AN INVESTIGATION INTO THE MAKING OF SUBJECT CHOICES FROM MIDDLE SCHOOL PHASE TO SENIOR SECONDARY PHASE

By

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DECLARATION

I declare that the dissertation, which I hereby submit for the degree of MASTER EDUCATIONIS at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at another university.

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SUMMARY

The primary purpose of the study was to empirically explore the impact of internal and external variables on subject choices made by a group of Black South African government school pupils in Ga-Rankuwa circuit in the North West Province.

From the literature point of view it was evident that there are different orientations which influence subject choice and academic achievement of learners. Learners who are mastery/learning-oriented want to develop their competence through the choice of challenging tasks and perform better. Ego/performance-oriented learners interested in demonstrating to others that they are capable, therefore turn to choose easy tasks and they do not perform as well. Mastery-oriented learners 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 learners attribute both failure and success to stable but uncontrollable cause (such as ability or teaching methods), and experience shame and decreased self-efficacy in the event of failure.

My ultimate conclusion is drawn from the study I examined by the *HSRC differentiated education blueprint.* Although the document emphasized the importance of meeting the needs of both the individual, and the manpower requirements of the country, findings in the present study implied that the sort of inhibitors operating in the subject choice context, were in no way contributing to the fulfilment of these aims. The organization of the school curriculum, school zoning procedures, gender and achievement stereotypes, all served to compromise pupils' subject preferences and subject choice differentially. These dictated both the academic bias and gender bias of the subject field choice, and therefore, the resultant social status of the choice. The educationally questionable subject choice criteria used by pupils, and the faulty guidance they received, did not assist much to maximize their unique potential.

KEY WORDS

Ten key words of this study are:

- Attributions
- Choice (Subject choice)
- Curriculum
- Goal orientation
- Middle School phase
- Motivation
- Self-efficacy
- Self-knowledge
- Self-worth
- Senior Secondary phase

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CHAPTER ONE

CONTENT OF THE STUDY

1. INTRODUCTION AND STATEMENT OF THE PROBLEM

1.1 INTRODUCTION

The new South African democracy is undergoing a process of transformation and stability. All educational institutions are on the cutting edge of change since they are the supposed bastions of enlightment, happiness, liberty and justice for all fulfilment of personal identity *(Jetto, 1997:1)*.

The rapidly changing technology and globalisation has a great influence on institutions of higher learning and the society at large. Innovation and change are the orders of the day. Innovation is the talk of the day around campus and this is taken as a philosophy and not a slogan. In the words of Dr. Tom Brown, Deputy director in the department of Telematic Learning and Education Innovation (*Tukkie, November 2001, Volume 9, Number 2:8)* – universities worldwide are continuously subjected to renewal because of the technological and social changes as well as changes in the educational paradigm. According to *Bennett, Crawford & Riches (1992:10)* "Change is about altering both practice and organisation, and individuals perceptions of their roles and responsibilities".

In this era of transformation, many factors will impinge negatively on this process, for example, attitudes which still reflect the past apartheid era such as racism, defiance of authority, destruction of property and boycotts. Hence, the acknowledgement in the *Government Gazette Vol. 353, no. 16085 (1994:6)* that: "No one doubts that transformation will be a long and arduous process . . ." This change implies that historically white educational institutions must accommodate other races.

Involved with change are notably the concepts of choice and reform. According to *Bennett et al. (1992:13)* choice involves change as reform relates to correctness, therefore one need to improve by change. The *1992 NEPI (National Educational*

Policy Investigation) report changes and transforms the support services together with the education system. The role and nature of guidance need to be taken into consideration as well as the demands placed on it during this process of change and reconstruction.

The socio-economic status of students influences their performance in schools. *Sorensen (1994:10-35)* made a study of South Korea students' socio-economic status and concluded that coupled with a strong family structure characterized by strong educational values and positive goals, these students were motivated to score well in competitive national senior secondary examination.

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 achieve lower scores as compared to those from a better socio-economic environment where parents attach great value to learning and thus provide their children with a motivating and stimulating environment for choice of subjects.

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 such as adequate educational facilities, curricular and syllabi that are relevant to their choice of subjects, properly trained teachers and a clear career guidance in most of the cases make wrong subject choices when compared with students who come from a better socio-economic environment.

