life, whether be it the school, work, sport or the political field, stimulates the orientation to evaluate oneself in terms of one's achievements in contrast with those of other - an achievement orientation is thus the result.

### **2.2.2 Definitions of motivation**

Motivation can be defined by focusing on different cognitive beliefs. The first definition defines motivation as *behaviour that is brought about by the student's belief that he/she is capable or not capable of performing a given task* (Schunk, 1991:121).

Covington (1984:81) and Nicholls (1984:40) relate competence beliefs to self-worth when they state that the desire to maintain a positive self image is a powerful motivator that directs behaviour in the classroom. Students not only aim at satisfying their own personal standards, but also tend to protect their deeply held values or beliefs about their own competence from being challenged by others (Slavin, 1991:322). Thus, when deeply held positive beliefs about the self are challenged, such as when constant failure is encountered, students are apt to avoid these challenging learning tasks in favour of easy tasks, or find excuses for their failure (Slavin, 1991:323).

Weiner (1984:30) focuses on beliefs about control when he defines motivation as *behaviour that aims at answering the question: Why did I pass or fail the task?* Hence, students who ascribe to uncontrollable factors such as task difficulty or luck become unmotivated to act. However, students who ascribe to a controllable factor like effort, intensify their effort in relation to the demand of the given task (Slavin, 1991:323).

Another perspective is that of Ames (1992:261) who defines motivation *in terms of goal directed behaviour*, which is behaviour that is directed by the goals students believe they have or are set. For instance, a student who aims at acquiring new skills will choose challenging tasks, while a student who aims at gaining social approval might avoid such tasks.

All these definitions of motivation share one common characteristic, namely that thought processes instigate behaviour. Although there are other perspectives about learning motivation, such as Maslow's need satisfaction theory and Freud's psycho-analytical theory, the cognitive perspective was chosen as a basis for this research since learning is very much a cognitive process. Specific characteristics of learning motivation will now be discussed, starting with its most important characteristic feature, namely self-evaluative thought. Attention will also be given to the affective reactions evoked by the cognitive processes.

### 2.2.3 *Description of motivation*

*Self-evaluative thought* is probably the most important characteristic feature of motivation from a cognitive perspective. It is also this characteristic feature that demonstrates its complexity (Schunk, 1991:253). For instance, when students evaluate their own ability to perform a given task, they might come to the conclusion that they are capable or incapable of performing the task. The result of positive self-evaluation

is personal responsibility and intrinsically motivated students. The result of negative self-evaluation, however, is a demotivated learner. Intrinsically motivated students value and derive pleasure from understanding the given tasks. Hence, when problems are met, they persist and ascribe the cause of their failure to an internal, controllable factor like effort, which they then intensify in order to gain mastery. As a result, when the problem is solved, such students gain confidence and their self-efficacy is enhanced (Bandura, 1986:349). However, self-evaluation leads to learnt helplessness for students who value grades or marks rather than the understanding of the subject matter. When such students fail, they tend to think that they cannot tackle the problem because of their low ability (Bandura, 1986:349). Self-evaluation, therefore, is always accompanied by emotions such as doubt, anger, helplessness, confidence and pride (Bandura, 1986:349), which emotions form the affective component or characteristic of motivation. Affect can thus be defined as emotions that result from cognition. Certain situations in students' learning environments make them experience distinct feelings which come about as a result of their engagement in certain activities. For instance, when students succeed in a given task, they experience feelings of pride and happiness which in turn lead to more effort expenditure, while students who fail experience a feeling of sadness which leads to effort withdrawal (Weiner, 1986:119). Emotions therefore play an important role in motivation, since they determine whether a student will persist in a task even when difficulties are met.

According to Slavin (1991:329) motivation to learn also varies in terms of *intensity* and *direction*. Intensity, refers to the strength of the desire to perform a particular action, whereas direction refers to the choice of action a student takes when he/she is confronted by two competing events (Dembo, 1991:412). Of the two characteristics, intensity (or strength of the need or desire) is more important since intensity will determine the direction of motivation should the student be confronted with two goals at the same time. Intensity relates as much to beliefs, whether about competence, self-worth or the cause of behaviour, as it does to motives and goals (Dembo, 1991:412). The strength of the belief the student has about his/her own competence has implications for the expectancy of successfully attaining the set goals. Hence, a student who strongly believes that he can perform a task is more highly motivated and has higher expectancies for future success, than a student who doubts his competence (Slavin, 1991:329).

Learning behaviours, such as choice of task, persistence or performance, are also

directed by the *value* a student attaches to the task and its outcome (Feather, 1988:381). Value in turn, relates to the type of goal the student sets himself to attain. As indicated by Feather (1988:318), the direction and amount of effort the student is willing to exert is determined by the value he/she attaches to the task. The value the student attaches to the task, can be said to have an important influence, since it determines whether the student will select and actively engage in the given task. The value a student attaches to the task/subject relates to different motivating factors that stimulate action in the classroom. For instance, a student who values competence (referring to the student's capacity to deal effectively with the environment) will be motivated by the competence motive, to select, engage and persist in a particular task (Gross, 1992:135). When such a student successfully completes the task, he/she becomes more intrinsically motivated, satisfied and confident. The value-goal setting linkage also has an emotional impact on the student. A student, for instance, who perceives a task as being attractive, will engage in it, persist at it and, when he succeeds experience a sense of pride. In contrast, a student who perceives the task as being aversive, might avoid choosing the task, will give up quickly when difficulties are met and will tend to become anxious (Slavin, 1991:329-330).

The *need to be in control of one's own actions* is a further characteristic of motivation in the classroom. Gross (1992:135), suggests that when students who aim at obtaining high marks realise that they are not in control of the learning situation, i.e. when the task is too difficult, they become discouraged and anxious. One can, therefore, deduce that anxiety develops when task difficulty prevents such students from achieving their goal (Gross, 1992:141).

Motivation can, lastly, be termed a *construct*, since it cannot be observed directly, but consequences of thought and affect can only be inferred from what students say and do, such as how they choose their tasks, spend their effort and persist in a given situation (Schunk, 1991:229).

Since motivation is characterised by such a complex array of features, a framework that organises the discussed features will now be described.

### 2.3 *VALUE-EXPECTANCY THEORY*

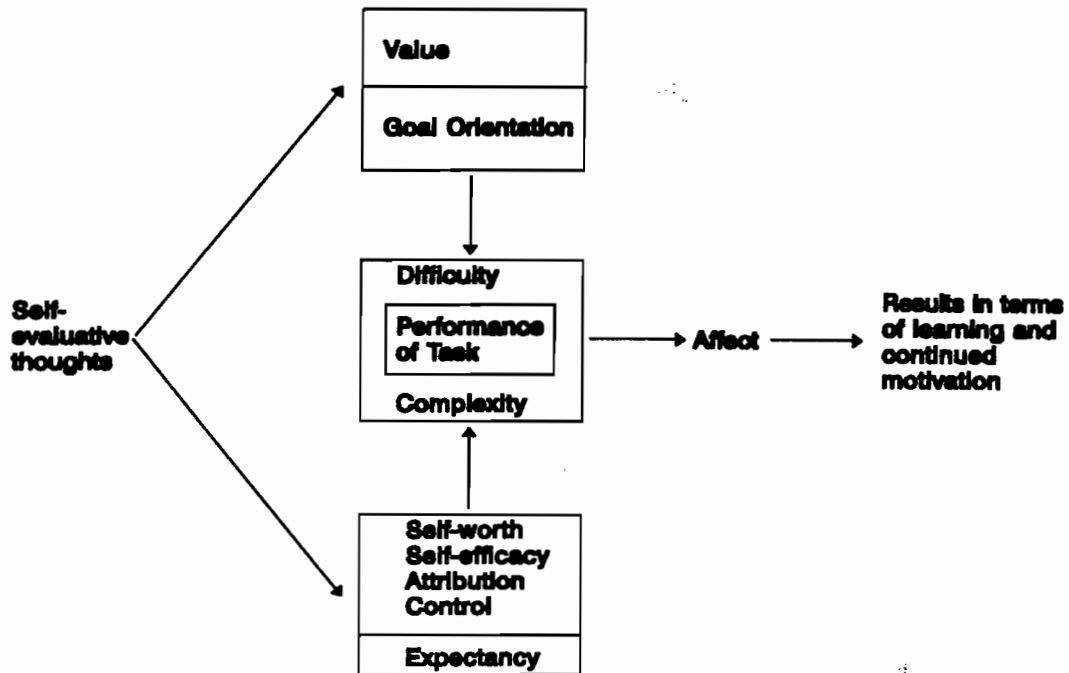
The value-expectancy framework (see figure 1) organises the value students attach to a task, what they expect to gain from the task and the type of actions they will engage in (Feather, 1988:381). The expectancy component involves students' beliefs about their

ability to perform a task, their perceptions of how competent they are to control and execute the actions, as well as their expectancy of successfully attaining their goals (Pintrich & De Groot, 1990:33). Expectancy of success focuses on beliefs about self-efficacy, control and the causes of results (Pintrich & Schrauben, 1991:154). Beliefs about control are central to self-efficacy and refer to how students judge their personal ability to influence their learning situations as well as their own actions (Pintrich & Schrauben, 1991:154). Hence, students who understand that outcomes in the classroom depend entirely on their own effort, perform better than those who attribute failure or success to uncontrollable factors, like luck. A student who believes that he has no chance of succeeding becomes unmotivated, anxious and gives up quickly (Slavin, 1991:333). On the other hand, a student with a personal sense of control and high self-efficacy becomes involved in learning and persists, even in times of difficulties (Pintrich, 1988:75).

Except for beliefs about the controllability of the causes of behaviour, the locus of such causes (i.e. intrinsic vs extrinsic), as well as its stability also determine the nature of the expectancy of success (Pintrich & Schrauben, 1991:154). Hence, a student who attributes success to an internal, stable and controllable factor, such as ability, has higher expectancies of success than a student who ascribes success to an external, unstable and uncontrollable cause, such as luck (Pintrich & Schrauben, 1991:154).

The value component relates students' perceptions of the attractiveness or aversiveness of the task and its expected outcomes, as well as the subjective value the students attach to the task and its outcomes, to their actions (Feather, 1988:381). Hence, the value students attach to learning, relates their actions to their beliefs about the importance of the activity or task. For instance, students who value acquiring new skills, select challenging tasks that will enable them to reach their desired goals (Feather, 1988:381; Pintrich, 1988:75). On the other hand, students who value social approval, will avoid such tasks in favour of less challenging ones, since they are troubled by self-doubt (Feather, 1988:381). Students attach different values to different subjects and such values influence how they set their goals, select their tasks, spend their effort and persist in any learning situation. For instance, students who value mathematics because they believe that it will enable them to pursue their desired careers, choose the subject and become actively engaged in it (Feather, 1988:381; Slavin, 1991:333). The value component thus incorporates the students' goal orientation, since value determines the direction of goal setting, whether the direction be the mastery of skills or the attaining of social approval.

**Figure 1:** Components of value-expectancy framework.



Since motivation has been defined and described from a cognitive perspective (see par. 2.2) and since value-expectancy serves as a framework, attention will first be given to variables that influence expectancy, i.e. attributions, control self-efficacy and self-worth (par. 2.4), and then to those that influence value (par. 2.5). Of all these variables attributions form the basis, since the attributional question "What causes success or failure?" exposes the motive for action.

## **2.4 THE EXPECTANCY COMPONENT**

### **2.4.1 Attributions**

Attributions are the beliefs students have about causes of their learning outcomes, and, according to Van Overwalle (1989:400) vary between personal factors, such as ability, effort or health, and environmental factors, such as teaching methods, social support or pure luck. When young, most students believe their learning outcomes to be the result of their own ability and equate ability with effort (Newman & Stevenson, 1990:197). Recurrent negative experiences of failure at school and the realization that ability does

not equal effort (Nicholls, 1984:65-66), incline students to look for other causes of learning outcomes as they become older. Environmental factors now come into play (Ames, 1984:179) in an effort to alleviate the influence personal factors as attributions have on the students' sense of self-worth (Nicholls, 1984:46).

Attributing causality tends to mediate the decisions students make in the classroom. A student who attributes his/her poor grades to lack of ability is more likely to avoid a similar given task than a student who attributes the poor grades to lack of effort (Bryan, 1994:61). As indicated by McCombs (1984:206-207), many behaviours, affects and cognitions are the result of causal attributions that students make about outcomes of their actions. Attributions therefore, tell students about their efficacy and about their perceptions of personal control (McCombs, 1984:207).

Attributions directly influence motivation and affect in the classroom, since students who ascribe failure to lack of ability, experience feelings of shame, helplessness and thus become unmotivated to act, while those who ascribe to lack of effort experience feelings of guilt. On the other hand, students who ascribe success to high ability experience feelings of pride and thus become motivated to engage in challenging tasks (McCombs, 1984:206).

According to Weiner (1988:99) and Scott (1991:4) it is not the attributions *per se* that influence affect and motivation to learn, but rather how the student interprets the attribution in terms of its locus, stability and controllability. Locus relates to value and emotions of pride and self-esteem; stability relates to expectancy and emotions of helplessness; and, control relates to beliefs of competence and self-efficacy, as well as to emotions of shame, guilt and helplessness. According to Nicholls (1984:60) and Dweck (1986:1041) ability can be viewed as either static or as incremental. A static view is good for success, but bad for failure, whereas an incremental view is good for failure, but less so for success attributed to ability. Effort too is problematic and so much so, that Covington (1984:89) calls it a two-edged sword because an attribution of effort in a success situation implies a lack of ability.

The stability dimension greatly influences students' outcome expectancies especially when related to ability. A student who views ability as static, for example, and attributes failure to lack of it, anticipates failure in future tasks as well (Weiner, 1984:21).

Controllability refers to the students' responsibility in any learning situation. Effort is viewed as being controllable, whereas ability, physical handicap, luck and task difficulty are viewed as being uncontrollable factors. Students who ascribe to a controllable factor like effort, take responsibility for their actions and are typified by positive outcome expectancies. Hence, when failure is met, they intensify their effort and succeed. On the other hand, students who attribute failure or success to uncontrollable factors, like luck, are inclined to withdraw their effort and are characterised by low outcome expectancies (Schuster, Försterling & Weiner, 1989:193).

The locus dimension describes location of a cause as being either internal or external to the acting student. For instance, ability and effort are viewed as being internal factors, whereas task difficulty and luck are viewed as being external factors. Students who ascribe failure to an external factor anticipate failure, while those who ascribe to an internal factor, like effort, are typified by positive outcome expectancies, since they are in a position to control and improve their learning situation (Schuster, Försterling & Weiner, 1989:193).

As mentioned previously, each of these dimensions evoke specific emotions. Lack of control leads to feelings of humiliation, lack of confidence and shame (Weiner, 1984:29-30). However, when failure is ascribed to a controllable factor like effort, it leads to a sense of guilt which can be a positive motivator given the student reacts to the guilt by inserting more effort. Success ascribed to a controllable factor evokes pride and self-confidence. Such feelings, motivate students to work harder and to persist when difficulties are met. An ascription to an uncontrollable factor forces students to give up easily when faced with problem-solving tasks, and to be reluctant to exert more effort.

Long-term beliefs about the causes of success or failure develop into so-called attributional styles which can be viewed as a learning-related personality characteristic (Weiner, 1984:35). Except for the three mentioned causal dimensions, namely internal vs external, stable vs unstable, and controllability vs uncontrollability, a fourth dimension, namely global vs specific also defines attributional style (Weiner, 1984:35; Wood, Schau & Fiedler, 1990:2). Some students tend to manifest a pessimistic style in that they give a helpless explanation for negative events. That is to say they generalise uncontrollable stable factors they think are responsible for their failure, whereas they tend to ascribe their success to external, unstable and specific factors. Such a pessimistic style affects students' self-esteem, motivation and cognition, as well

as their emotions. Other students are typified by a more optimistic or mastery-oriented style, which means that they ascribe negative events to external, unstable and specific factors, and success to internal, stable and global factors. As a result, such students are highly motivated, they believe in themselves and view failure as part of the learning process and thus apply problem-solving strategies when they meet up with difficulties (Wood, Schau & Fiedler, 1990:2).

#### 2.4.2 *Self-worth*

The self-worth theory relates attributions and dimensions to the desire to maintain both a personal and a public image (Covington, 1984:92-93). Students' behaviour in any achievement situation is directed towards satisfying a particular goal, that of appearing competent, rather than incompetent (Slavin, 1991:323; Nicholls, 1984:47). If a student fails a given task, the feedback leaves room for the possibility that it was due to a lack of ability. Such failure creates feelings of unworthiness and self-rejection, given that the student ascribes his/her failure to an internal, uncontrollable factor (Covington, 1984:87). His/her sense of self-worth is devastated when the student thinks that the possibility of a lack of ability as the cause of his/her failure is also shared by others. However, when success is attributed to an internal, stable and controllable factor, the student's sense of self-worth is enhanced and he/she experiences pride and self-confidence (Covington, 1984:94).

In all classrooms students are either mastery-oriented, meaning that they try to demonstrate high ability *to themselves* and hold the belief that failure indicates the need to work harder, or ego-oriented. Ego-oriented students try to demonstrate *to themselves and to others* that they are capable and hold the belief that failure makes them unworthy of the approval of others (Covington, 1984:81; Nicholls, 1984:43). As a result, such students give externally-oriented excuses in an attempt to maintain a positive image when deep-rooted beliefs are challenged (Slavin, 1991:233).

In summary, one can thus say that students who believe that success is the result of external, uncontrollable factors feel hopeless, inefficacious and their sense of self-worth declines because they believe that success is beyond their grasp (Slavin, 1991:326). In contrast, students who believe that success or failure is a result of internal factors exert more effort and succeed. Hence, they feel competent, efficacious and their sense of self-worth is enhanced (Covington, 1984:95). Repeated failure decreases the level of self-efficacy, since it comes to be perceived as being a product of

an internal, stable factor like ability, given that ability is perceived as being static (Bandura, 1986:349; Covington, 1984:95).

Attributional style not only influences self-worth, but also self-efficacy. In the next paragraph self-efficacy, as a component of motivation, will be defined, described and related to attributions before goal orientation is discussed in depth.

### **2.4.3 Self-efficacy**

#### **2.4.3.1 Definition of self-efficacy**

Self-efficacy refers to how a student judges his abilities, competence and skills to organize and implement behaviours in order to perform a given task (Bandura, 1986:391; Wood & Locke, 1987:1013). Schunk (1985:208) also defines self-efficacy as the ability to acquire and effectively apply skills and knowledge to new tasks or to stressful and unpredictable tasks. This judgement is based on a personal interpretation of feedback received from various sources (which will be discussed in par. 2.4.3.2). Since the interpretation is subjective, some students might despite possessing the necessary skills, still doubt their capability to put such skills into action, and thus suffer from a loss of self-efficacy (Schunk, 1991:121; Wood & Locke, 1987:1014).

#### **2.4.3.2 Sources of self-efficacy**

Students acquire information about their efficacy by evaluating and interpreting their own performances, the performances of others, feedback received from teachers, and their own physical symptoms. Self-evaluation involves students' interpretation of what they are capable of doing with the skills and abilities they think they possess (Bandura, 1986:391). The process of self-evaluation therefore, enables students to form beliefs about their self-efficacy, since it makes it possible for them to determine whether they can effectively use the skills and knowledge they believe they possess (Bandura, 1986:391; Paris & Winograd, 1990:28). Personal performance refers to how the student performs in the given task in relation to his/her past performance in a similar task. Hence, a student who repeatedly fails, tends to doubt his/her ability to perform a similar task. However, a student who repeatedly performs well has his/her self-efficacy increased when a similar task is given (Covington, 1984:95).

Physical symptoms refer to bodily reactions which show when a student doubts his ability to perform a given task. For instance, when a student trembles and sweats

when asked to perform a particular task, his/her reaction comes to mean that he/she is not capable of performing the given task (Schunk, 1991:122). Feedback from teachers refers to marks, remarks or comments given by the teacher on how the student performed in a given task. From these remarks students' self-efficacy can either decrease or increase depending on how the comments were interpreted (Andrews & Debus, 1978:157). Students also judge their competence by observing similar others perform a task. For instance, when they observe similar others succeed, their self-efficacy increases, whereas observing them fail leads to a decline in their self-efficacy. Students therefore, are inclined to judge their capabilities to be the same as those of their peers and thus expect to succeed or fail accordingly (Schunk, 1991:122). Vicarious evaluation (peers) can either positively or negatively create outcome expectations and also affect the observer's judgement of his/her own capability for action. Vicarious evaluation (peers) is an important source with regards to causes stimulated by external attributions. Hence, students who attribute results to the influence of peers, experience little control, whereas students who attribute results to an internal factor like effort take the responsibility for their actions (Weiner, 1988:93).

#### *2.4.3.3 The effects of self-efficacy*

Self-efficacy focuses on beliefs about how one feels about one's ability to act and aims at answering the question "Can I do the given task?" Hence, a student who believes that the task is beyond his/her capability, avoids such a task but chooses a task he/she believes he/she can handle (Bandura, 1986:393). The self-efficacy belief also determines the amount of effort the student is willing to spend on a given task. Hence, a student who has a high sense of self-efficacy is always willing to exert more effort and persist longer, while a student who doubts his/her ability to organize and implement his/her skills, reduces his/her effort or withholds it completely when he/she meets difficulties. An inefficacious student focuses on ability and is inclined to exaggerate the extent of the problem he/she has. Such a student becomes anxious and thus gives up quickly. On the other hand, a student with a strong sense of efficacy, understands that his/her efforts lead to positive outcomes, hence difficulties for him/her stimulate greater effort expenditure (Bandura, 1986:394).

The self-efficacy belief also shapes the way students attribute causes of their success or failure. Highly efficacious students ascribe the cause of their failure to insufficient effort expenditure, whereas those who are troubled by self-doubts ascribe to low ability which leads to feelings of humiliation (Bandura, 1986:394). Self-efficacy further

relates to outcome expectancies, in that students who are highly efficacious expect positive outcomes, while students with low self-efficacy expect negative outcomes (Schunk, 1991:121).

After having answered the questions pertaining to the causes of differing learning results, control of these causes, competence and self-worth, students ought to be able to formulate their expectancies of how successfully a specific learning task can be accomplished. One question remains to be answered, however, and that is what the criterion for success is to be? This criterion relates to the goals the student are pursuing with learning, not only the specific task, but also the subject in general. Feather (1988:381) suggests that the goal is determined by the value students attach to performing and accomplishing the task.

## **2.5 GOAL ORIENTATION**

Since much confusion can arise about the connotation attached to the concept *goal orientation* as used in motivational context, both goal and orientation will first be clarified, after which the goal orientation theory will then be explained. Following this, variables that influence the formation of goal orientation, such as already established learning styles, conceptions of ability, attributional style, levels of self-efficacy and self-worth will be discussed. Next, attention will be given to the effect goal orientation has on learning behaviour. Lastly, the possibility of changing a student's goal orientation will be discussed.

### **2.5.1 Concept clarification**

Goal refers to an endproduct towards which effort is directed. In learning context the goal may be a variety of emotional reasons why students choose to do certain learning tasks while they avoid others, or it may refer to specifications or certain standards which can either be personal or set by others (Scott, 1991:36).

Orientation refers to a lasting tendency or an inclination (Scott, 1991:36). In a learning context, orientation refers to a tendency that develops as a result of continuous experience of the same thing, such as feedback. Goal orientation can therefore be described as a tendency or an inclination that develops through continuous experience of the same result as one works towards achieving one's goal (Scott, 1991:36). Within a value-expectancy framework goal orientation relates to task value, meaning that the

type of value a student attaches to attaining his goal is determined by the specific orientation of the student.

### **2.5.2 Learning goals versus performance goals**

Due to their sinful human nature students usually have contrasting goals, such as the goal of enjoying a party instead of preparing for a test. The goal that the student decides to pursue depends on how much value he attaches to that goal in relation to the other (Feather, 1988:381; Blumenfeld, 1992:273). This perspective relates to what has been described as direction and strength of motivation (see par. 2.2). In the context of motivation to learn, three types of goals can be differentiated, namely learning goals, performance goals, and the third is a combination of the two goals already mentioned (Dweck, 1989:291). Different researchers give different names to these goals which, however, mean more or less the same thing. For instance, Dweck (1989:291) talks of learning goals and performance goals; Nicholls (1984:42) talks of task involvement goals and ego involvement goals, while Ames (1992:262) refers to them as mastery orientation goals and performance orientation goals.

A student with a mastery goal orientation views intelligence as being incremental, meaning that it changes as the learner increases his/her skills and knowledge. Conversely, with a performance goal orientation the student perceives intelligence as being fixed and believes that ability cannot be changed no matter how much skill or knowledge the learner has acquired (Dweck, 1989:102; Ames, 1992:262). The most important issue is that perceiving intelligence as being incremental allows one not to give up quickly when difficulties are met (Dweck, 1989:97; Meece *et al.*, 1988:514).

Mastery goals are further typified by a desire to understand and gain new skills, while a student with a performance goal desires to gain social approval and to demonstrate to others that he is capable (Meece *et al.*, 1988:514). Mastery goals also contribute towards strategic thinking and the will to persist in times of difficulty; hence, students with mastery goals are always ready to accept challenging tasks and to use deeper processing strategies like summarizing and paraphrasing. In contrast, performance goals generate a negative affect following failure and are characterized by the use of short-term strategies like memorisation (Ames, 1992:263).

A mastery goal orientation is related to a variety of motivational variables such as confidence, intrinsic interest in learning activities and production of positive achievement. In contrast, performance goals are related to motivational variables such

as lack of confidence and negative attitudes towards learning which hinder productive learning in the classroom (Ames, 1992:263). Goal orientation can therefore be expected to influence the student's choice of tasks, as well as the intensity and persistence he is willing to give out in any learning situation (Perry & Magnusson, 1989:164).

Students may pursue both types of goals i.e. mastery goals and performance goals. A student with such a versatile orientation knows how to analyze the task and selects the correct strategy for each aspect of the task: surface strategies for memorizing definitions and deep strategies for understanding and applying principles and solving problems (Dweck, 1989:98).

### ***2.5.3 The effect of goal orientation on learning***

The need to confirm their sense of personal competence and self-worth keeps students motivated over long periods of time (Gross, 1992:135).

Some of these students rely on intrinsic rewards and feel satisfied that they are capable human beings who are able to understand and control learning situations (Gross, 1992:135). These are the students with mastery orientations who have confidence in their ability to perform any task within their cognitive reach (Dweck, 1989:89). Other students are ego-oriented, however, often doubt their ability to perform certain tasks and rely on extrinsic help and rewards for their motivation (Dweck, 1989:89). Goal orientation, and the accompanying conception of ability (static vs incremental) thus influence task choice and performance.

Prior task attainment is one source from which perception of ability develops (Norwich, 1987:386). Students who repeatedly attain poor marks in a particular task or subject develop a low perception of ability in that task or subject, become anxious and tend to avoid such a task (Scott, 1991:54). In contrast, students who experience success become confident in their ability to perform the given task or subject, hence they choose and actively engage in challenging tasks (Covington, 1984:95). Schunk (1988:244) points out that students also estimate their ability to perform a task or subject through vicarious evaluation; i.e. measuring themselves against how others may possibly do. Ego-oriented students define task difficulty by comparing their performance with that of their peers, thus their hope of attaining their goals (expectancy of success) depends on how others will do (Nicholls, 1984:47). When many students do well in a task or subject, it is an indication that the task or subject is

easy. Good performance then does not indicate high ability. However, when a student fails on a task where most students did well, his poor performance comes to be interpreted as an indication of low ability (Nicholls, 1984:47). Perceptions of inefficiency in a particular task or subject stimulates choice of easy tasks or subjects that ensure success while high estimates of ability lead to choice of challenging tasks or subjects like mathematics (Randhawa, Beamer & Lundberg, 1993:41-48).

Mayer and Jajika (1991:69-72) report that Japanese students have confidence in their ability to work on tasks in mathematics, since the culture values an overall exposure to basic mathematics in elementary school. Hence, these students perform better than American students in basic mathematics and enjoy to learn and practise mathematics. They thus manifest a performance orientation. American students perform better on tests that require understanding and reasoning, however, since their culture encourages deep processing strategies like applying some concepts learnt in mathematics to students' daily experiences. This stimulates a learning/mastery orientation (Mayer & Jajika, 1991:67-72).

In the Molopo region, the researcher has observed that a large number of Black students in high schools, choose history instead of mathematics as their main content subject. Several factors might be responsible for such a pattern of behaviour, for example, the teacher's self-efficacy and his/her educational level (see par. 2.6). However, perceptions of one's ability is a powerful predictor of whether a student will choose a task/subject or not. Perceptions of a task/subject's difficulty depends on its content, as well as the method of instruction used when such a task is taught (Schunk, 1991:239). Mathematics for example, is perceived as being difficult since its content, requires deep understanding, logical interpretation and the ability to apply some of the concepts learnt (Schunk, 1991:239). History on the other hand, is perceived as being easier, since its content consists of an accumulation of ready-made knowledge (Jacob, 1982:227), which leads to a passive intake of knowledge by some students (Scott, 1991:37). Ego-oriented students who doubt their ability to perform certain tasks in mathematics, perceive the subject as being a threat to their competence. They tend to avoid such a subject in an attempt to defend their perceptions of high ability, thus preventing loss of self-esteem (Schunk, 1991:239; Randhawa *et al.*, 1993:41-48). In contrast, mastery-oriented students perceive a subject like mathematics as being challenging, since it promotes improvement and the acquisition of effective learning skills like logical thinking (Ames, 1992:263).

An ego orientation is associated with surface encoding, meaning that students keep the new information in the short-term memory through the use of strategies like memorisation and rehearsal. However, information stored in the short-term memory is quickly lost if not well learnt, hence surface encoding is not beneficial to learning. In contrast, mastery-oriented students organize, elaborate, and form schema structures with the incoming information, thus encoding the information deeply, since they link it with information already existing in the long-term memory to form meaningful structures. Such structures help students to understand better, interpret, apply and to recall when asked to do so. A mastery orientation therefore, promotes motivational patterns likely to evoke long-term and high quality engagement in learning (Ames, 1992:263). Ego-oriented students, probably fail due to surface encoding or because they do not learn, which serves as an excuse for failure and as a defence mechanism against perceptions of low ability (Covington, 1984:83). Students' perceptions of ability are reliable indicators to show how much effort they will spend to perform a given task. It also shows how the student will persevere in processing the information (Randhawa *et al.*, 1993:41-48).

Students with performance goals probably also fail because they use ineffective strategies like memorisation and rehearsal (Meece & Holt, 1993:582-590). Hence, they become discouraged and give up easily, while students with learning goals face failure strategically, since their main concern is to acquire new skills regardless of how well others perform (Slavin, 1991:330). Since performance-oriented students doubt their ability to perform tasks, they sometimes withhold effort expenditure and give externally-oriented excuses in an attempt to protect their sense of self-worth (Dembo, 1991:420). Effort expenditure can thus become a "double-edged sword" for some students, since if one fails after spending much effort, one experiences feelings of shame, while failure that comes after less effort has been exerted, only leads to negative disapproval from parents and teachers, but no loss of self-esteem (Dembo, 1991:420; Covington, 1984:89). Failing a difficult task is not as bad as failing an easy task, hence ego-oriented students sometimes choose difficult tasks as a defence mechanism against inferences of low ability (Covington, 1984:94). Students in their every day actions seek to find causes of their success or failure. They protect their self-concept of ability by either exerting more effort and succeeding or by withholding effort and failing (Weiner, 1984:21). Mastery-oriented students however, hold the belief that failure or success depends on their effective effort expenditure. Thus, when such students fail or encounter problems, they work harder, more strategically, and succeed, thus gaining confidence and their self-concept of ability improves (Dweck,

1989:293). In contrast, ego-oriented students who focus on their ability, withhold effort when difficulties are met, thus enabling them to avoid inferences of low ability (Covington, 1984:94).

#### **2.5.4 Possibilities of changing students' goal orientations**

The main characteristics of students who are ego-oriented are low perceptions of ability and an inclination to fall into a state of hopelessness. These characteristics are exacerbated by a continual emphasis on competition and the attaining of good grades (Slavin, 1991:330).

In the South African school context grades, competition, matric results, and social approval are overly emphasized, not only for students' future career prospects, but also for teachers' promotion. The emphasis on grades has a strong influence on students' self-image and their relationship with other students and their teachers. Poor matric grades can keep students from pursuing careers of their choice or obtaining a desirable job (Moreland, Miller & Lauka, 1981:335). Students thus tend to choose subjects like history, for which they perceive they might gain good grades, and avoid subjects like mathematics, which they mostly perceive as being difficult (Scott, 1991:74). Teachers too, encourage students to choose subjects that are easy to pass so that they (the teachers) might be socially recognised as being good teachers and thus stand better chances of being promoted.

The emphasis on grades, competition and the desire to gain social approval, contribute significantly towards the development of an ego orientation, since it forces students to focus on their ability rather than on mastery. Such an orientation could be changed by de-emphasizing evaluation and grades, and re-emphasizing effort, skill-acquisition and progress (Försterling, 1985:505). This could be done by encouraging students to set moderate, achievable goals for performance and to ascribe success to ability and failure to lack of effort rather than low ability. Such a re-attribution method could alter causal cognitions about behavioural outcomes, since attributing failure to lack of effort reduces anxiety and increases persistence when faced with difficulties (McClelland, 1985:55). Teachers can thus improve an ego-orientation by not making grades public but instead try to emphasize the importance and the interest of the content taught rather than grades (Slavin, 1991:330). This could be done by relating relevant content matter taught to certain careers students wish to pursue in future. For example, when teaching map interpretation in geography, the teacher could emphasize the importance of the skill taught for students interested in travel and tourism as a career.

Ego-oriented students become hopeless when they think that they have no control over what caused their failure. Such students are inclined to ascribe causes of failure to external, uncontrollable factors like "luck" (Slavin, 1991:326). Such an orientation could be changed by encouraging students to ascribe to an internal, unstable, controllable factor like effort, since people need to be in control of their own destiny and not to be at the mercy of external forces. Besides, attributional retraining has been found to be successful in increasing expectations for future success, persistence and performance (Försterling, 1985:503; Perry & Penner, 1990:262-271).

Feedback given by teachers should aim at showing the progress students are making towards attaining their goals, and suggest ways of improving certain areas which were poorly done. This could be done by designing a programme that addresses essential and trainable metacognitive strategies such as planning, monitoring and self-regulating (McCombs, 1984:207). Planning strategies, like goal-setting, skimming, and generating questions before reading the text (Pintrich, 1989:132; Paris & Winograd, 1990:29), activate relevant aspects of prior information thus making it possible for the learner to organize and comprehend the new learnt information. Different monitoring activities help the learner to understand the material and integrate it with prior knowledge. As the learner monitors the comprehension of a text, Pintrich (1989:133) indicates, he/she can adjust his/her learning and reading speed to the difficulty of the material or he/she could re-read portions of a text to increase comprehension. These self-regulating strategies help the learner in checking and correcting his/her behaviour as he/she proceeds with the task.

Students need to experience success before they can explore unfamiliar or difficult tasks with confidence. Hence, ego-oriented students need to be encouraged to do tasks which they can successfully complete first in order to build up their confidence. Thus, they could acquire and maintain a sense of self-worth which is a powerful motivator that directs behaviour in the classroom (Covington, 1984:81). This links up with the type of feedback given to students by teachers discussed previously.

Since an ego-orientation hinders productive learning, programmes that aim at changing such an orientation are necessary to enable students to contribute meaningfully towards different needs of their societies. However, such programmes would require intensive planning and teachers that are willing to put more time, effort and understanding into their work. It would also require parents who motivate and show interest in their childrens' education, since much of students' motivation and performance depend on their home environment.

## **2.6 THE AFFECT COMPONENT**

Text anxiety is a motivational variable that forms part of the affect component of the value-expectancy framework (see figure 2.1), which tends to negatively relate to expectancies and academic performance.

According to Pintrich and Schrauben (1991:15), test anxiety has two distinct components: a cognitive component which involves negative thoughts about one's ability to act. Such thoughts disrupt performance in the classroom. The emotionality component refers to affective and bodily reactions that form part of anxiety which influences the direction and intensity of action. In the learning context students' anxiety is aroused by certain situations in their learning environment, (for instance success or failure in a test), which will in turn generate feelings such as pride and sadness. Such feelings lead to more effort expenditure for mastery-oriented students, even when they encounter failure, while it leads to effort withdrawal for ego-oriented students (Dweck, 1989:89; Archer, 1994:431). Test anxiety is an example of a maladaptive behaviour which is mostly experienced by students who doubt their ability to perform a given task. Such a behavioural pattern is used in an attempt to avoid inferences of incompetence in the short term, but does little in bringing about continued motivation.