Notwithstanding many individualistic factors, *inter alia*, ability, developmental level, aptitude, personality and teaching-related factors (such as level and quality of teacher training, teaching media, number of students per class), that influences the quality of learning, the choice and level of subjects and study field of pupils after grade nine (the senior secondary phase).

1.2 PROBLEM IDENTIFICATION

This research reports data from a study which investigates subject choices from middle school phase to a senior secondary phase around Ga-Rankuwa schools in North-West province. For the adolescent choosing subjects a senior secondary school to attend at the end of grade nine (middle school phase) for entry into the senior years of school is a decision of critical importance.

Lees (1994:143) previously argued that the primary determinant of curriculum choice is what is available to choose from. A very basic form of opportunity structure, therefore, is the range of subjects immediately available. The middle schools in Ga-Rankuwa vary a little in the subjects they offer. Greater variation of subjects is available in the senior secondary schools. The provision of full and part-time (Abet) patterns of study, and the growing availability of vocational subject for post-compulsory secondary schooling, there are many options open to the adolescent who chooses to continue at school if she/he can be guided to make a correct choice of subjects. The greatest subject choices are available at senior secondary schools. These schools only enrol students in the last three years of secondary schooling (grade 10, grade 11 and grade 12).

Difference across schools once meant that students were presented with unequal options, since they were restricted to choose from their neighbourhood schools. This is no longer the case. In the White paper On Education and training *(WP)(Notice 196 of 1995, March 15, 1995)* government changed its policy on zoning of comprehensive schools and the de-zoning system of schools was introduced. In effect, this meant that children were no longer restricted to attend the local schools whose zone they reside in, instead if places are available, they could attend any comprehensive school of their own choice. The implications of this policy change for students subject choice are several. In particular, it means that a structural barrier to choice temporarily removed. *Lee et al, (1998 volume 71:314)* supports the idea, she says that students are no longer limited to the range of subjects available at their local school but can in theory, choose to move to another comprehensive school which offers the pattern of subjects they wish to complete. They can also make a choice of applying for entry to a senior high school of their choice.

The changes impact on decision-making process. In terms of rational decision-making, students need to have the information that makes informed choices possible. All schools provide students with information about their own offerings, but information about the desirability of subjects and their potential usefulness for various careers is not necessarily given explicitly. A given school is unlikely actively to promote the range of options available at a nearby school for fear of losing enrolments, with a subsequent loss of funding (*Government Gazette, No. 17579, Vol 377, Act No. 84 of 1996)*. It is not easy, for students to obtain further information about tertiary entrance or job requirements from a variety of source, both formal and informal, hence a dire need for a career guidance counsellor, *(Bleuer and Walz, Eric Digest article "Striving for Excellence", May 1993*).

The process of subject choice and choice of a secondary school to attend must be a deliberate, planned exercise on the part of adolescents and parents, it would be expected that adolescents would engage in such information-seeking on the option, facts and effects of their choices. Moreover it would be expected that students who are unhappy about choices available at their own school would seek further information about offerings of subjects at other schools of their own choice. Perceived lack of subject choice, therefore, should be related to a deliberate search for information about alternatives.

Proximity to a senior high school may also influence the process of school and subject selection. If senior secondary schools inevitably have a high profile in their local community, students in the vicinity are more likely to access available curriculum information. We see this happening with the then Model C schools. Hoërskool Akasia, for example, in the Akasia area, Pretoria, they advertise themselves through the use of their school diary, their year book and also place some advertisement in the local newspaper, *Rekord 2003 Vol 17, No. 15:4*. All this adverts are been done yearly.

1.2.1 Analysing of the problem

The quality of learning and choice of subjects and a senior secondary school to attend are very much influenced by the value learners attach (*Khabele, 1995:2)* to what they perceive to be the goal for choice of subjects. Whereas one learner would

for instance, perceive the grade he/she is going to be awarded for a test written of a learning task and a choice of a subject as a reason for learning the subject. Another student might perceive the skills and knowledge he/she gains from subject as more valuable than the test in other subjects or the grade. *Dweck (1989:291)* reports that the value student attach to performing each learning task within different subjects influences not only their goal with a particular subject choice, but most aspects of their learning and motivation, such as their approach to intention with their learning task or subjects, persistence in performing in subjects of high difficulty level, the type of learning strategies they adopt, and their choice of subjects *(Pintrich, 1988:76)*.