## **2.7 VARIABLES INFLUENCING GOAL ORIENTATION**

Although many variables influence a student's goal orientation, as stated in paragraph 1.1 and 1.2, attention will only be given to those variables that were used as control variables in the empirical study, namely: type of tasks, the teacher's efficacy beliefs, educational level and teaching experience, and students' age.

### **2.7.1 *The influence the teacher's efficacy beliefs have on students' goal orientation***

The teacher's educational training level and teaching experience tie in with his/her feelings of self-efficacy which refers to the belief a teacher has about his/her ability to bring about positive change in students' learning behaviours and achievements (Czerniak & Chiarelott, 1990:49-58). Beliefs of inefficiency are generated by poor content knowledge in the subject taught and a lack of effective teaching skills. Teachers' level of self-efficacy influences the way they choose instruction activities, the amount of effort they spend on teaching, and the degree of persistence they show in the classroom (Ashton, 1985:144). According to Coladarci (1993:32-34) efficacious

teachers are characterised by warmth and empathy: warmth refers to a teacher's ability to show that he/she cares for the students as human beings, whereas empathy refers to his/her capacity for understanding how students feel and the possible causes of emotional reactions that are a common feature in the classroom. The way teachers behave in the classroom, in turn, influences students' goal orientation, as well as their performance (Corno, 1988:181-202). Hence students of teachers who doubt their ability to teach mathematics or science, perceive the subject as being difficult and boring (Midgley, Feldlanfer & Eccles, 1989:247-258). Such students begin to doubt their ability to perform in mathematics or science due to repeated bad experiences, such as personal failure and poor mathematics or science instruction. The most important issue is that such an inclination leads to a development of an ego-orientation (Czerniak & Chiarelott, 1990:49-58). In contrast, students of more efficacious teachers view mathematics or science as being less difficult, show interest and have confidence in their ability to perform tasks in mathematics or science (Midgley, Feldlanfer & Eccles, 1989:247-258).

### ***2.7.2 The influence of the teacher's teaching experience on students' goal orientation***

More experience is better than less experience depending on the type of teacher training the teacher experienced. Through experience, the degree and type of control, planning, questioning teaching style, homework, and attention given to students' different needs improve. Valli and Agostinelli (1993:107-117) noticed that control changes from being teacher-oriented to being student-oriented when the teacher gives lessons which involve the student actively. Such a teaching style encourages students to actively engage in learning thus developing a mastery orientation. Ashton (1984:143) however, suggests that some teachers with many years of teaching experience are negative towards changes and implementation of new methods of teaching. It is observed that they always use the conventional method of instruction which discourages active participation and choice of challenging tasks. As a result students of such teachers are inclined to rely heavily on their teachers to bring about learning changes. Hence, they tend to ascribe causes of success or failure to external causes, such as poor method of instruction and luck, a tendency that is associated with an ego-orientation (Slavin, 1991:326).

### ***2.7.3 The influence of task structuring on goal orientation***

A well trained, confident teacher first analyses tasks before he/she attempts to teach them to students. As pointed out by Ames (1992:263), task structuring can lead to the development of a particular orientation. She noticed tasks that are challenging and interesting give students a sense of control, thereby giving them less chances of comparing their work with that of their peers. Diverse and challenging tasks tend to create intrinsic interest in learning. Ames (1992:263) maintains that the manner in which tasks are structured and delivered to the class greatly influences the development of a specific goal orientation. In line with Ames's (1992:263) view Perry, Vanderstoep and Yu (1993:33) conducted research to examine whether asking high order cognitive questions leads to better learning than answering questions that require rote responses. They found that high order questions engaged students in integrative thinking which in turn gave students no chance of focusing on their ability. Instead, such questions enabled students to find answers to the questions themselves and thereby derive great pleasure and satisfaction.

### ***2.7.4 The influence of teachers' educational training level on goal orientation***

The teachers' training level implies the number of years (3 or 4 year programme) offered by different colleges/universities. Coladarci (1993:325) observed that teachers who trained for a longer period have confidence in their ability to instruct even the most difficult or unmotivated students. According to Graham and Golan (1991:193-194) the relationship between levels of information processing and goal orientation is brought about by the instructional method used by the teacher. Teachers who are poorly trained to teach mathematics lack the content background knowledge and effective teaching methods such as relating new concepts to students' everyday experiences (Czerniak & Chiarelott, 1990:49-58). Hence, they use the conventional method which leads students to being passive and to develop an ego orientation. In contrast, teachers who are well trained accept responsibility for motivating students (Czerniak & Chiarelott, 1990:49-58). Hence, they use innovative techniques which involve motivating, focusing on meaning and understanding, by demonstrating and by giving lively process explanations (Czerniak & Chiarelott, 1990:49-58). Such methods of instruction lead to deep information processing which is associated with a mastery orientation (Graham & Golan, 1991:193-194).

### **2.7.5 *The influence of students' age on goal orientation***

Nicholls (1984:66) suggests that children's perceptions of ability and their reaction to similar outcome situations vary with age.

For young children (from the lower primary level up to the 9th grade) high effort implies high ability and they are always ready to try, even if they fail. In contrast, high effort implies low ability for children in their adolescent stage; as a result they always try not to appear stupid and are inclined to ascribe success to internal causes (Nicholls, 1984:66). This implies that young children's conception of ability does not depend on how well others perform, whereas older children use defensive strategies, like not trying, since they are aware of themselves and their performances in relation to that of their peers (Stipek & Daniels, 1991:201-211). Stipek and Daniels (1991) also noticed that extrinsic pressures, like the desire to please parents, lead to an increased effort expenditure and the development of an ego orientation among junior high school students, and not among senior high school students. It can therefore be postulated that the development of a specific goal orientation varies with age.

## **2.8 *SUMMARY***

In chapter two, an attempt to define, as well as describe, motivation was made since it is such a difficult and complex structure. Several perspectives on motivation were examined but the goal orientation theory was given specific attention because it gives the most comprehensive overview of motivation as it occurs in the classroom. The value expectancy framework was briefly examined in an attempt to identify the value a student attaches to learning and what he expects after he has made specific learning endeavours. Factors that influence motivation in the classroom were also discussed since goal orientation is not only influenced by student variables but also depends on classroom structures such as the teacher, peers and different tasks. Research dealing with the question of factors influencing goal orientation and subject choice were also examined. Chapter three will describe the method that was used in an attempt to examine the relationship between goal orientation and task/subject choice.

## **CHAPTER THREE**

### **METHOD OF RESEARCH**

#### **3.1 INTRODUCTION**

In the previous chapter motivation and its components were described and discussed within the context of the value-expectancy framework. This chapter is devoted to a description of the empirical research resulting from the literature review. The aims and hypotheses of the empirical research are stated in paragraphs 3.2 and 3.3 and the population and sample are described in paragraph 3.4. In paragraph 3.5 the questionnaires that were used to gather the data are described, followed by a list of the variables playing a role in the research (par. 3.6), and the research design (par. 3.7). Attention is next given to the statistical techniques that were used for the data-analyses (par. 3.8), and lastly an exposition's given of the procedure that was used for gathering the data information (par. 3.9).

#### **3.2 THE AIMS OF THE RESEARCH**

As stated in paragraph 1.2, the aims of the study were to determine whether the goal orientation of Black standard seven students from the Molopo region of the North West Province influences: (i) the choice they have to make between history and mathematics at the end of standard seven, and (ii) their achievement in history and mathematics. Since research has shown that student age and teacher-related variables mediate goal orientation (see par. 2.7), two secondary aims were to control for the influence these two variables have on type of goal orientation.

In order to attain these four aims, and to direct the empirical research, four hypotheses were formulated.

#### **3.3 HYPOTHESES**

##### **Hypothesis 1**

There is a relationship between goal orientation and the choice Black standard seven students in the Molopo region of the North West Province have to make between mathematics and history.

### **Hypothesis 2**

There is a relationship between goal orientation and achievement in mathematics and history of Black standard seven students in the Molopo region of the North West Province.

### **Hypothesis 3**

There is a relationship between teacher variables and the goal orientation of Black standard seven students in the Molopo region of the North West Province.

### **Hypothesis 4**

There is a relationship between student age and the goal orientation of Black standard seven students in the Molopo region of the North West Province.

## **3.4 POPULATION AND SAMPLE**

The population of this research constituted 15 Black middle schools in the Molopo region of the North West Province (called Bophuthatswana at the time the research was undertaken). Middle schools were selected since students have to make a curriculum choice at the end of standard seven, before advancing to the senior secondary school.

Six of the schools are located in and within a one kilometer range of the town of Mmabatho, whereas nine of the schools are located in small villages surrounding Mmabatho. Most of these schools have an average enrollment exceeding 550 students, and a teacher-student ratio exceeding 1:40. Setswana is the mother-tongue of the majority of the students, although a small percentage are Xhosa-speaking. The language of tuition at all the schools is English, however.

Standard seven students were selected for the empirical research because they are in their final year in the middle school and are to make a choice between mathematics and history before advancing to the senior secondary phase of the educational programme. The rationale was that the students would be more motivated to take part in the research since it was relevant to their immediate future.

A random cluster sample of five schools was drawn from the fifteen schools.

**Table 3.1: Descriptive features of standard 7 classes of the sample schools.**

<b>School</b>	<b>Student number</b>	<b>Students per teacher</b>	<b>Boys</b>	<b>Girls</b>	<b>Nr. of st. 7 classes</b>
01	250	1:42	109	141	6
02	206	1:41	101	105	5
03	266	1:44	130	136	6
04	186	1:46	98	88	4
05	240	1:40	100	140	6

Since each of the schools was found to have more than one standard seven class, one class was randomly drawn from each school, giving a total number of 205 students in the sample. See table 3.2 for a description of these classes. These were the students who completed the test battery.

**Table 3.2: Descriptive features of the sample classes.**

<b>School</b>	<b>Student number</b>	<b>Boys</b>	<b>Girls</b>	<b>14-15 years</b>	<b>16-17 years</b>	<b>18-19 years</b>	<b>20 + years</b>
01	44	21	23	23	15	04	02
02	39	14	25	10	12	13	04
03	39	10	29	21	08	03	07
04	39	22	17	13	14	06	06
05	44	23	21	03	21	17	03

Due to the faulty completion of certain aspects of one or more of the questionnaires, two students were exempted from the sample when the data were analysed.

Since teacher-related variables were included as control variables in the research, information on the teaching-training and -experience of the history and mathematics teachers teaching each of the five selected classes was also obtained by means of a biographical questionnaire (see par. 3.5.4).

### **3.5 INSTRUMENTATION**

The motivational variables, including goal orientation, were measured by means of two motivational questionnaires, namely the Motivational Strategies for Learning

Questionnaire (MSLQ) (par. 3.5.1) and the Attribution Scale for Mathematics (par. 3.5.2). Information on the control variables (see par. 3.6) and the dependent variables, namely (i) choice between mathematics and history and (ii) grades obtained in the two subjects, was obtained by means of a biographical questionnaire (see par. 3.5.3).

### **3.5.1 *The Motivated Strategies for Learning Questionnaire (MSLQ)***

The Motivated Strategies for Learning Questionnaire (MSLQ) which was at the disposal of the researcher, was the 1987/88 version developed by a team of researchers from NCRIPAL at the university of Michigan. It is a self-report instrument designed to assess college students' motivational orientations and their use of different learning strategies. The MSLQ is based on a general cognitive view of motivation and learning strategies. There is essentially two sections to the MSLQ, namely a motivation section and a learning section. Since only the motivation section was used in this research, the other section will not be discussed. The motivation section consists of 40 items that assess the values students attach to a subject, their beliefs about their skill to succeed in the subject, and their anxiety about tests in the subject.

Since the MSLQ was constructed for measuring college students' motivational orientations, it had to be adapted for use with school students. This was done by replacing all words with a college-context connotation (such as course and course material) with school-related concepts (such as subject and textbook). Next the questionnaire was made subject-specific by means of referring to mathematics and history respectively, instead of the non-specific "the task". The questionnaire was also translated into Setswana (the mother tongue of the students in the sample) to prevent any misinterpretation of the questions. This translation was done by an accredited translator lecturing in the Department of African Languages, and controlled by a teacher whose first language is Setswana (see addendum A for the translated and adapted version of the MSLQ).

The motivation section of the MSLQ measures 3 areas of motivation, namely (i) a value component consisting of intrinsic goal orientation (4 items), extrinsic goal orientation (4 items) and task value (6 items); (ii) an expectancy component, consisting of control beliefs (8 items), perceived competence (5 items), self-efficacy (5 items) and expectancy for success (3 items); and (iii) an affective component

measuring test anxiety in the form of cognitive interference (3 items) and emotionality (2 items).

The intrinsic goal orientation (ALPHA:0.74)\* concerns the degree to which the student perceives himself/herself to be participating in a task for reasons of challenge, curiosity and mastery. Extrinsic goal orientation (ALPHA:0.62), on the other hand, concerns the degree to which the student perceives himself/herself to be participating in a task for reasons such as grades, rewards, performance, evaluation by others and competition (Pintrich *et al.*, 1991:10). Goal orientation on the MSLQ also refers to the general orientation to the subject as a whole. The task value component (ALPHA:0.90) measures the value the student attaches to the task in terms of its interest, importance, and utility for other subjects.

The expectancy component includes control beliefs (ALPHA:0.68), which refer to students' beliefs that outcomes are contingent on own effort. This means that if the student feels that he/she can control his/her academic performance, he/she is more likely to utilize his/her effort strategically in order to bring about the desired change. Expectancy also entails self-efficacy beliefs (ALPHA:0.93), which include perceived competence and expectancy for success. Self-efficacy is a self-appraisal of one's ability to master a task (Pintrich *et al.*, 1991:13).

The last component, namely affect (ALPHA:0.80) concerns students' negative thoughts that disrupt performance, and their emotionality which refers to affective and physiological arousal such as sweating (Pintrich *et al.*, 1991:15).

The 40 items thus give a complete picture of motivation in the value-expectancy paradigm, since all aspects as described in paragraph 3.6 are measured. Since learning motivation is task and/or subject specific (Pintrich, 1988:75); students had to respond to the MSLQ first for mathematics and later for history as well.

Students were instructed to respond to the items on a 7-point Likert Scale (1 = not at all true of me to 7 = very true of me) in terms of their behaviour in mathematics and history.

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\* Since no information on the item and scale statistics of the 1987/88 version of the MSLQ were available, the ALPHA statistics given are those of the 1991 revised version of the MSLQ (see Pintrich *et al.*, 1991:3-4 for further details) received later.

### 3.5.2 The Mathematics Attribution Scale (MAS)

Subject-specific attributions students give for success and failure (see par. 2.4.1) were measured with the Mathematics Attribution Scale constructed by Fennema, Wolleat and Pedro (1979). Since this instrument was developed to be used by secondary school students taking mathematics, no adaptation for mathematics was necessary. A similar questionnaire was adapted for history, using the principles for adaptation supplied by Fennema *et al.* (1979). These two versions of the MAS were also translated into Setswana (see addendum B for the adapted and translated version of the MAS for history).

The modified MAS consists of eight events (stated as suppositions), of which four depict successful performance of a learning task and four unsuccessful performance. The eight subscales are paired as *Success-Ability*, *Failure-Ability*, *Success-Effort*, *Failure-Effort*, *Success-Environment*, *Failure-Environment*, *Success-Task difficulty*, *Failure-Task difficulty*. *Ability* is described as talent and skill and being able to understand. *Effort* involves the amount of time spent in preparing for lessons, tests or examinations, learning strategies and the degree of concentration. *Environment* refers to external variables not controlled by the student, such as luck and teacher variables. The *task difficulty* is given in terms of the difficulty level and the conceptual level of the subject.

Students were instructed to read each supposition and to score each of the four options given as a possible cause of success or failure on a 7-point Likert-type scale: 7 indicating that they totally agreed with the attribution; 1 indicating no agreement at all. See example 1 for a supposition and options for a success event.

#### Example 1: Attributional choice subscale.

Supposition 1: You have gained the marks you have aimed for in the class tests written so far.

You gained the marks because:

	1	2	3	4	5	6	7
a. The class tests were easy.							
b. You spent much time in preparing for the tests.							
c. The teacher explained the work very well.							
d. You have a special aptitude for this subject.							

The subscale reliability coefficients are reported by Fennena *et al.* (1979) and are given in table 3.3.

**Table 3.3: MAS Subscale reliability coefficients.**

Subscale	Female	Male	Total
Success-ability	0.78	0.76	0.77
Success-effort	0.79	0.77	0.79
Success-task	0.42	0.36	0.36
Success-environment	0.51	0.45	0.48
Failure-ability	0.64	0.61	0.63
Failure-effort	0.70	0.62	0.66
Failure-task	0.51	0.45	0.48
Failure-environment	0.51	0.45	0.48

### 3.5.3 *The biographical questionnaire for students*

The biographical questionnaire for students consists of 22 items (see addendum C), three of which required students to respond to personal details such as name, age, gender, and five items required them to divulge information of their family background. Twelve items were aimed at determining their attitudes towards mathematics and history, their June examination grades for mathematics and history, and their choice between the two subjects. Since the biographical questionnaire was not difficult to interpret, it was given in simple English and not translated into Setswana.

### 3.5.4 *The biographical questionnaire for teachers*

The biographical questionnaire for teachers consists of 22 items (see addendum D) of which the majority measures teaching training and teaching experience. Four items measured goal orientation, for example, how teachers value the subject they teach in terms of child development, its relevance for career choice, how it contributes towards the understanding of other subjects and whether they perceive mathematics or history as being more important than other school subjects. Items 16-20 were aimed at discovering their method of instruction, e.g. "Which aspect of the teaching-learning cycle do you regard as the most important?" Teachers were asked to respond by

indicating one of the following: Motivating the student, explaining the work, remembering the work, understanding the work, doing exercises or evaluating the work. The last two items (21 and 22) measured teachers' expectations in terms of how their students will perform.

### **3.5.5 *Subject choice and academic achievement***

Mathematics and history were chosen as the subjects for this study, since the choice between these two subjects in actual fact constitutes a school curriculum choice: students choosing mathematics will follow a natural sciences curriculum, whereas students choosing history will follow a human sciences curriculum. The two subjects do not occur in the same curriculum. It was thought that this choice would make the research more relevant to the students' immediate future, and ought to motivate them to become involved in the research.

Academic achievement was constituted by the marks the students gained for the two subjects in the end-of-term examinations during June. Since students were nowhere in this research grouped on account of their marks, there was no necessity to standardize the marks for students from the five schools.

Both subject choice and academic achievement were obtained through questions posed in the biographical questionnaire for the students.