Better known to teachers is the influence they have on the culture of learning, gender and 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 education of girls *(Palafox, Prawda and 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 grade three to grade six, girls out-performed boys on attention task and text planning, giving evidence of their superior reading achievement *(Warrick and Naglieri, 1993:693-701).* The same researcher found no differences in Mathematics quantitative ability between boys and girls at pre-school and elementary school level. At a senior secondary and college level, however, boys appeared to out-perform girls on problem-solving task abound, more than girls. *Lees (1994:74-75)*, reports that, only a small percentage of British 16-years 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 goal students perceive for learning, repeated experiences of not only the same type of learning outcomes, but also of how others interpret such (whether as skills and knowledge or as grades) initiate the development of a specific orientation towards motivating students to learn. *Dweck (1989:299)* calls this student's goal orientation. Subject choice thus refers to behaviour that is directed by the value students attach to the outcomes of learning actions, subject choice can be differentiated into a learning or mastery orientation and performance, achievement or

ego orientation *(Ames, 1992:261 and Schunk, 1991:243).* A student with a learning orientation focuses on the intrinsic value of making a choice on subject and the development of new skills and knowledge, and believes that effort leads to success. A student with performance or achievement orientation, on the other hand, focuses on the ability and a sense of self-worth, hoping to gain public recognition from performing better than others. This type of a learner most of the time makes wrong choice of subjects-support.

As stated, subject choice not only reflects students' intention with learning, but also influences their approach to learning and information processing. *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 task in a particular subject 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 consists of challenging tasks requiring a deep or versatile (i.e. sometimes deep and sometimes surface) approach to information processing. A surface approach means that a learner 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 learner process information to the level of understanding and problem solving, whereas a versatile approach means that the learn 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 of which influences subject choice *(Blumenfeld, 1992:277).*

Subject choice and choosing a school are interactive and the one influences the other. Learners who are learning-oriented place subject choice on mastery and tend to choose subjects that are challenging and which give them the opportunity of procuring new skills. Learners who are performance oriented, on the other hand

value choosing a learning institution and gaining social approval and support for possible failure *(Ames, 1992:263).*

Goal orientation influences subject choice, it thus relates to specific types of tasks and also subjects. Some subjects (such as History) lend themselves more readily to memorization and surface processing, than others (such as Mathematics). *Stable and Stable (1995:39-51)*, reported that some subjects like human sciences (biology and both human and social biology) are perceived as being easy and ability is not seen as important factor in academic achievement, whereas in subjects like Physics, Mathematics and Art, ability is seen as an important factor. As a result students who doubt their ability to perform in these subjects, they avoid and do not make choice of such subjects. As indicated by *Ames (1992:263),* students who are learning-oriented become helpless in the face of failure or difficulties and lose their will to apply effortful strategies.

The question that now arises is whether all students who are performance-oriented notwithstanding cultural backgrounds or ethnicity, would tend to forego a difficult subject (namely Mathematics) in favour of easier one (History or biblical studies). *Kokong (1991), Mathebula (1992)* and *Mgwathi (1993)* supports the idea that the subject choice and academic achievement of Black South African Secondary learners are influenced by learners and teacher related variables.

Jacobs et al (1991:564) defines "occupational choice (education) as a concept that is deliberate, purposeful involvement of the career guidance teacher and the parent with the school child in order to make the latter independent and responsible in the occupational world'. Occupational education relates to subject choice, it is deliberate influencing of the learner with the specific aim of accomplishing positive change with respect to insight and responsible actions. Choice of subjects is not an action that can continue indefinitely because to the extent that the learner succeeds in making responsible choices in the career guidance situation and in accepting responsibility for his choices, the career guidance teacher and the parent retread into the background, leaving the learner himself/herself to make a responsible choice of subjects and a school to attend.

1.3 STATEMENT OF THE PROBLEM

The primary purpose of the present research will be to empirically explore the impact of both biographical and institutional variables, on subject choices made by middle school and senior secondary learners from Ga-Rankuwa area. A secondary aim of the study was to examine the effect of a guidance intervention-program on subject choice satisfaction.

1.4 HYPOTHESES

Four hypotheses will be tested (see 4.3 in chapter 4).

1.5 METHOD OF RESEARCH

Two methods of research were used, namely a literature review (described in Chapter 2 and 3) and an empirical study (described in Chapter 4 and 5).

1.6 PROGRAMME PLANNING OUTLINE AND CHAPTER PLANNING

Six chapters were compiled as follows:

CHAPTER 1

Introduction of the research project.

CHAPTER 2

The curriculum design and the clustering of schools into unit's impact on subject choice and also clarification of subject choice theories given.

CHAPTER 3

Attention was given to motivation (Value-expectancy theory) as another aspect that influences subject choice. Other variables such as teachers, level

of education, parental involvement, student age, sex and gender were also discussed as other factors that impacts on choice of subjects.

CHAPTER 4

An empirical research design used to investigate the making of subject choices. An exposition of motivational variables on subject choices given by describing the measuring instruments, namely the BIOGRAPHICAL QUESTIONNAIRE and the ATTRIBUTIONAL SCALE for MATHEMATICS.

CHAPTER 5

The results of the empirical research are given and discussed.

CHAPTER 6

Conclusion and recommendations drawn from the results, together with a summary and limitations of the study are given.

1.7 CONCEPT CLARIFICATION

Since subject choice is such a complex concept, four constructs that form part of its social cognitive nature, namely curriculum, motivation, self-efficacy and attributions will be clarified.

1.7.1 Curriculum

It is a course of study in a school. The word is derived from *currere* or *curro* which means "to run", and originally meant "a race". *Jacobs et al (1991:79)* defines curriculum as a planned learning experience, learning activities, learning opportunities and the learning results.

1.7.2 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 in a particular subject, they might come to the conclusion that they are capable or incapable of performing the task in that subject. The result of positive self-evaluation is personal responsibility and intrinsically motivated students. The result of negative self-evaluation, however, is a demotivated learner.

1.7.3 Self-efficacy

Self-efficacy refers to students' judgement of their ability to perform in any given task *(Schunk, 1989:13-14).* This judgement is influenced by factors such as motivation and attributions *(Bandura, 1982:122).* Learning-oriented students attribute causes of failure to lack of effort: an internal, controllable factor. Performance-orientate students attribute causes of their outcomes to external, uncontrollable factors, which is detrimental to their self-efficacy.

1.7.4 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, 1984:548).* 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 make wrong subject choices and their sense of self-efficacy decreases. Students who perceive the cause as being controllable, on the other hand, make sound subject choice and an increase in self-efficacy results.

1.8 SUMMARY

Research is necessary to investigate the making of subject choices from a middle school phase to senior secondary phase. A literature study and empirical research will be undertaken to test this hypothesis. The literature review will be discussed in chapter 2 and 3.

CHAPTER TWO

SUBJECT CHOICE THEORIES AND THE CURRICULUM

2.1 INTRODUCTION

The word "curriculum" is a concept, which denotes all the activities, which constitute a teaching and learning programme, i.e. in a course of study. The aim of constructing a curriculum is to account for all the teaching and learning situations and learning opportunities (also called learning experiences), which occur in a school or other teaching institutions. The extent to which the totality of learning opportunities reflects the educational aim of educators is one of the most important problems curriculum designers will have to solve.

Curriculum researchers regard the community as a source of situational analysis for determining the needs of the young person and the community (curriculum content and objectives). It is impossible for the school to transmit the entire culture of a society. Consequently, decisions have to be made, that result in choices, which provide the basis of the school's curricular emphasis. Most schools tend to focus on the teaching of bodies of knowledge, arts, skills, languages, conventions and values. It is the emphasis and inclusion of certain subject areas, at the expense of others, that result in a particular value structure, and organisational structure of the curriculum emerging, *(Wheeler 1983 and Young 1995).* In South Africa, decisions regarding the curriculum, have traditionally been made by a central authority, partly by the Differentiated Educational Blueprint.

2.2 THE RECEIVED AND REFLEXIVE THEORIES OF CURRICULUM PRACTICE

Eggleston in Schraibman (1990:7) has suggested, that curriculum theories lie along a continuum bounded by two extreme positions, both of which have implications for the type of curriculum options made available to pupils, and have consequences for selecting certain bodies of knowledge to study, at the expense of others. The "received perspective', presents knowledge as containing various fundamentally different constructs, that have their existence justified as something separate from

human beings. Hence, the 'knower' and the 'known', are viewed as separate entities, in no way dependant on one another for meaning *(Louw 1992:46-55);* The 'reflexive perspective', alternatively views man as imposing structure and meaning on the facts. This is seen as necessary for the construction of social and historical realities. A rigid, fixed curriculum cannot reflect knowledge in this sense, as knowledge is viewed as relative, and as a result, cannot be objective and absolute.