## **3.6 *VARIABLES USED***

### **3.6.1 *Independent variables***

- a. Control variables: age, sex and teacher-related variables.
- b. Experimental variable: goal orientation.

### **3.6.2 *Dependent variables***

- a. Subject choice in terms of either mathematics or history.
- b. Marks obtained in June examination for mathematics and history.

### 3.7 *EXPERIMENTAL DESIGN*

An *ex post facto* design with analysis of variance was used to determine the interaction between goal orientation, subject choice and achievement of standard 7 students.

### 3.8 *STATISTICAL ANALYSES*

The data was computed with the main-frame computer of the university.

Firstly, a cluster analysis, using Ward's Minimum-Method, was used to cluster students into groups differing in the fifteen variables constituting goal orientation. Ward's method was selected since it "tends to join clusters with a small number of observations and is strongly biased toward producing clusters with roughly the same number of observations. It is also very sensitive to outliers" (Milligan, 1980, as quoted by SAS, SAS Institute Inc., 1988:297). Secondly, the significance of the differences in the goal orientation variables between the clusters was determined by means of a multivariate analysis of variance (MANOVA). Instead of testing each of the variables within the clusters separately and then comparing them, a MANOVA enables one "to consider the joint distribution", and test the fifteen variables simultaneously (SAS Institute Inc., 1988:601).

For testing the differences between the means of the fifteen goal orientation variables for the clusters, a series of one-way analyses of variance (ANOVA) on goal orientation and cluster was done. According to the SAS Handbook (SAS Institute Inc., 1988:604) the effects of interest in a series of ANOVA's are the between-subjects effects (the clusters in this research), within-subjects effects (the goal orientation variables), and interactions between the two types of effects (goal orientation x cluster). The repeated measures analyses differ from other multivariate and univariate analyses due to the interest for testing hypotheses about the within-subject effects and the within-subjects-by-between-subjects interactions. This was followed by multiple comparisons between the group means, using the Tuckey method which controls the experimentwise error rate. The educational significance of between-group differences in goal orientation variables was determined by computing the effect sizes using the following equation:

$$d = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{MSE}}$$

To test the relationship between (i) goal orientation and subject choice (hypothesis 1), teacher variables and goal orientation (hypothesis 3) and student age and goal orientation (hypothesis 4), three two-way frequency analyses (PROC FREQ of SAS, SAS Institute Inc., 1988) followed by a computation of the Chi-Squares, were performed. The rationale for using frequency analysis to test hypothesis one, was that more students with an intrinsic orientation would choose mathematics than students with an extrinsic orientation. For hypothesis three it was argued that more students of teachers with more years' teaching training and more teaching experience would show an intrinsic goal orientation than students of teachers with fewer years training and fewer years of experience. Students who are the correct age for standard seven (14-17 years) ought to manifest a more intrinsic goal orientation than older ones, was the argument for hypothesis 4. Chi-squares were computed for each of the frequency analyses to determine the probability level of the perceived differences.

The second hypothesis was tested by means of a two-way ANOVA using goal orientation and achievement in the subject. This was once again followed by a Tukey test and the computation of the effect size.

All statistical analyses were performed first for mathematics and then for history.

### **3.9 PROCEDURE**

The empirical research was scheduled to take place during three (3) consecutive days in the last week of June 1994. Schools 02 and 04 were tested on the 21st of June. School 01 on the 22nd of June, followed by schools 03 and 05, which were tested on the 23rd of June.

After the researcher had explained the rationale of the research, she explained the first section of the questionnaires. The tester explained the Motivated Strategies for Learning Questionnaire (MSLQ) first and indicated on the blackboard how the students were to answer it. Thereafter, the Attribution Questionnaire was explained in detail and the students were shown how to respond.

The students were not allowed to discuss questions or answers with each other. They were asked to answer as truthfully as possible and as quickly as possible. They were also asked not to think too long about the answers.

In all schools, the subjects first completed the biographical questionnaire which was then followed by the Motivated Strategies for Learning Questionnaire (MSLQ) and the Attribution Scale for Mathematics (MAS). After completion the questionnaires were taken in.

A ten-minute break was taken to ensure that the students did not simply give the same answers that they gave for mathematics. After the break the Motivated Strategies for Learning Questionnaire (MSLQ) and the Attribution Scale for history were handed out. Since no further explanations were necessary the students completed these in a shorter period of time than the first session.

The duration of the testing time varied between 1 hour 50 minutes for the first school tested, to 2 hours for schools 03 and 05.

Teachers answered the biographical questionnaire for teachers while students were busy with their questionnaires. There was no time limit set for answering the questionnaire. The researcher collected the questionnaires from teachers after the students had completed answering their questionnaires.

### **3.10 SUMMARY**

The aim of the study was to determine the relationship between goal orientation, subject choice and achievement. The chapter was devoted to a description of the empirical investigation of this topic. The population and sample were discussed first after which the motivational questionnaire, statistical analyses and the procedure were discussed.

## **CHAPTER FOUR**

### **RESULTS OF THE EMPIRICAL RESEARCH**

#### **4.1 INTRODUCTION**

As stated in paragraph 1.2, this study had a dual purpose, namely to determine: (i) whether goal orientation influences the choice between mathematics and history Black students from the Molopo region of the North West Province have to make at the end of standard seven, and (ii) whether goal orientation influences these students' achievement in mathematics and history. Since various factors, amongst others teacher characteristics (see par. 3.6.1) and student age (see par. 3.6.2), mediate the goal orientation students have for a specific subject, the study had the secondary aim of controlling for the influence of these two variables on goal orientation.

Due to the nature of the two types of motivational questionnaires used (see par. 3.5.1 and 3.5.2), goal orientation was defined by the following variables: from the MSLQ: intrinsic orientation, extrinsic orientation, task value, control, competence, self-efficacy, test anxiety; and variables from the MAS, namely: success-task, success-environment, success-effort, success-ability, failure-task, failure-environment, failure-effort and failure-ability, giving a total of 15 variables. It is once again reiterated that each single result will first be given for mathematics, and then for history (in contrast to giving all results for mathematics and then for history), to improve the opportunity of drawing sensible comparisons.

The chapter will be structured in accordance with the rationale underpinning the course of the statistical analyses, and the hypotheses stated in paragraph 3.3. The results of the cluster analysis, MANOVA, and series of ANOVAS, each with a Tukey test and effect size, will be given first, since the clusters had to be identified and variables within the clusters described, before any of the hypotheses could be tested. The results of each of the four hypotheses will then be given in accordance with the order in which the hypotheses have so far been stated.

## 4.2 RESULTS OF THE CLUSTER ANALYSES

### 4.2.1 Cluster analyses and MANOVAS

To initiate the attainment of the mentioned aims, students were first grouped in accordance with the variables composing their goal orientation towards, firstly, mathematics, and secondly, history. Ward's Minimum-Variance method of Cluster Analysis (see par. 3.8) was used. Students were clustered into four groups, differing in various ways in how they interpret the different goal orientation variables (which will be discussed in par. 4.2.2) for both the subjects. For mathematics the number of students per group were 23 for group 1, 56 for group 2, 75 for group 3, 49 for group 4. For history the numbers were: 26 for group 1, 60 for group 2, 35 for group 3, and 82 for group 4. When controlling the research numbers allocated to the students, few students (41; 20%) had the same orientation towards both subjects: 3 students from group 1, 8 from group 2, 11 from group 3 and 19 from group 4. This can probably be ascribed to the fact that subjects differ so much in nature, content and difficulty level.

**TABLE 4.1:** Number of students per cluster.

	Cluster 1 Extrinsic goal orientation	Cluster 2 Intrinsic, but teacher dependent	Cluster 3 Intrinsic goal orientation	Cluster 4 Intrinsic, but anxious
Mathematics	23	56	75	49
History	26	60	35	82
Mathematics and History*	3	8	11	19

\* These students had the same orientation towards both subjects; the rest of the students differed in their orientation towards the two subjects.

The multivariate analyses of variance (MANOVA) (one for each subject) performed after the cluster analyses, indicated that the difference in goal orientation variables between the four clusters were highly significant (at the 1% level) for both mathematics ( $F[45] = 8.73$ ;  $p < 0.0001$ ) and history ( $F[45] = 10.68$ ;  $p < 0.0001$ ). A series of analyses of variance (ANOVAS), one for each of the 15 goal orientation variables, and for both mathematics and history, was consequently done to determine how the variables differed between the four clusters.

#### 4.2.2 Description of the differences between clusters for mathematics

The means, standard deviations, and one-way ANOVA levels of significance (f-values) of the variables descriptive of goal orientation were first calculated to differentiate between the four clusters (see table 4.2).

**TABLE 4.2:** Mean values, standard deviations and one-way ANOVA levels of significance of the motivational variables descriptive of motivational orientation for mathematics.

Motivational Variables	Cluster 1 N : 23		Cluster 2 N : 56		Cluster 3 N : 75		Cluster 4 N : 49		F Value	d Value*4
	M	SD	M	SD	M	SD	M	SD		
Intrinsic goal orientation	54.04 <sup>b</sup>	15.58	72.89 <sup>a</sup>	17.25	77.76 <sup>a</sup>	12.35	73.69 <sup>a</sup>	16.86	14.20	1.23-1.55
Extrinsic goal orientation	74.11 <sup>a</sup>	17.47	57.55 <sup>b</sup>	17.23	53.09 <sup>b</sup>	19.42	48.33 <sup>b</sup>	16.69	11.50	0.99-1.43
Task Value	52.79 <sup>c</sup>	22.02	62.20 <sup>b</sup>	17.23	85.08 <sup>a</sup>	14.32	78.38 <sup>a</sup>	15.09	35.24	0.58-2.03
Control	61.69 <sup>b</sup>	9.88	57.48 <sup>b</sup>	12.71	71.72 <sup>a</sup>	13.12	61.07 <sup>b</sup>	8.63	17.94	0.85-1.21
Competence	55.03 <sup>b</sup>	22.86	62.55	14.89	66.63 <sup>a</sup>	22.29	69.27 <sup>a</sup>	15.53	3.42	0.61-0.75
Self-efficacy	55.12 <sup>c</sup>	14.37	61.73 <sup>c</sup>	12.61	83.00 <sup>a</sup>	15.99	74.16 <sup>b</sup>	15.35	36.92	0.63-1.99
Test anxiety	75.12 <sup>a</sup>	21.84	55.23 <sup>b</sup>	22.11	46.00 <sup>b</sup>	24.94	80.03 <sup>a</sup>	17.37	27.72	0.90-1.31
Success-task*2	56.37 <sup>b</sup>	20.14	69.32 <sup>a</sup>	17.29	69.95 <sup>a</sup>	20.61	67.86 <sup>a</sup>	15.94	3.35	0.70-1.10
Success-environment	45.50 <sup>b</sup>	13.41	72.51 <sup>a</sup>	16.19	74.38 <sup>a</sup>	19.47	76.82 <sup>a</sup>	15.74	20.02	1.58-1.83
Success-effort	53.73 <sup>b</sup>	19.09	68.38 <sup>a</sup>	17.18	70.05 <sup>a</sup>	20.42	71.21 <sup>a</sup>	17.73	5.21	0.78-0.93
Success-ability*2	50.78 <sup>b</sup>	21.15	64.60 <sup>a</sup>	17.26	63.43 <sup>a</sup>	21.30	62.17 <sup>a</sup>	16.59	3.12	0.59-0.72
Failure-task	65.99	17.16	58.42 <sup>b</sup>	19.61	56.09 <sup>b</sup>	18.67	70.48 <sup>a</sup>	18.09	6.85	0.65-0.77
Failure-environment	56.52	21.06	66.71 <sup>a</sup>	17.47	53.95 <sup>c</sup>	16.73	64.43	18.51	6.75	0.71
Failure-effort**2	58.69	18.86	63.71	20.03	68.19	19.74	66.98	20.56	1.59	-
Failure-ability	59.32 <sup>b</sup>	17.62	61.29	17.52	60.86	19.58	70.26 <sup>a</sup>	16.65	3.45	0.76

1. D F = 3; 202
2. F-values are significant at the 1% level, except for that of success-task and success-ability (5% level) and failure-effort (no significance).
3. a b c indicates that significant differences in the variables exist between the clusters ( $p < 0.05$ ) applying Tukey's multiple comparison test.
4. Effect sizes:  $d < 0.2$ : small;  $d = 0.3-0.5$ : medium;  $d = 0.6+ =$  large (Cohen, 1977:79-81). The smallest and largest effect sizes for each variable are given.

All the variables differed significantly, in one way or another, at the 1% level, between the clusters, except for success attributed to task and ability of which the significance level was 5%, and failure attributed to effort, which was not significant at all. Cluster one differs significantly from the other 3 clusters on 10 out of the 15 variables both statistically and educationally (using effect sizes).

The students grouped into **cluster 1** have a much lower mean value for intrinsic goal orientation (54.04) than for extrinsic goal orientation (74.11). Students from the other three clusters have much higher mean values for intrinsic (72.89, 77.76 and 73.69) than for extrinsic goal orientation (57.55, 53.09 and 48.33). Students from cluster 1 also have much lower means for success attributed to intrinsic variables (effort: 53.73 and ability: 50.78) than the other three groups (effort: 68.38, 70.05 and 71.21 and ability: 64.60, 63.43 and 62.17). Students from cluster 1 also attach much less value to the task (52.79) than students from cluster 2 (62.20), 3 (85.08) and 4 (78.38). Considering that failure, as well, is attributed to the task (an extrinsic variable) rather than to effort or ability (intrinsic variables), it was concluded that students from cluster 1 had an **extrinsic goal orientation** towards mathematics and show a high level of test anxiety ( $\bar{x}$ : 75.12).

Although students from clusters 2, 3 and 4 can all be classified as having more intrinsic than extrinsic orientations, based on higher means for intrinsic goal orientation (72.89, 77.76 and 73.69) than for extrinsic goal orientation (57.55, 53.09 and 48.33), they nevertheless differ. Students from **cluster 3** can be classified as having the **most intrinsic (or best) goal orientation** towards mathematics. Their mean scores on task value (85.08), control (71.72) and self-efficacy (83.00) are constantly higher than those of group 2 (task value = 62.20, control = 57.38 and self-efficacy = 61.73) and group 4 (task value = 78.38, control = 61.07 and self-efficacy = 74.16). Cluster 3 also manifests the lowest test anxiety (46.00), although the mean is not significantly lower than that of group 2 (55.23). Attributionwise, students from cluster 3 don't differ from those from cluster 4 for attributions for success (prioritizing the environmental variables, then effort, task and lastly ability); they have a better attribution pattern for failure, however, attributing firstly to effort (an intrinsic variable), whereas group 2 prefers the environmental variables and group 4 the task as cause of failure (both extrinsic variables). The educational significance between the clusters range from medium effect sizes (0.58) to large effect sizes (2.03), thus illustrating a significant difference.

What mostly differentiates **cluster 4** from clusters 2 and 3, is the very high mean for test anxiety (80.03 in contrast to 55.23 for cluster 2 and 46.00 for cluster 3). Coupled to a very negative attributional pattern for failure (a too difficult task, and secondly a lack of ability), students from cluster 4 can be classified as having an **intrinsic goal orientation** but with the tendency of becoming **very anxious** when confronted by failure, since they feel incapable of taking control of such failure.

The most differentiating aspect of students from *cluster 2* is their high dependency on the environment (including the teacher and peers), since they attribute both success and failure to environmental variables. They also show the lowest level of control (57.48) of students from all four clusters (1 = 61.69; 3 = 71.72 and 4 = 61.07). Students from this cluster are consequently viewed as having an *intrinsic goal orientation*, but still highly *teacher-dependent*.

The four clusters are thus named:

Cluster 1: Extrinsic goal orientation (N = 23)

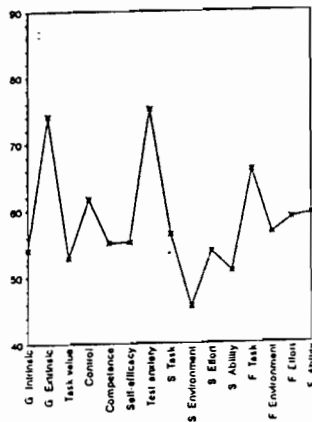
Cluster 2: Intrinsic, but teacher-dependent goal orientation (N = 56)

Cluster 3: Intrinsic goal orientation (N = 75)

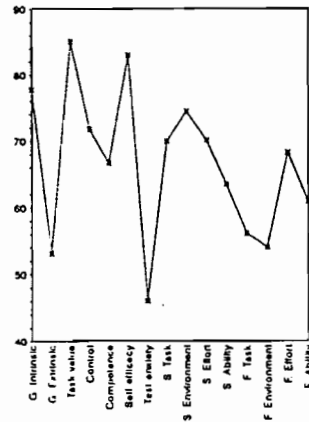
Cluster 4: Intrinsic, but anxious goal orientation (N = 49)

The four clusters are displayed graphically and the differences between the variables in the four clusters are easily discernable.

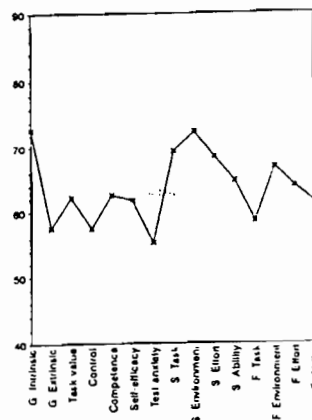
Graph 4.1 Extrinsic goal orientation



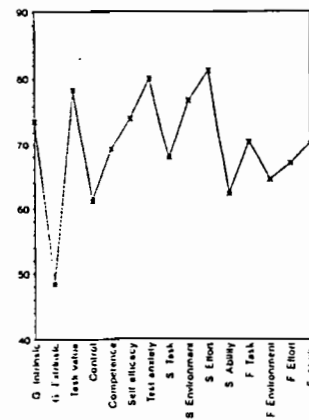
Graph 4.3 Intrinsic goal orientation



Graph 4.2 Intrinsic, but teacher-dependent goal orientation



Graph 4.4 Intrinsic, but anxious goal orientation



Since the effect sizes (indicating educational significance) for all variables are large (see Cohen, 1977:79-81), it is concluded that the differences between the clusters of all the variables are highly significant in an educational context.