Reductionists, whose theories are interpreted from a 'received' perspective, are those forms of knowledge and realm of meaning in *Schraibman (1990:8)*, both of whom question the structure of knowledge, and attempt to determine how the curriculum can be organised. *Hirst (1974:18)* talks about 'forms of knowledge' (Table 2.1), whilst *Schraibman (1990:9)* talks about 'realms of meaning' (Table 2.2*). Hirst's* approach, is in part an attack on the subject-structured curriculum, and has important implications for subject specialization. His seven forms of knowledge, form the basis of a common core curriculum, and imply that children should be initiated into all distinct cognitive structures. The curriculum choices pupils make, often divides them into three cultures – humanistic, scientific and commecial, each with little exposure to, or understanding of, the other.

Table 2.1 Hirst's Forms of Knowledge

Form	*Implication of this form of knowledge*
1. Mathematics and logic	Inductive, analytic relations expressed symbolically.
2. Physical science	Empirical work – assessment through observation and experiment
3. History and human sciences	Propositions connected with intentions.
4. Literature and fine arts	Aesthetic forms.
5. Morals	Rationally deduced from other under-standings, especially 3.6 and 7.
6. Religion	Deductive reasoning
7. Philosophy	

According *to Schraibman (1990:10*) Hirst is correct about there being seven forms of knowledge, then these must form the basis for a common core curriculum, that should have nothing subtracted from it.

Table 2.2 Phenix's Realm of Meaning

Realm		Derived from	Disciplines
1.	Symbolic	Communication	Language; logic; Mathematics; symbols in expressive art.
2.	Empirics	Experimentally verified systems	Physical, life and social sciences.
3.	Aesthetics	Contemplative perception	Literature, music and visual arts.
4.	Synoptic (inter-personal relation-ships)	Relationships	Literature, philosophy, History psychology, theology
5.	Ethics/morality	Obligations and codes responsibly selected	Philosophy, theology.
6.	Synoptics	Integrated selfhood	Philosophy, religions, History

Concrete, practical, 'affective-artistic' orientation of *Phenix's*, advocating two alternative curricula or those of different abilities or different sub-cultural interests, but has been criticized on ideological grounds, for applying rigid categories to individuals, *(Layton, 1973).*

Modern teaching and learning are characterised by a movement away from the behaviouristic process-product view of learning towards a more constructivist cognitive perspective with the emphasis on teaching learners how to think *(Woolfolk, 1995:240).* For *Nicholls (1984:8) and Schraibman (1990:12)* what is really being promoted are the "democratisation of thinking" and an assumption that all learners "can become competent thinkers". The new task of the teacher as "facilitator" and "learning mediator" requires that the teacher should be able to communicate effectively showing recognition of and respect for the diverse needs of learners *(South Africa, DoE, 1995:10),* is perceived as the main objective of the school and with adequate language proficiencies.

The interplay of language and the development on thinking, needs serious attention, not only in language education, as stated by *Young (1995:69),* but in all learning-areas.

Through the language of thinking teachers can encourage learners to be aware of their own thought processes and to engage actively in appropriate thinking by using precise terminology, posing critical questions, clarifying ideas and processes, and withholding value judgements *(Cole and Chan, 1994:406)*.

According to Curriculum 2005, education should be child-centred, and based on the needs of the child. This approach however is 'arbitrary', and the child's needs' fail to be clearly described. Curriculum 2005 fail to acknowledge that there are a limited number of fairly well delineated subject areas, that have their existence separate from that of the individual, and into which the individual needs to be initiated.

The implication, that some of these subject areas may be attributed greater value than others, falls into the domain of the 'reflexive' school of thought. The 'reflexive' approach, promotes a relativistic interpretation of knowledge, rather than an absolute one, and is a more flexible way of viewing knowledge. *Hirst (1974)* has claimed that knowledge is 'objective', *Young's (1995)* relativistic view, has conceptualised knowledge as socially and historically constructed. Knowledge, and hence the curriculum, is seen as being stratified, reflecting a particular distribution of power in society, with those in power, defining knowledge and how accessible it should be to the individual. Assumptions penetrate the subject areas; stressing that some types of knowledge, specifically academic knowledge, are of greater worth than others. If theorists adopting a "received' perspective are incorrect, and knowledge is not objective in nature, then different subject areas must be attributed differential status in the curriculum, and be subjected to the influence of ideological factors. Pupils' subject choices, may be determined by these ideological components that, in turn, serve to stratify the pupils themselves, hence preserving and legitimating inequality.

In the analysis of education and subject availability, there is a need to re-examine the dynamics of ideological and political practices, in the context of the school. A move away from a purely theoretical stand, to a more empirical one, is required. This approach is conducive to an exploration of different aspects of school knowledge, in various school contexts, and the examination of subject areas that tend to be 'reproductive' in their effects, and those that tend to be 'non-reproductive'. Both the "received' and 'reflexive' theories of curriculum organization, then have implications for curriculum specialization. Pursuing only certain types of knowledge, imply in the

former case, that the development of some cognitive skills will be precluded, whilst in the latter, the suggestion is that "choice' will socially stratify individuals, resulting in differential life chances for them. Whether or not social stereotypes, and differential degrees of status, are bestowed on subject areas by pupils, specifically when making subject choice decisions, remains empirically unexplored.

2.3 THE STRATIFICATION OF KNOWLEDGE

The issue of subject status, and the differential value bestowed on different subject areas in the curriculum, has been examined widely, from essentially a theoretical perspective. Traditionally, academic curricula have been awarded the greatest prestige. Curricula, in white secondary schools in South Africa, are dominated by 'academic' considerations, and teachers and pupils are socialized within an institutionalised structure, which legitimates assumptions that academic curricula, are of greater value than other bodies of knowledge. Within the subject choice context, two questions need to be addressed in conjunction with one another:

(i) What criteria are used for stratifying knowledge, and how does this result in differential prestige being awarded?

(ii) What factors influence the accessibility of different curricula, to various groups of pupils?

Young in *Schraibman (1990:16),* accords knowledge status in terms of the following criteria:

1. tends to be abstract
2. highly literate
3. individualistic
4. unrelated to non-school knowledge

Van der Stoep (1992:204-207) has discussed the process called the 'bureaucratic domination of the nature of education' and has suggested that the major constraint on what counts as knowledge in society, is whether it can be 'objectively assessed'. Typically, the natural sciences and Mathematics fall, into this category.

A useful paradigm in which to explore the subject choice investigation process, is the 'social construction of reality theory'. Here, the dialectic process between the individual and society is stressed. According to this theory, subject selection has served the dominant interests of a capitalist society, and has helped to preserve and legitimate inequality. The ideology of the school is considered to be a surreptitious mechanism of allocation. Questions need to be addressed empirically, regarding the function of the subject choice process within the general policy of the school. If the curriculum model adopted in Black government schools is an academic one, and conforms to the above mentioned criteria with its class and occupational associations, then the possibility that choice in fact may not be a choice at all for some groups of pupils, needs to be tested. While the academic tradition is guaranteed high status in its conformity to criteria of examineability, content focused, abstract, objective and theoretical, the utilitarian tradition, is conversely attributed low status *(Scraïbman, 1990:17)*. The latter deals with practical knowledge, not always amenable to the examination tradition. These traditions are also associated with class origins and occupational destinations *(Layton, 1973),* and the values of dominant interest groups, particularly universities. The academic tradition, is geared towards middle and upper class children, in preparing them for professional vocations and hence tertiary *education (Jacobs et al, 1991:5),* whilst the majority are initiated into a utilitarian training, preparing them in non-professional job skills, to be utilized immediately on completion of their schooling.

2.4 DESIGN OF A HIGH SCHOOL CURRICULA

The senior secondary curricula design of different high schools influences subject choice of grade nine learners from middle schools around Ga-Rankuwa circuit.

2.4.1 Differentiation versus constraint

What students learn in high school is largely a function of the courses they take, and they select courses from what is offered (the curriculum). A secondary school's curriculum codifies choices about what knowledge is deemed worthy of transmission to younger generations and within the capacity of its students to master. Attempts to reach a consensus on both common understandings and individual differences in students' abilities and interests, reflect a dual pattern of differentiation and constraint in most Ga-Rankuwa high schools *(Kleibard 1986; Oakes, Gamoran, Roba and Page 1992 and Lees, 1994:314).*

The curriculum-differentiation approach reflects an ideology that the knowledge available to students should be based on the students' aptitudes and tests; the underlying dynamic attaches different purposes and missions to educating students in a single building. In contrast, the constrained-curriculum approach is based on a belief in the appropriateness of common academic goals for all participants. According to the curriculum – differentiation approach, students' choices and options are limited. The high school curriculum can be constrained through limited opportunity, as well as through a proactive emphasis on moving students through a common set of experiences.