#### 4.2.3 Description of the differences between clusters for history

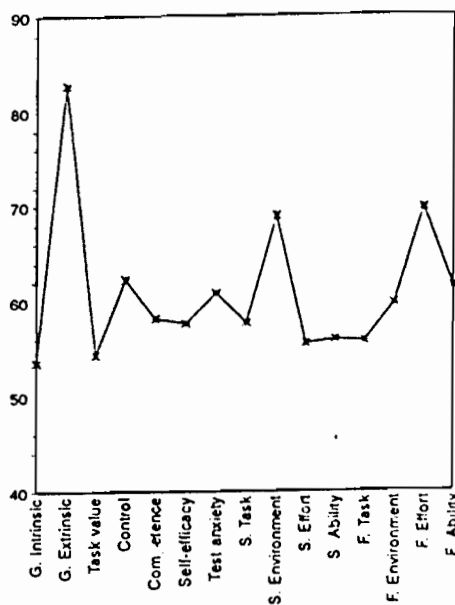
**TABLE 4.3:** Mean values, standard deviations and one-way ANOVA levels of significance of the motivational variables descriptive of motivational orientation for history.

Motivational Variables	Cluster 1		Cluster 2		Cluster 3		Cluster 4		F Value	d Value*4
	N : 26		N : 60		N : 35		N : 82			
	M	SD	M	SD	M	SD	M	SD		
Intrinsic goal orientation	53.57 <sup>b</sup>	15.65	72.99 <sup>a</sup>	16.72	72.85 <sup>a</sup>	18.90	72.56 <sup>a</sup>	16.62	9.75	1.12-1.15
Extrinsic goal orientation	82.86 <sup>a</sup>	16.97	54.98 <sup>b</sup>	18.71	58.57 <sup>b</sup>	13.40	54.39 <sup>b</sup>	15.92	20.39	1.44-1.69
Task Value	54.39 <sup>b</sup>	15.79	72.53 <sup>a</sup>	15.64	76.80 <sup>a</sup>	17.86	77.78 <sup>a</sup>	16.32	13.66	1.12-1.44
Control	62.41	13.43	56.48 <sup>c</sup>	9.62	78.05 <sup>a</sup>	12.69	68.71 <sup>b</sup>	12.37	32.21	0.81-1.87
Competence	58.24 <sup>b</sup>	17.50	74.87 <sup>a</sup>	15.30	54.12 <sup>b</sup>	23.33	58.95 <sup>b</sup>	19.83	15.01	0.86-1.12
Self-efficacy	57.76 <sup>b</sup>	12.26	73.64 <sup>a</sup>	11.69	75.25 <sup>a</sup>	15.44	75.29 <sup>a</sup>	12.21	13.56	1.26-1.39
Test anxiety	60.98 <sup>a</sup>	19.82	61.75 <sup>a</sup>	26.25	42.85 <sup>b</sup>	25.57	69.40 <sup>a</sup>	24.28	8.45	0.73-1.06
Success-task	57.83 <sup>c</sup>	17.90	75.69 <sup>a</sup>	16.03	84.48	16.31	72.61 <sup>b</sup>	16.55	13.50	0.72-0.90
Success-environment*2	69.09 <sup>b</sup>	22.54	76.26	18.44	82.24 <sup>a</sup>	16.55	75.24	15.64	2.74	0.73
Success-effort	55.63 <sup>b</sup>	19.49	78.70 <sup>a</sup>	13.19	77.95 <sup>a</sup>	19.35	70.00 <sup>a</sup>	18.58	13.93	0.85-1.37
Success-ability	56.04 <sup>b</sup>	24.68	71.51 <sup>a</sup>	17.10	64.89	20.95	65.83	17.40	4.64	0.82
Failure-task	55.90 <sup>b</sup>	19.51	68.59 <sup>a</sup>	16.85	37.55 <sup>c</sup>	17.09	61.13	16.68	27.21	0.74-1.81
Failure-environment	58.91 <sup>a</sup>	21.41	65.50 <sup>a</sup>	19.50	38.77 <sup>b</sup>	14.62	64.28 <sup>a</sup>	19.79	17.70	1.05-1.26
Failure-effort	69.92 <sup>a</sup>	14.68	67.98 <sup>a</sup>	17.99	49.79 <sup>b</sup>	19.05	73.86 <sup>a</sup>	16.64	14.83	1.04-1.56
Failure-ability	61.68 <sup>a</sup>	21.32	68.81 <sup>a</sup>	18.47	42.85 <sup>b</sup>	19.09	69.29 <sup>a</sup>	15.33	19.64	1.04-1.46

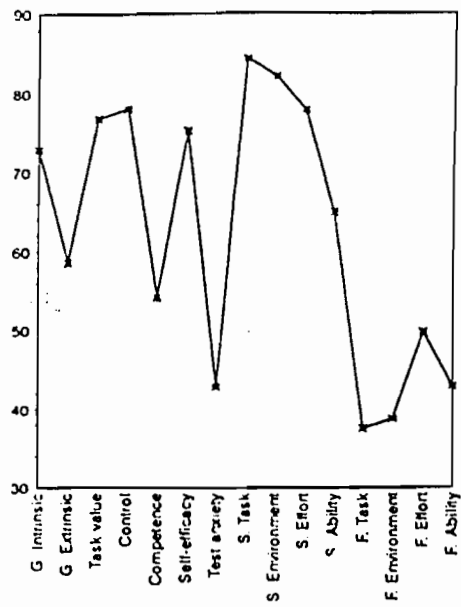
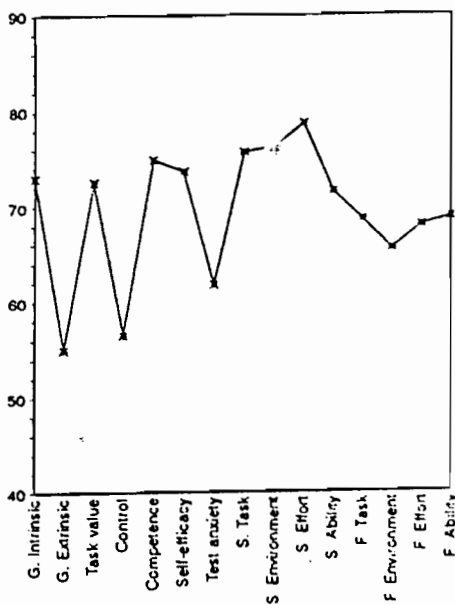
1. D F = 3; 203
2. F-values are significant at the 1% level, except for that of success-environment (5% level).
3. a b c indicates that significant differences in the variables exist between the clusters ( $p < 0.05$ ) applying Tukey's multiple comparison test.
4. Effect sizes:  $d < 0.2$ : small;  $d = 0.3-0.5$ : medium;  $d = 0.6+ =$  large (Cohen, 1977:79-81). The smallest and largest effect sizes for each variable are given.

All the variables in one way or another differ significantly at the 1% level of significance between the four clusters, except success attributed to environmental variables, of which the significance level was 5%. Students from **cluster 1** (N = 26) once again showed a more **extrinsic goal orientation**, than students from the other three clusters, since their means for extrinsic goal orientation (82.86) is much higher than their means for intrinsic goal orientation (53.57). They also attach less value to the task (54.39) and have a much lower perception of their self-efficacy (57.76) than students from cluster 2 (task value: 72.53; self-efficacy: 73.64), 3 (task value: 76.80; self-efficacy: 75.25) and 4 (task value: 77.78; self-efficacy: 75.29). Students from cluster 1 attribute success primarily to environmental factors (69.09) and failure to lack of effort (69.92), which is not quite in keeping with their extrinsically oriented goal orientation.

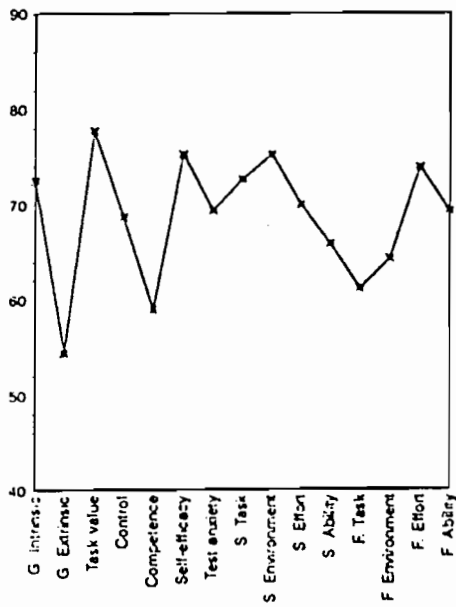
Students from the other three clusters can all be viewed to have more intrinsic goal orientations due to their high means on intrinsic goal orientation (72.99; 72.85 and 72.56), task value (72.53; 76.80 and 77.78) and self-efficacy (73.64; 75.25 and 75.29) and their low means on extrinsic goal orientation (54.98; 58.57 and 54.39). These three clusters do not differ as much as do the three intrinsic clusters found in mathematics. Cluster 3 and 4, for instance, only differ on control (cluster 3 is high on control:  $\bar{x} = 78.05$ , whereas cluster 4 is average with a mean of 68.71) and test anxiety (cluster 3 = 42.85; cluster 4 = 69.40). Both clusters (3 and 4) attribute success to extrinsic causes, but failure to lack of effort. In the context of history, which is often viewed to be a rather easy subject, this can be interpreted as follows: the task being easy, success can not be attributed to ability or overzealous effort; failure at this easy task, should it be attributed to ability, would imply very low intelligence; it is therefore more prudent to attribute failure to lack of effort. Based on the high level of control and low anxiety level, **cluster 3** students (N = 35) have the best **intrinsic goal orientation towards history**, whereas the higher anxiety level of cluster 4 students coupled with lower control, as with mathematics, leaves them with a classification of an **intrinsic, but anxious goal orientation**. Cluster 2 students differ from students from clusters 3 and 4 in that they show a much lower level of control ( $\bar{x} = 56.48$ ), a higher competency level (74.87), a better attribution pattern for success (namely to effort primarily) and a worse attribution pattern for failure (task or ability). The latter, coupled to low control, can be symptomatic of feelings of selfhelpless. Group 2 (N = 60) will be termed **intrinsic, but tending to be helpless**.



Graph 4.6 Intrinsic, but selfhelpless goal orientation



Graph 4.8 Intrinsic, but anxious goal orientation



\* The same can be said of the effect sizes for history as was said of mathematics (see par. 4.2.2).

#### 4.2.4 Comparison of mathematics and history clusters

##### Cluster 1: Extrinsic goal orientation.

As mentioned in paragraph 4.2.1 only three students from the total sample had an extrinsic goal orientation for both mathematics and history; the orientation towards the two subjects differed from the other students. Salient features of the two extrinsic

clusters are the higher extrinsic goal orientation variable of history students (82.86; mathematics: 74.11), the higher test anxiety manifested by mathematics students (75.15; history: 60.98) and the difference in attribution for failure: mathematics students attribute to the difficult task (thus protecting their self-esteem), whereas history students attribute to effort (already discussed in par. 4.2.3). With circumspection, the conclusion can be drawn that the higher difficulty level of mathematics leads to higher test anxiety in students with an extrinsic orientation.

### **Cluster 3: Intrinsic goal orientation.**

Eleven students showed the same intrinsic goal orientation for mathematics and history. Whereas 37% of mathematics students had an intrinsic goal orientation, only 17% of history students had this most positive orientation. Mathematics students had higher means on intrinsic goal orientation as variable, task value, competence and self-efficacy, while history students had higher means on extrinsic goal orientation as variable and control (the latter probably ascribable to the perception that the subject is less difficult, which is corroborated by attributing success to the easy task). Once again with circumspection, the conclusion can be drawn that an intrinsic goal orientation has more value for students who deal with a difficult subject rather than with an easier one, and thus influences their self-efficacy more, than otherwise.

### **Cluster 4: An intrinsic, but anxious goal orientation.**

Nineteen students had the same intrinsic but anxious goal orientation for both mathematics and history. Salient differences here are the much larger percentage of history students with this orientation (40% contrasted to 20% for mathematics), the higher level of control manifested by history students (68.71 contrasted to 61.07 for mathematics) and the much higher level of test anxiety of mathematics students (80.03, contrasted to 69.40 for history). The cause of failure for mathematics students (ability and the difficult task) partly explains the anxiety phenomenon. One can carefully conclude that since history is not in general perceived to be as difficult as mathematics, students do not tend to become quite as anxious in test circumstances as with mathematics.

### **Cluster 2: An intrinsic but teacher-dependent or helpless goal orientation.**

There is little similarity between the mathematics and history students in cluster 2, except that both have higher means for intrinsic than for extrinsic goal orientation as variables and that both show a relative lack of control (mathematics: 57.48 and

history: 56.48). Eight students showed this orientation towards both mathematics and history. On the other variables (except for the attributions) the history students have higher mean values than the mathematics students. The mathematics students, however, seem to be very dependent on environmental factors (the teacher mainly, but also peers) for both success and failure, whereas the history students attribute more to internal factors (effort for success and ability and task for failure). A very tentative conclusion can be drawn that both the mathematics and history students are too dependent and, coupled with their lack of control, will tend to become selfhelpless when faced with too much failure.

#### ***4.2.5 Conclusions concerning the clustering of students for mathematics and history***

The results indicate that these standard seven students differ in the type of goal orientation they have towards both mathematics and history; four different goal orientations were identified for each subject. Only 41 students (20% of the sample tested) had the same goal orientation towards both subjects. More than double the number of students from mathematics (mathematics: 75; history: 35) had the most positive intrinsic orientation, whereas far more students showed high anxiety towards history (N = 82) than towards mathematics (N = 49). Except for cluster 2, the clusters were typified by more or less the same characteristic patterns for both mathematics and history.

#### ***4.3 THE RELATIONSHIP BETWEEN GOAL ORIENTATION AND SUBJECT CHOICE (HYPOTHESIS 1)***

The first hypothesis addressed the question whether goal orientation affects the choice standard seven students have to make between mathematics and history. A two-way frequency analysis (goal orientation X subject choice) was performed for mathematics (see table 4.4) and history (see table 4.5) and the chi-square for each was computed to determine the probability level of perceived differences.

**TABLE 4.4:** Results of the frequency analysis performed for mathematics choice X goal orientation.

Goal orientation		Decision to take mathematics	
		Yes	No
1. Extrinsic orientation (N = 23)	N.	7	16
	Row percent	30.43	69.57
	Col. percent	8.14	13.68
2. Intrinsic, but teacher dependent (N = 56)	N.	23	33
	Row percent	41.07	58.93
	Col. percent	26.74	28.21
3. Intrinsic orientation (N = 75)	N.	33	42
	Row percent	44.0	56.0
	Col. percent	38.87	35.90
4. Intrinsic, but high anxiety (N = 49) Total = 203	N.	23	26
	Row percent	46.94	53.06
	Col. percent	26.74	22.22
Chi-square: value = 1.881; Prob. 0.599; Phi = 0.09*			

\* Small effect = 0.02, medium effect = 0.15 and large effect = 0.35.

Although a much lower percentage of students with the extrinsic goal orientation (30.43%) chose to carry on with mathematics, than students with the intrinsic goal orientation (respectively cluster 2: 41% , cluster 3: 44% and cluster 4: 47%), these differences in percentages were not significant ( $\text{Chi}^2 = 1.89$  (df=12, N = 203),  $p > 0.05$ ; Phi = 0.09).

To test the first hypothesis for history, namely that there is a relationship between goal orientation and subject choice, a two-way frequency analysis (goal orientation subject choice was performed) (see table 4.5). The chi-square was computed to determine the probability level of perceived differences.

**TABLE 4.5:** Results of the frequency analysis performed for history choice X goal orientation.

Goal orientation		Decision to take mathematics	
		Yes	No
1. Extrinsic orientation (N = 26)	N	10	16
	Row percent	38.46	61.54
	Col. percent	9.17	17.02
2. Intrinsic, but teacher dependent (N = 60)	N	33	27
	Row percent	55.00	45.00
	Col. percent	30.28	28.72
3. Intrinsic orientation (N = 35)	N	16	19
	Row percent	45.71	54.29
	Col. percent	14.68	20.21
4. Intrinsic, but high anxiety (N = 82) Total = 203	N	50	32
	Row percent	60.98	39.02
	Col. percent	45.37	34.04
Chi-square: value = 5.113; Prob. 0.164; Phi = 0.15			

\* Small effect  $d.$  = 0.02, medium effect  $d.$  = 0.15 and large effect  $d.$  = 0.35.

For history also, a smaller percentage of extrinsic goal-oriented students (38.46%) chose to carry on with history, than students with the intrinsic goal orientations (respectively cluster 2 = 55% , cluster 3 = 45% and cluster 4 = 60%), these differences in percentages were not significant ( $\text{Chi}^2 = 30.66$  ( $df = 12$ ,  $N = 203$ ),  $p < 0.002$ ;  $\text{Phi} = 0.39$ ). The first hypothesis could thus not be accepted.

#### **4.4 THE RELATIONSHIP BETWEEN GOAL ORIENTATION AND ACADEMIC ACHIEVEMENT**

To test the second hypothesis that there is a relationship between goal orientation and academic achievement, a one-way ANOVA was performed to determine the interactions between clusters and academic achievement, first in mathematics (see table 4.6) and then in history (see table 4.7). Tukey's Studentized Range test was used to test the significance of the differences between clusters. To test the educational significance of the ANOVA and Tukey measures, the effect sizes were determined using the following formula:

$$d = \frac{x_2 - x_1}{\sqrt{MSE}}$$

Where MSE = mean square error from the ANOVA.

The effect sizes for the 4 mathematics clusters were found to vary between 0.75 and 0.81 implying, according to Cohen (1977:223-227), that the interaction between goal orientation and academic achievement was of a high effect and could thus be accepted as educationally very significant.

**TABLE 4.6:** Results of the two-way analysis of variance with goal orientation on academic achievement for mathematics.

Source	DF	Type III ss	F value	PR > F
Cluster	3	1596	4.51	0.0044

**TABEL 4.7:** Effect size of goal orientation on academic achievement for mathematics.

	N	Mean	SD	d (effect)
Extrinsic goal	23	48.36 <sup>b</sup>		b/a <sub>1</sub> = 0.81 b/a <sub>2</sub> = 0.75
Intrinsic goal	75	56.55 <sup>a1</sup>		
Intrinsic, but teacher dependent	56	57.17 <sup>a2</sup>		
Intrinsic, but anxious	49	53.28		

\* d = 0.2: small effect; d = 0.5: medium effect; d = 0.8: large effect (Cohen, 1977:223-227).

For history, the Tukey test indicated no significant differences between clusters implying that there is no relationship between goal orientation and achievement in history.