2.4.2 Student or a school phenomenon?

Although most research on this topic is framed within the student choice" model, another strand views the link between course taking and achievement as primarily a school, rather than a student, phenomenon. This model recognizes that students partake in the curriculum to the extent that it is available and, more subtly, depending on the encouragement they receive *(Lantz et al.1981 and Lee and Useem 1991).* If a school offers a modest number of courses, largely academic, it is no surprise that these are the courses that the students take *(Lee et al. 1998).* Thus, a constrained curriculum is evidenced both structurally, through the number of academic and non-academic options provided, and behaviourally, through the actual variety of choices that students make. School differences in the design and purpose of curricula were historically linked to school sector, and they still are.

2.5 THE CURRICULUM MODEL FOR SOUTH AFRICAN SECONDARY SCHOOL

The more overt restrictions placed on pupils' subject choices, lie in the way the official curriculum is structured and organised. The curriculum model for South Africa, has been laid down in the Differentiated Education Report, Part 1, *(HSRC, 1972),* which came into effect in the mid seventies. It was one of the first major attempts, to link the economic needs and educational needs of the country. Provision was made to a greater extent for vocationally directed fields of study, for pupils within the framework of the manpower requirements of the country, *(HSRC, 1981, 7: 1,2).* Subject choice was noted as a central feature of differentiated education. In all the

specifications in the document, emphasis has been placed on the needs of the individual, and the assisting of the individual to make decisions suitable to meet these needs. Yet, according to *Schraibman (1990:19)* this document (differentiated education report), and the stated aims of such a programme of differentiation, may be criticized as having a lack of justification and appropriateness, for all the people of South Africa. One needs to question, whether in fact such a system of education, serves to maximize the potential of all South Africans, irrespective of their race, language, socio-economic status, gender and religion, and whether placement in curricular areas, is solely dependant on, and prevailed in accordance with, the ability and aptitude of, and interest shown by the pupil, *(HSRC Report 1972, 2.1 f).* The document has attempted to confirm this, but with the frequent use of tautology, circular arguments and contradiction in Education. The Report's focus appears to be on a product-orientated model of education with the major purpose of schooling being the 'moulding' or 'forming' of the individual. If this is so, then the validity of such a term as 'choice' in the Black South African school curriculum needs to be questioned.

2.5.1 Two Forms of Differentiation in the Curriculum

(a) Differentiation, in the form of subject choices and courses of study, *(HSRC Report, 1972, 29:3.2.23),* is common in various countries, and is the subject of interest in the present study. A core of basic subjects is prescribed for all pupils, especially with a view to a formative education. In addition, choice of a field of study and subjects, takes place in an attempt to make provision for the pupil's specific aptitude, interests and requirements. These courses are mainly of an academic, technical, commercial, and domestic science.

(b) Differentiation, may also take the form of allocating pupils to tracks or streams. This involves the differentiation of subject matter, and entails the classification of pupils into homogenous ability groups, according to achievement or I.Q. School subjects may be studied at a higher or standard grade level. This approach to differentiation, however, didactically justifiable practice.

2.5.2 The task of the system of Differentiated Education

Aims of differentiated education in *Schraibman (1990:21)* are stated as follows:

(a) to supply pupils with differentiated education, in accordance with their capacities, so that they will be able to attain full development.
(b) to link schooling with the demands which are posed, in connection with post-school vocational training,
(c) to give pupils guidance, relating to their educational and vocational choices, so that the country's manpower needs can also be provided for,
(d) to give the education system a Christian character, honouring the religious convictions of parents and pupils, and to provide a broad national character in order to realize the aim of formative education.

2.5.3 The Fields of Study offered in the Curriculum

The Report for Differentiated Education *(HSRC, 1972),* has laid down details of curricula for the various school phases, restricting choice to a few fields of study only. However, at no point does it actually address why the particular curricula for the primary phase, the middle school phase, and the optional structures in the senior secondary schools, were selected and it still the case.