**TABLE 4.8:** Results of the two-way analysis of variance with goal orientation on academic achievement for history.

Source	DF	Type III ss	F value	PR > F
Cluster	3	740	1.77	0.1548

#### 4.5 THE RELATIONSHIP BETWEEN GOAL ORIENTATION AND THE SCHOOL VARIABLES

To test the third hypothesis that there is a relationship between goal orientation and school variables, a frequency analysis (PROC FREQ, SAS Institute Inc., 1985) was done on goal orientations and school variables (with the focus on the teacher) to determine how many students of each school would be classified as having extrinsic/intrinsic goal orientations (table 4.9: mathematics; table 4.10: history). To determine whether the difference between motivational patterns and school variables was educationally significant a chi-square analysis was done. Since the chi-square probability value was as near to 1% as possible for both subjects (Mathematics:  $\text{Chi}^2 = 54.41$  (df = 12, N = 203),  $p < 0.001$ ; Phi = 0.52); (History:  $\text{Chi}^2 = 30.66$  (df = 12, N = 203),  $p < 0.002$ , Phi = 0.39) the perceived differences were significant.

##### 4.5.1 Differences in number of students per cluster between the schools for mathematics

TABLE 4.9: The relationship between school and goal orientation for mathematics.

Goal orientation		School 1	School 2	School 3	School 4	School 5	Total
Extrinsic goal orientation	Frequency	7	4	0	8	4	22
	Row pct.	30.43	17.39	0.00	34.39	17.39	11.33
	Col. pct.	15.91	10.26	0.00	21.05	9.30	
Intrinsic, but teacher dependent	N	27	11	3	5	10	56
	Row pct.	48.21	19.64	5.36	8.93	17.86	22.59
	Col. pct.	61.36	28.21	7.69	13.16	23.26	
Intrinsic goal orientation	N	4	16	22	14	19	75
	Row pct.	5.33	21.33	29.33	18.67	25.33	36.95
	Col. pct.	9.09	41.03	56.41	36.84	44.19	
Intrinsic, but high anxiety	N	6	8	14	11	10	49
	Row pct.	12.24	16.33	28.57	22.45	20.41	24.14
	Col. pct.	13.64	20.51	35.90	28.95	23.26	
Total		44	39	39	38	43	203
		21.67	19.21	19.21	18.72	21.18	100.00

\*  $\text{Chi}^2 = 54.41$  (df = 12, N = 203),  $p < 0.001$ ; Phi = 0.052.

Of the 44 students from *school 1* 27 (61.36%) had an intrinsic but teacher dependent goal orientation, contrasted to 29.02% of students from school 2, 7.69% from school 3, 13.16% from school 4 and 23.26% from school 5. Nearly 16% of students from school 1 had an extrinsic goal orientation. It would appear that the majority of students tested from school 1 (77.27) rely on extrinsic factors when dealing with mathematics. This is in direct contrast to students from *school 3*, of which none showed an extrinsic goal orientation and only 7.69% showed an intrinsic, but teacher dependent orientation. For school 3 the majority of students (56.41%) showed an intrinsic orientation. School 3, however, also had the highest percentage of students manifesting high anxiety, namely 35.90% contrasted to 13.64% for school 1, 20,51% for school 2, 28.95% for school 4 and 23,26% for school 5.

Students from schools 2, 4 and 5 did not show such marked differences in how they clustered as did students from schools 1 and 3. More students from school 2 were intrinsically motivated (41.03%) than extrinsically motivated (10.26%). School 4 did not show much difference between extrinsically motivated student numbers (21.05%) and intrinsically motivated ones (36.84%).

These results indicate that school variables, in this research teacher and peer group, have an influence on students' goal orientations and thus need to be considered when research on motivation is undertaken.

#### 4.5.2 Differences in number of students per cluster between the schools for history

**TABLE 4.10:** The relationship between school variables and goal orientation.

Goal orientation		School 1	School 2	School 3	School 4	School 5	Total
Extrinsic goal orientation	Frequency	11	0	2	6	7	26
	Row pct.	42.31	0.00	7.69	23.08	26.92	12.81
	Col. pct.	25.00	0.00	5.13	15.79	16.28	
Intrinsic, but selfhelpless	N	8	12	4	4	7	35
	Row pct.	22.86	34.29	11.43	11.43	20.00	17.24
	Col. pct.	18.18	30.77	10.26	10.53	16.28	

**TABLE 4.10:** The relationship between school variables and goal orientation.

Goal orientation		School 1	School 2	School 3	School 4	School 5	Total
Intrinsic goal orientation	N	17	10	18	21	16	82
	Row pct.	20.73	12.20	21.95	25.61	19.51	40.39
	Col. pct.	38.64	25.64	46.15	55.26	37.21	
Intrinsic but high anxiety	N	8	17	15	7	13	60
	Row pct.	13.33	28.33	25.00	11.67	21.67	29.56
	Col. pct.	18.18	43.59	38.46	18.42	30.23	
Total		44	39	39	38	43	203
		21.67	19.21	19.21	18.72	21.18	100.00

\*  $\chi^2 = 30.66$  (df = 12, N = 203),  $p < 0.002$ ; Phi = 0.39.

*School 1* had the highest percentage of students manifesting an extrinsic goal orientation, namely 25%, contrasted to 16.28% of students from school 5, 15.79% from school 4, 5.13% from school 3 and none from school 2. School 1, however, also had the lowest percentage of students with high anxiety (18.8) contrasted to 43.59% for school 2, 38.46% for school 3, 30.23% for school 5 and 18.42% for school 4. *School 3* once again had a high percentage of students with an intrinsic goal orientation (46.15%), as has school 4 (55.26%). *School 2* has the highest percentage of students with a selfhelpless tendency (30.77%), as well as high anxiety (43.59%). Students from *School 4* are mostly (55.26%) intrinsically oriented, whereas students from *School 5* are evenly distributed over externally motivated (Cluster 1 and 2 = 32.56%), intrinsically motivated (37.21%) and highly anxious (30.23%).

Hypothesis 3 can thus be accepted.

#### 4.6 THE RELATIONSHIP BETWEEN GOAL ORIENTATION AND STUDENT AGE

The chi-square analyses to test for possible age relationship with the different motivation clusters (for mathematics and history) was done, but there was no significant relationship between the student age and goal orientations. The results indicated that cluster membership was not associated with age (for mathematics,

$\chi^2 = 35.80$  ( $df = 12$ ,  $N = 203$ ),  $p < 0.79$ ;  $\phi = 0.43$ ; for history  $\chi^2 = 23.57$  ( $df = 12$ ,  $N = 203$ ),  $p < 0.21$ ,  $\phi = 0.34$ ). It became evident that there is no relationship between the age of these standard 7 students and goal orientation. The fourth hypothesis can therefore not be accepted.

#### **4.7 DISCUSSION OF THE RESULTS**

The results of the cluster analyses (for mathematics and for history) confirmed that different patterns of goal orientations exist, as had previously been found by other researchers, among others Meece and Holt (1993), Blumenfeld (1992), Wood, Schau and Fiedler (1990) and Ames and Archer (1988). Whereas Dweck (1989:89), Wood, Schau and Fiedler (1990:2-3) and Ames (1992:263) identified two goal orientations, and Meece and Holt (1993:582) and Archer (1994:430) three, this research identified four. The classification of the first three mentioned researchers into a mastery or learning orientation (implying a more intrinsically-oriented orientation) and an achievement or performance orientation (more extrinsically-oriented) was, however, also found in this research although very few pupils manifested an exclusively extrinsic orientation ( $N = 23$  for mathematics and  $N = 26$  for history). Three of the four groups identified by this research had intrinsic orientations; although only one of the three groups (group 3;  $N = 75$  for mathematics and  $N = 35$  for history) showed an exclusively intrinsic orientation (i.e. a mastery orientation). One of the other two groups, namely group 2, showed some negative, or more extrinsically-oriented characteristics together with the intrinsic orientation, whereas the last group (group 4) manifested a too high level of anxiety. The classification of group 2 into intrinsic, but teacher dependent concurs somewhat with what has been found by Meece and Holt (1993:585). These researchers also identified three different goal orientations, namely a task-mastery orientation of which the students manifested the desire to learn new skills and competences; a combined mastery-ego orientation, of which students placed equal emphasis on both task-mastery and ego-social goals. The third group with a low mastery-ego orientation was typified by high work-avoidant scores. The findings that different goal orientations exist can thus be accepted; the questions that remain are: How many different goal orientations are there? Are the types of goal orientations related to cultural factors and developmental age? How do different goal orientations differ?

The answers to the first and second questions will only be divulged through further research, since this research found no answers to the relationship between culture or

age and goal orientations. Other researchers (Nicholls, 1984; Stipek & Daniels, 1991) did find relationships between goal orientation and age, however. According to Nicholls (1984:66) younger children do not differentiate between effort and ability attributions for achievement, whereas junior high school students do. The latter group has a tendency to be influenced by external pressures, which invariably determine the development of an ego-orientation (Stipek & Daniels, 1991:201-211). Though this research also dealt with middle school students, no relation was implicated. This could be due to the fact that the American students used by Stipek and Daniels (1991) did not manifest such a wide agespan as was the case for the students used in this (the Khabele) study. Traditionally Black schools in South Africa often have a very wide agespan (between 2 and 8 years) in one standard.

Some research has also been done on cultural differences in goal orientation. Researchers like Brown (1990:305), Patterson, Kupersmidt and Vaden (1990:485) and Keith and Benson (1992:89-90) found that cultural differences, implying differences in values they attach to learning or education, have a great impact on goal orientation among American children. Patterson, Kupersmidt and Vaden (1990) noticed that White children from a better socio-economic background performed better than Black students from a disadvantaged background. Since there are cultural differences in goal orientation among culturally different Americans and in view of the multicultural classrooms, it would be wise to do some further research on goal orientation, using students from different cultural groups in South Africa.

This research gives some tentative answers to the last question concerning the differences between goal orientations. Consistent with the research done by Dweck (1989), Graham and Golan (1991) and Ames and Archer (1988) the main differentiating feature between different goal orientations is to be found in the intrinsic-extrinsic dimension, coupled with task value perceptions. As in this research (and for both subjects), Graham and Golan (1991:193-194) and Ames and Archer (1988:260-267) found that students with intrinsic goal orientations (i.e. mastery-oriented students) reported a higher level of task value than students with an extrinsic goal orientation (i.e. achievement-oriented students). An intrinsic orientation is normally also accompanied by high levels of self-efficacy and control, however (Dweck, 1989:89; Archer, 1994:431).

Only students from cluster 3 for both mathematics and history showed high levels of both control and self-efficacy, and that is why this group was classified as having an exclusively intrinsic goal orientation. Group 3 also showed another characteristic

typical of a mastery orientation, namely low test anxiety (Schuster, Försterling & Weiner, 1989:193). Based on the information gained from the MSLQ alone, it would be safe to conclude that group 3-students had a mastery orientation, whereas group 1-students (the exclusively extrinsically-oriented group for both subjects) had a performance or achievement orientation (being high on extrinsic factors and test anxiety, and low on intrinsic factors, task value, control and self-efficacy). Group 4 showed the same features as group 3 (and for both subjects), except for the rather high level of anxiety (especially the mathematics group).

Cluster 3 also showed a good attributional pattern in that students attribute failure to lack of effort - an internal, unstable, controllable factor - which means that such students take responsibility for their actions. The extrinsic group however, attributes success to easy tasks and failure to task difficulty. As indicated by Schuster, Försterling and Weiner (1989:193) a group that attributes to an uncontrollable factor anticipates failure, and thus become anxious (note the high anxiety level of cluster 1), avoid tasks it believes to be difficult, since it thinks outcomes are beyond its control.

Graham and Long (1986:7) reported that the understanding of the attributional causal dimensions for both Black and White American students in the 7th grade was more or less similar. Black students, however, anticipated to be highly praised for their success, even if it was the result of external and uncontrollable causes. The attributional results of this research, thus also call for a cross-cultural investigation into the motivational patterns of students in multi-cultural classrooms in the new South Africa.

Meece and Holt (1993:587-589) found a high correlation between mastery and ego goals. Contrary to this findings the present study found no relationship between these two goals (intrinsic and extrinsic). In this study cluster 1 (extrinsic) constantly and negatively differed from the other three groups, and that is in line with most correlational studies (Ames & Archer, 1988; Meece *et al.*, 1988; Nolen, 1988), that report little or no relation between students' mastery and ego goals.

The results of this study also showed that very few students had the same orientation towards both subjects (see par. 4.2.5). This is in line with what Schunk (1991) and Dweck (1989) suggest when they state that subjects which differ in terms of difficulty level, nature and content evoke different motivational orientations. The majority of these standard seven students manifested different types of goal orientations towards

mathematics and history. Since the clusters differed significantly, their relationship to the two subjects, namely mathematics and history were tested.

#### **4.7.1 *The relationship between goal orientation and subject choice***

Scott (1991:90), Dweck (1989:296) and Kroll (1988:338), suggest that an intrinsic goal orientation influences the choice of complex thought-provoking tasks, whereas an extrinsic goal orientation leads to the choice of tasks of an average-to-easy difficulty level (Dweck, 1986:1047).

Goal orientation can thus be accepted to be domain-specific and is related to the value a student assigns to the task. The domain-specificity of the relationship between motivational variables (in this instance values) and subject choice was tested by Feather (1988) with regard to mathematics and English. The results indicated that students who valued English more, chose humanities while those who assigned more value to mathematics, enrolled for science courses at a tertiary level. Other researchers like Young, Arbretton and Midgley (1992) investigated whether students distinguish between content areas with regards to goal orientation. They reported that the students they tested developed motivational patterns specific to each content area and also used strategies that were appropriate to each area. History students (social science), they noticed, tended to develop ability goals (ego orientation) and were inclined to use surface strategies whereas mathematics students developed mastery orientations and used deep processing strategies.

Different content areas, together with instructional method used when these subjects are taught, have been reported to generate different motivational patterns in the classroom (Feather, 1988). The results of this study however, did not show any relationship between goal orientation and the choice between mathematics and history. The difference in results can be due to the fact that Feather's (1988) study was conducted on university students who have well established subject values, in contrast to this study (Khabele-study) which was conducted on middle school students who might not as yet have developed any significantly different value systems for the subjects they learn in school.

#### **4.7.2 *The influence of goal orientation on academic achievement***

Schunk (1991:243) and Ames (1992:263) reported that students with intrinsic goals were oriented towards developing new skills and they perceived themselves to be participating in the task for reasons such as mastery and challenge. They therefore performed well since when they failed, they either intensified effort or changed their learning strategies and thus succeeded.

The Khabele-study revealed that the intrinsic mathematics group had higher mean scores on intrinsic goal variables such as task value, competence and self-efficacy, than the history group. This result is in line with Williams' (1994) findings when she reported that the relationship between efficacy and performance was stronger in mathematics than in any other content areas (English, reading and science). This implies that performing and succeeding in a difficult subject like mathematics, motivate students intrinsically thus enhancing their self-efficacy, which in turn leads to better academic performance.

The results of this study have educational implications, implying that student efficacy expectations in mathematics are of significant importance. This suggests a need for teachers to implement instructional methods that aim at enhancing efficacy expectations through performance feedback.

Extrinsic goals encourage students to participate in a task for reasons such as grades and rewards. Such students are therefore characterised by high anxiety since the judgement might be that one lacks ability if one fails. Such an orientation evokes feelings of shame and helplessness which lead to unmotivated behaviour which in turns, gives rise to poor academic achievement (McCombs, 1994:206). In this study the extrinsic mathematics group manifested higher test anxiety mean scores (75.15) than the history extrinsic group (60.98), probably because mathematics was perceived as being much more difficult than history. This is corroborated by the attributions of task difficulty for failure in mathematics.

The result of this study thus indicated a relationship between goal orientation and academic achievement in mathematics, but not in history.

#### **4.7.3 *The relationship between goal orientation and the school variables (focusing on the teacher)***

It was further hypothesized that the influence of the school (with a focus on the teacher) leads to the development of a specific goal orientation, since students' goal orientation is in part influenced by the teacher's self-efficacy, level of training and teaching experience.

In this study, school three differed from the other four schools in that most of its students were intrinsically motivated (see table 4.7 and 4.8). The difference may in part be assigned to the fact that school 3 is located in Mmabatho, the capital town of the North West Province, whereas the other four schools are located in the rural villages around Mmabatho. According to Le Roux (1993:106-107) teachers in urban areas are better qualified than those teaching in rural areas and are exposed to slightly better teaching materials. Rural village students have a greater problem with proficiency in the language of instruction (English) than do students living in towns. Such students struggle with the understanding of academic concepts and terminology since most of the terms and ideas are less easy to grasp. Rural Black students therefore, become emotionally insecure, low in self-confidence and thus feel threatened by even attending school.

The teachers' sense of self-efficacy not only influence students' academic achievement but also their cognitions about performance expectancies and the appraisals they experience in the classroom (Coladarci, 1993:323-337). Corno (1988:181-202) noticed that students of highly efficacious mathematics teachers have positive thoughts about their ability to perform in this subject, and enjoy and actively engage in given tasks. Teachers with high self-efficacy levels not only use conventional instruction but also use motivational strategies to involve children in activities, adapt tasks to students' interests, and give them more control and choice. Such instructional skills appeal to students and lead to the development of an intrinsic goal orientation (Hootstein, 1994:214).

Czerniak and Chiarelott (1990:49-58) also noticed that innovative techniques, such as motivating students and focusing on meanings, lead to the development of an intrinsic interest in the task, and thus develop an approach that is associated with a mastery orientation. Students of such teachers enjoy schooling and seem to be positive about school and its outcomes. One might therefore deduce that students from school 3

differ from students from the other 4 schools partly, due to the influence of teacher variables.

#### **4.7.4 *The relationship between student age and goal orientation***

According to Harter *et al.* (1992:778), older students (8th grade) are more likely to adopt an extrinsic orientation towards school work than younger students, since they are easily influenced by environmental factors such as peers, and achievement feedback.

Farmer *et al.* (1991:127-140) found that younger children do not differentiate between ability and effort attributions for achievement, whereas older high school students do. The latter group has a tendency to adopt domain-specific attributions which have an influence towards the development of students' expectancies, task value and a specific orientation (Dweck, 1986:1040).

The research studies cited show that motivation in general, the attributional styles in particular, and achievement of students differ and progressively change with age. This study, however, found no relationship between student age and goal orientation.

The results of this study has educational implications, implying that students at the middle school level, have to be trained to value what they have in terms of type of school, type of teachers and learning conditions. These students also have to be trained to attribute to an internal, controllable factor like effort so as to reduce the teacher-dependent type of orientation, and thus learn to control their own efforts and learning strategies. The training would in turn change their orientation towards performing in science subjects and schooling as a whole.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 INTRODUCTION**

The main aim of this study was to empirically determine the relationship between goal orientation, subject choice and academic achievement of standard 7 students in the Molopo region. To attain this aim, a literature review was first undertaken by means of which the nature of the above-mentioned variables and the relationships between the variables, were determined (viz. Chapter 2). Attention was also given to the influence external variables, the school and the teacher in particular, have on students' motivational patterns. Following the literature study, the empirical study was undertaken, of which the method was reported in chapter 3 and the results and discussion were reported in chapter 4.

In this last chapter a summary of the literature study and conclusions drawn from this review is first given (viz. par. 5.2), followed by a summary of the empirical research and results (viz. par. 5.3). The limitations of the study are stated in paragraph 5.4 and recommendations for further research are made in paragraph 5.5.

#### **5.2 THE LITERATURE STUDY**

A summary of the literature study will first be given (5.2.1), followed by the conclusions drawn (5.2.2).

##### **5.2.1 Summary of the literature study**

The literature study revealed learning motivation to be a very complex construct, manifesting a cognitive, affective and conative aspect, as well as other characteristics, such as intensity and direction (viz. par. 2.2). It was found that motivation needed to be placed in a specific context before it could be analysed or described lucidly. The value-expectancy framework was used for this purpose (viz. par. 2.3), since it relates the value students attach to any learning task, and their expectancy to succeed at the task, to the actions and strategies they employ for learning, and to the outcomes of the learning endeavour.

*The expectancy component* was found to be related to attributional beliefs, and perceptions of control and self-efficacy (viz. par. 2.4.1, 2.4.2 and 2.4.3).

Attributional beliefs refer to the perceptions students develop about what causes their learning outcomes. These causes (among others: ability, effort, teaching variables and task characteristics) were found to differ in locus of causality (internal vs external), variability (stable vs variable), and controllability (controllable vs uncontrollable). The dimension of control was found to relate closely to the perception of self-efficacy, which is the judgement that the student has about his/her ability, competence and the skills to organize his/her actions in order to perform in the classroom. Students who doubt their ability to perform become demotivated to learn while those that have a positive judgement of their abilities are motivated and perform better. Doubt about the ability to perform thus relates to perceptions about control over the variables of which ability consist (be they intelligence, effort, skills or knowledge).

*The value component* was found to be related to the orientations students manifest toward goal attainment (viz. par. 2.4.1). Two goal orientations were stated, namely a mastery orientation, meaning that competencies and skills gained through hard work are important to the learner; and an ego orientation which values social approval gained through marks and grades. Goal orientation determines the type of learning strategies the student will use for processing information and performing the task: A student with a mastery orientation aims at acquiring both what is to be learnt (i.e. content knowledge) and the skills involved in learning, thus understanding what he learns. An ego-oriented student aims at outperforming others and demonstrating to them that he is capable. Such a student easily becomes discouraged and has a tendency of using surface processing learning strategies.

Goal orientation influences learning in various ways. A mastery orientation develops to a high sense of self-worth and positive beliefs about self-efficacy in students, irrespective of whether difficulties were encountered and what the learning results in terms of grades were. The only provision is that a series of respected failures should not be experienced. An ego orientation, on the other hand, is dependent on high grades for high self-esteem and self-efficacy; failure, especially when repeated, invariably affects the student negatively. When ego-oriented students encounter difficulties in performing a learning task, anxiety is evoked and they soon lose interest in the task. A mastery orientation consequently stimulates more responsibility and self-confidence in students than an ego orientation.

Another benefit of a mastery orientation is that it stimulates the choice to accept challenging task/subjects whereas an ego orientation stimulates the choice of easy tasks/subjects. Mastery-oriented students effectively spend their effort while ego-oriented students might withhold it in order to avoid inferences of low ability. A mastery orientation lastly leads to better understanding, although not always higher achievement whereas an ego orientation leads to parrotlike memorisation and poor academic achievement in tasks or subjects that test students' problemsolving or abstract thinking skills.

The literature revealed that goal orientation could be changed, thereby improving both attributions and self-efficacy, as well as learning strategies. It was found that a negative orientation could be improved by de-emphasizing evaluation and grades. Educators should, instead, try to re-emphasize the importance and interest of the subject taught, relating it to students' daily experiences. It could also be changed by teaching students effective ways of spending their effort; and by building up their sense of self-worth through helping them to tackle and successfully accomplish certain tasks. Goal orientation could also be changed by helping students change their attributional style, which would in turn alter their causal cognitions about behavioural outcomes, since ascribing failure to lack of effort reduces anxiety (viz. par. 2.5.4).

Providing feedback that aims at improving problem areas, through the use of trainable metacognitive strategies like planning, note-taking and information organisation could also improve negative orientations students have (viz. par. 2.5.4).

It was also found that *student age* impact on goal orientation (viz. par. 2.6.5) since it brings about differences in children's perceptions of ability and their reactions to similar outcomes. The differences as such have the following educational implications:

- Children from the middle school are more self-centered than younger children.
- They are also aware of themselves and their performances in relation to that of their peers.
- For middle school students conceptions of ability depend on how well others perform and high effort implies low ability and thus they tend to use defensive strategies.

Finally, the literature revealed the influence of teacher variables on students' goal orientation. Students' characteristics interact with environmental variables to produce

student goal orientation and achievement. Environmental variables include teacher's self-efficacy, level of educational training and experience.

It was found that students of efficacious mathematics teachers have confidence in their ability to perform mathematics tasks and they enjoy the subject, since their self-efficacy is enhanced by succeeding in a difficult task; thus they experience intrinsic rewards. Students of inefficacious mathematics teachers doubt their ability to perform in mathematics, hence their self-efficacy suffers through personal failure. Poor instruction was lastly found to lead to the development of an ego orientation.

The degree and type of control teachers have over students, their planning, techniques and attendance to individual needs, improve with teaching experience, this leading to a positive goal orientation in students.

### **5.3 SUMMARY AND CONCLUSIONS OF THE EMPIRICAL RESEARCH**

#### **5.3.1 Summary of the method of research**

Two hundred and three (N = 203) students from five (5) middle schools formed the sample used in the empirical research (par. 3.4). A questionnaire was used to measure students' goal orientation, and attributional style. Information on the control variables and the dependent variables were obtained by means of a biographical questionnaire.

The aim of the research was to determine the effect goal orientation has on the subject choice and academic achievement of standard 7 students. Students' age, gender and teacher-related variables were used as control variables. The marks attained in mathematics and history for the June-examination were used as one of the dependent variables, the other one being the choice between mathematics and history as a subject for standard 8.

Ward's Minimum-Method of clustering, frequency analyses, analyses of variance, the chi-square test and the effect size were used to analyse the data.

#### **5.3.2 Summary and Conclusions of results**

The clustering procedure, which classified the students according to their goal patterns, identified four groups. Three groups (2, 3 and 4) were intrinsically-oriented but differed in that cluster 3 demonstrated an exclusively intrinsic orientation while cluster

2 was intrinsic but teacher dependent and cluster 4 intrinsic but highly anxious. Cluster 1 demonstrated a truly extrinsic pattern and constantly differed from the other groups on all variables.

The results and conclusions are given in accordance with the two main hypotheses and the two secondary hypotheses for the two subjects.

#### ***5.3.2.1 Goal orientation influences the choice standard 7 students make between mathematics and history***

A two-way frequency analysis was performed for mathematics versus history and the choice between the two subjects, and the chi-square was computed. No relationship was found between goal orientation and the subject choice.

These results were contradictory with other research findings (par. 2.6) that goal orientation appeared to influence choice of subjects. Further research still needs to be conducted in this regard using:

- different students from the more rural areas of the Nort West Province, and
- cross-cultural samples aimed at identifying the effects of goal orientation on subject choice.

#### ***5.3.2.2 Goal orientation influences academic achievement***

This study found that goal orientation relates to academic achievement in mathematics, but found no interaction between goal orientation and history. Since history is generally perceived to be less difficult than mathematics, it might be that motivation plays a bigger role in achievement of the more difficult subject.

Further implications are the following:

- students beliefs about their ability to perform well in mathematics depend on personal factors as well as environmental factors;
- personal factors, such as prior achievement, in mathematics have a greater impact on future performance than in history, and

- the nature of the subject as well as the teacher's self-efficacy in teaching mathematics have a greater influence on achievement in mathematics than in history.

### **5.3.2.3 *The relationship between the school variable (with the focus on the teacher) and goal orientation***

This study found an interaction between goal orientation and the school variables implying that:

- schools differ in terms of the number of qualified teachers, level of training/education and the general approach towards learning and schooling.

### **5.3.2.4 *The relationship between students' age and goal orientation***

This study found no relationship between goal orientation and age, implying:

- these standard 7 students in the Molopo region of the North West Province have not yet attached any subjective value to the different subjects they learn, and
- instead, they learn in order to achieve a pass and be promoted to the next class.

## **5.4 *LIMITATIONS***

The limitations of the empirical research related to the following:

- the measuring instruments, and
- statistical analyses performed.

The 1988/89 version of the Motivated Strategies for Learning Questionnaire (MSLQ) which had been constructed for use with college students was used in this research, although a version of the same questionnaire exists for junior high school students (Pintrich & De Groot, 1990). A more recent version for college students also exists (Pintrich *et al.*, 1991), but was not in the care of the researcher at the time this research was conducted. Any one of the last-mentioned two versions of the MSLQ might have rendered somewhat different results. Care had, however, been taken to contextualise the 1988/89 college version for use with junior high school students.

The Mathematics Attribution Scale (MAS) was constructed for use with American students. The events in the MAS could perhaps have been made more culturally relevant, which, once again, might have rendered different results. The students used in this research are also not used to such types of self-evaluatory questionnaires. They thus spent a long time answering the questionnaire and might have experienced some frustration that could have contaminated the results.

### *Statistical analyses*

Path analysis might have rendered better results in the interactions and the path of the instrument of motivational variables. Ward's method of clustering has, however, been used for the first time in investigating the relationship between goal orientation and subject choice with a South African sample.

## **5.5 RECOMMENDATIONS FOR FURTHER RESEARCH**

The research was aimed at exploring the influence goal orientation has on subject choice and academic achievement, and to identify its relationship with the school variables and age. It is recommended that further research be conducted:

- to construct a measuring instrument to measure most aspects of motivation in the South African context;
- to plan programmes aimed at improving Black students' orientation towards the natural sciences;
- in the planning of inservice programmes aimed at improving teaching techniques, necessary for motivating students, and
- in the new South Africa educational system with culturally diverse classrooms, to investigate whether there are any differences in motivational patterns, between students of different ethnic groups.

## **5.6 FINAL REMARK**

The complexity of learning motivation renders it an extremely interesting construct to research. The same complexity, however, is the cause of very contradictory results: one researcher might find a relationship between subject choice and motivational variables, whereas another might find no interaction whatsoever. Is there any purpose

in researching learning motivation at all? Yes indeed, since each new finding with a different sample not only broadens the motivational framework, but might in the end, lead to a more lucid synthesis and a clearer perception of what really does motivate students to learn, and what doesn't.

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# ***ADDENDUM A***

***The adapted and translated version for history and mathematics of the  
Motivated Strategies for Learning Questionnaire (MSLQ)***

Barutwa ba farologana jaaka dirutwa di farologana. Ka jalo, barutwa ba rata kgotsa ba thopa dirutwa tse di rilang fa ba bangwe ba rata kana ba thopha tse dingwe. Ke ka moo o bonang ngwaga o o latelang morutwana a tswelala ka dirutwa dingwe, mme a tlogela tse dingwe. Dipotsolotso tse di latelang di ikaeletse go go thusa ka thopho. Go tswa mo Potsolotso e go ka lemogwa gore a o thoholeletsegile go tswelala ka serutwa sa mathematics ngwaga o o tlang kgotsa o tseye mofuta mongwe wa serutwa jaaka History (Ke sekao fela e seng tota History). Go ka go tswela mosola go araba Potsolotso e ka boammaaruri.

O tla araba Potsolotso ya ntsha (Potsolotso 1) ka serutwa sa Mathematics. O tla fiwa pampiri ya go arabela ka sethogo sa "mathematics : Potsolotso 1"; e na le dipotso di le 40. Morago ga Potsolotso e, o tla fiwa Potsolotso ya bobedi (Potsolotso 2 : Mathematics) ka serutwa Mathematics. Sethogo sa pampiri ya go arabela ke : mathematics : Potsolotso 2, e na le dipotso di le 32. Tsweetswee bontsha dikarabo tsa gago tsotsha mo pampiring ya go arabela, gape o se ka wa kwala sape mo dipotsolotso.

Morago ga go lkhutsa o tla araba dipotsolotso tse pedi tse di tshwanang le e o a arabileng pele, me ka serutwa sa History. Dipotsolotso tse pedi tse le tsona di tla nna le dipampiri tsa go arabela tsa tsona.

### POTSO 1

Dipotso tse di latelang di bota ka ga tlhabe go ya gagwe le boitshwarelo ba gagwe ka ga dirutwa tse pedi. Gakologelwal ga go na dikarabo tse di siameng le tse di sa siameng, araba ka nepagalo fa go ka kgonega. Dirisa sekao se se fa tlase go araba dipotso. Fa o nagana gore polelo ku nnetu tota mo go wena, tshwaya nomore ya bosupa (7) ka sediko. Fa o nagana gore polelo ga se nnetu epe mo go wena, tshwaya nomore ya bonngwe (1). Fa polelo e le ganyne kgotsa gagolonganya fela, tshwaya nomore e o dumelang mo o ka ipayang gone.

1	2	3	4	5	6	7
Nnote epe mo go nna						nnote tota mo go nna

- Ke tlotlomatsa diteng tsa serutwa tse di gwethang gore ke kgone go ithuta sengwe se sentsha.
- Fa ke batla go amogela maduo a a itumedisang mo serutweng se go tswa mo go nna fela.
- Fa ke itshwantshanya le baithuti ba bangwe mo serutweng se, ke nagana gore ke na le bokgoni ba go kwala bo bo gaisang.
- Ke rata mokgwa wa tiro wa serutwa se.
- Ke nagana gore nka dirisa se ke se ithutang mo serutweng se mo dirutweng tse dingwe.
- Ke dumela gore nka amogela maduo a a kwa godimo dimo mo serutweng se.
- Ke tlhomamisa gore nka tlhaloganya tiro e e leng thata mo bukeng ya mo serutweng se.
- Go amogela maduo a a kwa godimo mo serutweng ga se maikaelelo a me
- Fa ke araba teko mo serutweng se ke nagana ka dipotso tse ke sa yeng go di kgona.

- Go botlhokwa gore ke ithute diteng tse di leng teng mo serutweng se.
- Fa ke itshwantshanya le baithuti ba bangwe ke nagana gore ke na le mokwa o o siameng wa go ithuta go ba gaisa.
- Ke solofela gore nka kgona go ithuta diteng tse ke di rutiwang mo serutweng se.
- Fa nka kgona, ke batla go amogela maduo a a kwa godimo go gisa baithuti ba bangwe mo serutweng se.
- Fa nka amogelo maduo a a kwa godimo mo serutweng se, selo se se tlabo se diragetse ka gore morutabana o re ruta ka mokwa o o itumedisang, o o siameng.
- Fa ke kwala diteko ke na le go nagana gore go ka diragala eng fa nka se falole teko e.
- Fa ke itshwantshanya/ipapisa le baithuti ba bangwe mo serutweng se ke nagana gore ke moithuti yo o siameng.
- Ke tlotlomatsa tiro e e ntshegetsang mo serutweng se le fa se le thata.
- Ke na le kgatlhego mo go tse di ithutang ma serutweng se.
- Fa ke sa amogele a a kwa godimo mo serutweng se, molato e tlabo e le morutabana.
- Ga ke je monate, ke a tshwenyega fa ke kwala ditlathlatho.
- Ke solofela gore ke tla dira ka natla/ka thata fa nka fiwa tiro ya kwa gae kgotsa teko mo serutweng se.
- Ke ikaelela go amogela maduo a a kwa godimo mo serutweng se.
- Maikaelelo a magolo a me ke go ithuta thata ka ga serutwa se.
- Ke nagana gore se ke se ithutang mo serutweng se, se tla ntwela mosola.
- Fa ke na le nako, ke ithopela tiro ya kwa gae e e nkgwetlhang le fa e sa ye go dira gore ke tle go oketsa maduo a me mo hofelong.
- Fa ke ipapisa le baithuti ba bangwe ke nagana gore ke na le maitshetlego le kitso go ba gaisa mo serutweng se.
- Fa ke sa amogele maduo a a kwa godimo e tlabo e le ka gore morutabana ga a rate baithuti ba ba tshwanang le nna.
- Go tlhaloganya diteng tsa serutwa se, go botlhokwa mo go nna.
- Fa ke batla go amogela maduo a a kwa godimo mo serutweng se go tla tswa mo go nna gore a leka thata kgosa ke repisitse.
- Ke utlwa gore pelo ya me e a tshoga fa ke kwala ditlathlatho, e bo e rorome.

33. Fa nka amogela maduo a a kwa godimo mo serutweng se e tlabo e le gore diteko le dilbathobo di ne di se thata.
34. Ke thopa tiro e ke e itseng e e seng thata gore ke kgone go nna le maduo a a kwa godimo.
35. Go itshwantshanya le baithuti ba bagwe ke nagana gore ke tla amogela maduo a a kwa godimo.
36. Fa ke kwala teko ke na le go nagana gore ke tlile go amogela maduo a a kwa tlase go na le baithuti ba bangwe.
37. Ke nagana gore go amogela maduo a a kwa godimo go tla mpulela tsela go amogela tiro e e tla intumedisang.
38. Ke dumela gore nka kgona go tlhaloganya diteng tse di leng thata mo serutweng se, fa morutabana a ka di tlhalosetsa.
39. Fa ke amogela maduo a a kwa mo sertuweng se e tlabo e le gore ke ne ke sa iteka thata.
40. Ke nagana gore mekwa ya me ya go thuta e siame go gaisa baithuti ba bangwe.

Name of student: \_\_\_\_\_

Name of school: \_\_\_\_\_

### ANSWER SHEET FOR HISTORY:QUESTIONNAIRE 2

Card number  (1)

a	1	2	3	4	5	6	7	15	1	2	3	4	5	6	7	(16)	
b	1	2	3	4	5	6	7	16	1	2	3	4	5	6	7	(17)	
c	1	2	3	4	5	6	7	17	1	2	3	4	5	6	7	(18)	
d	1	2	3	4	5	6	7	18	1	2	3	4	5	6	7	(19)	
1	1	2	3	4	5	6	7	(2)	19	1	2	3	4	5	6	7	(20)
2	1	2	3	4	5	6	7	(3)	20	1	2	3	4	5	6	7	(21)
3	1	2	3	4	5	6	7	(4)	21	1	2	3	4	5	6	7	(22)
4	1	2	3	4	5	6	7	(5)	22	1	2	3	4	5	6	7	(23)
5	1	2	3	4	5	6	7	(6)	23	1	2	3	4	5	6	7	(24)
6	1	2	3	4	5	6	7	(7)	24	1	2	3	4	5	6	7	(25)
7	1	2	3	4	5	6	7	(8)	25	1	2	3	4	5	6	7	(26)
8	1	2	3	4	5	6	7	(9)	26	1	2	3	4	5	6	7	(27)
9	1	2	3	4	5	6	7	(10)	27	1	2	3	4	5	6	7	(28)
10	1	2	3	4	5	6	7	(11)	28	1	2	3	4	5	6	7	(29)
11	1	2	3	4	5	6	7	(12)	29	1	2	3	4	5	6	7	(30)
12	1	2	3	4	5	6	7	(13)	30	1	2	3	4	5	6	7	(31)
13	1	2	3	4	5	6	7	(14)	31	1	2	3	4	5	6	7	(32)
14	1	2	3	4	5	6	7	(15)	32	1	2	3	4	5	6	7	(33)

School   (34-35)

Name of student: \_\_\_\_\_

Name of school: \_\_\_\_\_

### ANSWER SHEET FOR HISTORY:QUESTIONNAIRE 1

Card number  (2)

1	1	2	3	4	5	6	7	(37)	21	1	2	3	4	5	6	7	(57)
2	1	2	3	4	5	6	7	(38)	22	1	2	3	4	5	6	7	(58)
3	1	2	3	4	5	6	7	(39)	23	1	2	3	4	5	6	7	(59)
4	1	2	3	4	5	6	7	(40)	24	1	2	3	4	5	6	7	(60)
5	1	2	3	4	5	6	7	(41)	25	1	2	3	4	5	6	7	(61)
6	1	2	3	4	5	6	7	(42)	26	1	2	3	4	5	6	7	(62)
7	1	2	3	4	5	6	7	(43)	27	1	2	3	4	5	6	7	(63)
8	1	2	3	4	5	6	7	(44)	28	1	2	3	4	5	6	7	(64)
9	1	2	3	4	5	6	7	(45)	29	1	2	3	4	5	6	7	(65)
10	1	2	3	4	5	6	7	(46)	30	1	2	3	4	5	6	7	(66)
11	1	2	3	4	5	6	7	(47)	31	1	2	3	4	5	6	7	(67)
12	1	2	3	4	5	6	7	(48)	32	1	2	3	4	5	6	7	(68)
13	1	2	3	4	5	6	7	(49)	33	1	2	3	4	5	6	7	(69)
14	1	2	3	4	5	6	7	(50)	34	1	2	3	4	5	6	7	(70)
15	1	2	3	4	5	6	7	(51)	35	1	2	3	4	5	6	7	(71)
16	1	2	3	4	5	6	7	(52)	36	1	2	3	4	5	6	7	(72)
17	1	2	3	4	5	6	7	(53)	37	1	2	3	4	5	6	7	(73)
18	1	2	3	4	5	6	7	(54)	38	1	2	3	4	5	6	7	(74)
19	1	2	3	4	5	6	7	(55)	39	1	2	3	4	5	6	7	(75)
20	1	2	3	4	5	6	7	(56)	40	1	2	3	4	5	6	7	(76)

School   (77-78)

## ***ADDENDUM B***

*The adapted and translated version for history of the Mathematics Attribution Scale (MAS)*

O tlile go bala ka ga sengwe se gongwe se diragetseng ka wena. Morago o tlile go bona mabaka a mane a dirileng gore selo se, se go diragalele. O tlile go araba gore a mabaka a, a thalosa ka nnete se se go diragaletseng. Tiragalo mmgwe le nngwe e tla beiwa le mabaka a mane a gongwe a dirileng gore e diragale. Jaanong, bala ditiragalo ka kelotlhoko mme o arabe gore o ikutiwa jang go lebaka lengwe le lengwe.

**TIRAGALO YA A:** Mo karolong e nngwe ya tiro ya gago ya kwa gae ya historo o fositse.

E ne e sa siama ka gore:

- Ga o a kgona go gakologelwa gore o ne tshwanetse go dira jang.
- O ne o sa kgathale mme o batla go fetsa fela.
- Karolo e o e fositseng e ne e le e le e leng thatanyana mo go tse dingwe.
- O ne o se sego.

Nomoro ya a., b., c. le d. ke mabaka a a kabong a dirile gore o fose. Leba nomore ya a. A lebaka le le kabo le dirile gore o fose? A o dumela thata kgotsa o a dumela? A ga o itse, a ga o dumela kgotsa ga o dumele sepe gore nomore ya a. ke lebaka la gore o fose. Batla nomore ya a. mo pampiring ya dikarabo. Bontsha gore a o nagana gore lebaka la a. ke le le dirileng gore o fose.

1	2	3	4	5	6	7
Ke ganetsa thata				Ke dumela thata		

Dira fela jalo ka nomore ya b., c. le d.

Kaanong ya kwa tiralong ya B mme o arabe gore o ikutiwa jang mo mabakeng a mane mo tiralong e.

**TIRAGALO YA B:** O amogetse maduo a o neng o a batla mo kgaolong e ya ngwaga mo serutweng sa Histori.

- Diteng tsa serutwa di ne di se thata.
- O ne o ithuta Histori se nako e ntsi letsatsi le letsatsi
- Morutabana o setswerere ka go thalosa tiro ya Histori se sentle.
- O na le neo e kgolo mo Histori se.

**TIRAGALO YA C:** O ne o na le mathata mo ditirong tse dingwe tsa letsatsi le letsatsi.

- Go ne go se na nako ya go kopa thuso mo Historing ka gore diphakathuto di ne di fetotswe ka letsatsi leo.
- Ga o kgone go nagana ka tsela e e tshwanetseng fa o dira Histori.
- Ga o a tsaya nako ya go ithuta thata mo Historing.
- Ditiro do ne le thata-thata.

**TIRAGALO YA D:** Ga o a kgona go tshwarelela le bontsi jwa baithuti mo thutong e. Histori.

- Baithuti ba ba go dikologileng ga ba a go reetsa.
- Ga o a tsaya nako e ntsi go ipaakanya.
- Tiro ga e bonolo.
- Ka gale o ntile le mathata mo go thaloganyeng thuto e.

**TIRAGALO YA E:** O kgonne go fetsa tiro ya gago ya bofelo e nnye (tiro ya Histori e nnye e e fetileng) bonolo.

- Tiro e e filweng e ne e itumedisa
- Matsapa a o a tsereng go dira tiro ya legae kwa tshimolong a thusitse.
- O moithuto yo o kgonang thata mo Historing.
- O ntile lesego go dira le setlhopa se se nang le thuso sa baithuti ka wena.

**TIRAGALO YA F:** O kgonne go thaloganya karolo e e bokete mo Historing

- Mokgwa o morutabana (makaedi) a tlhagisitseng (thlalositseng) ditlha ka teng go thusitse.
- Bokgoni ba gago bo mo pepeneneng thata fa o lekwa (fa tiro e le bakete).
- O oketsa nako ya go ithuta tiro e ka diura.
- Tiro e ne e le bonolo gonne e ne e dirilwe pele.

**TIRAGALO YA G:** O amogetse teko ya kgaolo ya maemo a a kwa tlase.

- Ga o moithuti yo o botoka go gaisa mo serutweng se (Histori).
- O ithutile mme e seng thata jaaka go tlhokega.
- Go ne go na le dipotso tse o iseng o di bone pele.
- Morutabana (mokaedi) o tsere nako e nnye ya go ruta kgaolo e.

**TIRAGALO YA H:** O falotse bontsi jwa diteko kwa ntle ga mathata.

- Morutabana (makaedi) o dirile go ithuta Histori gonne go go kgalisang.
- Jaaka mongwe le mongwe a bua, o na le neo mo serutweng se (Histori).
- O tsaya diura tsa nako e e okeditsweng mo serutweng se.
- Tiro e o e kwadileng ka yona e ne e le bonolo.

**TIRAGALO YA I:** Go ne go na le nako nngwe fa o ne o sa bone gore ditlamorago tsa ditiragalo tsa Histori di amega jang.

- Tema e ne e sa go kgalise.
- Le fa o ne o sa ithute o ne o sa e thaloganye sentle.
- Go tlhoka kelotlhoko ga ditsala tsa gago mo phapusing go ntile le seabe mo mathateng.
- Fela ga o a dirisa nako e ntsi go dira tiro ya legae.

Name of school: \_\_\_\_\_

ANSWER SHEET FOR MATHEMATICS:QUESTIONNAIRE 1

Card number  (35)

1	1	2	3	4	5	6	7	(36)	21	1	2	3	4	5	6	7	(56)
2	1	2	3	4	5	6	7	(37)	22	1	2	3	4	5	6	7	(57)
3	1	2	3	4	5	6	7	(38)	23	1	2	3	4	5	6	7	(58)
4	1	2	3	4	5	6	7	(39)	24	1	2	3	4	5	6	7	(59)
5	1	2	3	4	5	6	7	(40)	25	1	2	3	4	5	6	7	(60)
6	1	2	3	4	5	6	7	(41)	26	1	2	3	4	5	6	7	(61)
7	1	2	3	4	5	6	7	(42)	27	1	2	3	4	5	6	7	(62)
8	1	2	3	4	5	6	7	(43)	28	1	2	3	4	5	6	7	(63)
9	1	2	3	4	5	6	7	(44)	29	1	2	3	4	5	6	7	(64)
10	1	2	3	4	5	6	7	(45)	30	1	2	3	4	5	6	7	(65)
11	1	2	3	4	5	6	7	(46)	31	1	2	3	4	5	6	7	(66)
12	1	2	3	4	5	6	7	(47)	32	1	2	3	4	5	6	7	(67)
13	1	2	3	4	5	6	7	(48)	33	1	2	3	4	5	6	7	(68)
14	1	2	3	4	5	6	7	(49)	34	1	2	3	4	5	6	7	(69)
15	1	2	3	4	5	6	7	(50)	35	1	2	3	4	5	6	7	(70)
16	1	2	3	4	5	6	7	(51)	36	1	2	3	4	5	6	7	(71)
17	1	2	3	4	5	6	7	(52)	37	1	2	3	4	5	6	7	(72)
18	1	2	3	4	5	6	7	(53)	38	1	2	3	4	5	6	7	(73)
19	1	2	3	4	5	6	7	(54)	39	1	2	3	4	5	6	7	(74)
20	1	2	3	4	5	6	7	(55)	40	1	2	3	4	5	6	7	(75)

School   (76-77)

Name of student: \_\_\_\_\_

ANSWER SHEET FOR MATHEMATICS:QUESTIONNAIRE 2

Card number  (1)

a	1	2	3	4	5	6	7	15	1	2	3	4	5	6	7	(16)	
b	1	2	3	4	5	6	7	16	1	2	3	4	5	6	7	(17)	
c	1	2	3	4	5	6	7	17	1	2	3	4	5	6	7	(18)	
d	1	2	3	4	5	6	7	18	1	2	3	4	5	6	7	(19)	
1	1	2	3	4	5	6	7	(2)	19	1	2	3	4	5	6	7	(20)
2	1	2	3	4	5	6	7	(3)	20	1	2	3	4	5	6	7	(21)
3	1	2	3	4	5	6	7	(4)	21	1	2	3	4	5	6	7	(22)
4	1	2	3	4	5	6	7	(5)	22	1	2	3	4	5	6	7	(23)
5	1	2	3	4	5	6	7	(6)	23	1	2	3	4	5	6	7	(24)
6	1	2	3	4	5	6	7	(7)	24	1	2	3	4	5	6	7	(25)
7	1	2	3	4	5	6	7	(8)	25	1	2	3	4	5	6	7	(26)
8	1	2	3	4	5	6	7	(9)	26	1	2	3	4	5	6	7	(27)
9	1	2	3	4	5	6	7	(10)	27	1	2	3	4	5	6	7	(28)
10	1	2	3	4	5	6	7	(11)	28	1	2	3	4	5	6	7	(29)
11	1	2	3	4	5	6	7	(12)	29	1	2	3	4	5	6	7	(30)
12	1	2	3	4	5	6	7	(13)	30	1	2	3	4	5	6	7	(31)
13	1	2	3	4	5	6	7	(14)	31	1	2	3	4	5	6	7	(32)
14	1	2	3	4	5	6	7	(15)	32	1	2	3	4	5	6	7	(33)

School   (34-35)

# ***ADDENDUM C***

***The Biographical Questionnaire for Students***

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
---

  
Std 6 

2
---

  
Std 7 

3
---

  
Std 8 

4
---

  
Std 9 

5
---

  
Std 10 

6
---

  
Post matric qualification 

7
---

 (10)

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

Std 5 or lower 

1
---

  
Std 6 

2
---

  
Std 7 

3
---

  
Std 8 

4
---

  
4 Std 9 

5
---

  
5 Std 10 

6
---

  
Post matric qualification 

7
---

 (11)

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

Yes 

1
---

  
No 

2
---

 (12)

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

Mother 

1
---

  
Father 

2
---

  
Relatives 

3
---

  
Friend 

4
---

  
Alone 

5
---

 (13)

8. Where do you live?

Farm 

1
---

  
Town 

2
---

  
Village 

3
---

  
Squatter camp 

4
---

  
Other 

5
---

 (14)

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

9. Is Mathematics one of your difficult subjects at school?

Yes 

1
---

  
No 

2
---

 (15)

10. Do you get extra tuition in Mathematics after school hours?

Yes 

1
---

  
No 

2
---

 (16)

12. What is the lowest percentage you would be happy with in Mathematics?

--	--

(17-18)

--	--

(19-20)

13. What percentage did you obtain for Mathematics in the June/July examination?

--	--

(21-22)

14. Were you satisfied with the percentage you obtained for Mathematics in the June/July examination?

Yes

1
2

No

(23)

15. Is History one of your difficult subjects at school?

Yes

1
2

No

(24)

16. Do you get extra tuition in History after school hours?

Yes

1
2

No

(25)

17. What is the percentage you would like to obtain in History?

--	--

(26-27)

18. What is the lowest percentage you would be happy with in History?

--	--

(28-29)

19. What percentage did you obtain for History in the June/July examination?

--	--

(30-31)

examination:

Yes

1
2

No

(32)

21. Do you intend taking Mathematics next year (thus in form 3)?

Yes

1
2

No

(33)

22. Do you intend taking History next year?

Yes

1
2

No

(34)

# ***ADDENDUM D***

***The Biographical Questionnaire for Teachers***

# BIOGRAPHICAL QUESTIONNAIRE FOR TEACHERS

Questionnaire number: 

--	--

 (1-2)

1. Name of teacher: \_\_\_\_\_

2. Name of school: \_\_\_\_\_

3. Subject taught: 

Mathematics	1	(3)
History	2	

4. Age in years only: 

--	--

 (4-5)

5. Sex: 

Male	1	(6)
Female	2	

6. Cross the applicable square to indicate your highest academic qualification and specify the year in which you completed the qualification.

	Qualification	Year it was completed			
(a)	1-year post-matric teaching diploma or certificate	19	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>		
(b)	2-year post-matric teaching diploma or certificate	19	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>		
(c)	3-year post-matric teaching diploma or certificate	19	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>		
(d)	4-year post-matric teaching diploma	19	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>		
(e)	B.A., B.Comm. or B.Sc.	19	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>		
(f)	A degree plus a 1-year post-graduate teaching diploma	19	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>		
(g)	A 3- or 4-year teaching diploma plus a 3-year degree	19	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>		
(h)	B.Ed. degree	19	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>		
(i)	Any other teaching qualification (specify):	19	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> (8-9)		

(7)

7. Number of years teaching experience in all subjects:

Years	Primary school	Secondary School	Tertiary level
0-1	1	1	1
2-3	2	2	2
4-5	3	3	3
6-7	4	4	4
8-9	5	5	5
10+	6	6	6
	(10)	(11)	(12)

8. Number of years' teaching experience in Mathematics/History:

Years	Primary school	Secondary School	Tertiary level
0-1	1	1	1
2-3	2	2	2
4-5	3	3	3
6-7	4	4	4
8-9	5	5	5
10+	6	6	6
	(13)	(14)	(15)

9. Number of years' teaching experience per form or standard:

Years	Form 1	Form 2	Form 3	Form 4	Form 5
0-1	1	1	1	1	1
2-3	2	2	2	2	2
4-5	3	3	3	3	3
6-7	4	4	4	4	4
8-9	5	5	5	5	5
10+	6	6	6	6	6
	(16)	(17)	(18)	(19)	(20)

Yes	1	(21)
No	2	

Give a reason for your answer.

---



---

11. Does Mathematics/History have any relevance for career choices?

Yes	1	(22)
No	2	

Motivate your answer.

---



---

12. Does Mathematics/History improve the student's understanding of any other school subjects?

Yes	1	(23)
No	2	

Specify the subject(s) and how they are influenced

---



---

13. Is Mathematics/History more important than other school subjects?

Yes	1	(24)
No	2	

Motivate your answer.

---



---

Yes	1	(25)
No	2	

Motivate your answer.

---



---

15. Are certain aspects of Mathematics/History more difficult than others?

Yes	1	(26)
No	2	

Specify which aspects.

---



---

16. Do you teach all aspects of the subject in the same way (i.e. do you always use the same teaching/instructional method)?

Yes	1	(27)
No	2	

17. Which aspect of the teaching-learning cycle do you regard as the most important?

• Motivating the students	1
• Explaining the work	2
• Remembering the work	3
• Understanding the work	4
• Doing exercises/ answering questions on the work	5
• Evaluating the work	6

(28)

18. Except for your choice in question 17, which aspect is the second most important one?

- Motivating the students
- Explaining the work
- Remembering the work
- Understanding the work
- Doing exercises/  
answering questions on  
the work
- Evaluating the work

1
2
3
4
5
6

(29)

19. Do you prefer:

- explaining the work to students
- students to work in groups and do the work themselves

1
2

(30)

20. Would you rather:

- repeat the same lesson to 3 classes of 30 students each
- teach the lesson once to one class of 90 students

1
2

(31)

21. Do you mostly know what to expect of your students in terms of performance and achievement?

Yes

1
2

No

(32)

22. Do you often change your opinions about student performances and/or achievement?

Yes

1
2

No

(33)

Thank you very much for your kind cooperation.