Fields of study offered include:

(a) Natural Science
(b) Humanities
(c) General
(d) Arts
(e) Commercial
(f) Technical

All the fields of study include the two official languages as a core part of the curriculum, together with at least half of the remaining subjects, complimenting the field type into which they fall *(curriculum 2005).*

2.5.4 Subject Grouping and different Subject Levels

In order to establish some form of balance in the pupil's curriculum, subjects must be selected from particular subject grouping (Table 2.3). This restricts choice further. Decisions regarding what level a subject will be studied at, advanced (HG) or standard level, are also important, especially for those who intend going on to university. It is stipulated that a pupil who chooses a particular field of study, in preparation for university entrance, is compelled to choose six subjects out of at least four groups. The six subjects must include the two official languages, of which at least two must be done on the higher grade. Apart from this, the subject choice must include at least four of the other subjects on the higher grade (advanced level). This is the minimum requirement. Pupils who cannot, or do not, wish to take a course at university, can opt for all their subjects, with the exception of the home language, on the standard grade, provided the subjects are selected from three out of the six groups. The hold that universities have over secondary education as a result of strict and traditional entrance requirements has been condemned *(HSRC Report, 1972, 82:17)*.

In the South African curriculum, the course (subject) choice of a pupil has a direct effect on the possibility of university access. Not all subjects are offered on all levels, and the decision as to the level upon which a subject should be studied, is most often left up to the school. This further inhibits pupil choice.

Table 2.3 Subject Groupings in the Curriculum

The subjects to be examined at the end of the senior secondary phase are divided into six groups, *viz:*

Group A:

English)
Afrikaans) Official languages (advanced and standard level)

Group B:

Mathematics) (advanced and standard levels)

Group C:		
Physical Science	)	
Biology	)	Natural Sciences (advanced and standard level levels)
Group D:		
French	)	(advanced level)
German	)	Third languages (advanced level)
Latin	)	(advanced and standard level)
African Language	)	(standard level)
Hebrew, Portuguese,	)	
Italian, Greek	)	(standard level)
Group E:		
History	)	(advanced and standard levels)
Geography	)	(advanced and standard levels)
Biblical Studies	)	(standard level)
Economics	)	(advanced and standard levels)
Group F:		
House craft – Home Economics)		(advanced and standard levels)
Housekeeping and Catering)		
Field Husbandry	)	Agricultural
Farm Mechanics	)	Course (advanced and standard levels)
Accoutancy	)	(advanced and standard levels)
Typing	)	
Business Economics	)	
Shorthand	)	Commercial
Bookkeeping	)	Courses (standard level)
Mercantile Law	)	
Music	)	(advanced and standard levels)
Practical Music	)	
Art 1	)	(advanced and standard levels)
Art II	)	
Art III	)	Art courses (advanced and standard levels)

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Art IV)
Practical Ballet)
Anatomy & Music)
National and Greek Dance)

Handcraft – woodwork and metal work)
Technical Drawing)
Fitting and Turning)
Welding and metalworking)
Woodworking)
Motor body repairing) Technical
Plumbing and sheet metal working) courses (advanced and standard levels)
Bricklaying and Plastering)
Motor vehicle and construction)
Building construction theory)
Electronics)

2.5.5 Comprehensive Units of schools

Schools themselves are limited in the variety of fields they make available to pupils. As it has been considered impractical, to organise a large comprehensive school that offers all eight fields of study, schools in the Ga-Rankuwa in particular, are grouped into three comprehensive units. Schools grouped together in each unit, between them, offer all eight fields of study.

2.5.6 Subject Sets

Pupils are also regulated in their choice of a particular field of study. Supposedly, to ensure a "balance' of subjects, blocks of subjects are organised into subject sets.

2.5.7 Compulsory Subjects

Again, in the guise of "curriculum balance', a compulsory core curriculum must be included in the "choice'. The compulsory subjects in a curriculum are those subjects deemed to be so important, that all pupils are expected to pursue them. These

subjects often tend to be of ideological significance, and hence are seen to have an important "moulding' function within the school context. Other courses that might form part of the core curriculum are often subjects believed to have fundamental formative value, and are attributed by implication, great status in the curriculum. Such subjects include Mathematics and Physical science most often, and sometimes, the humanities in conjunction with the sciences. This is again an attempt to achieve some kind of curricular 'balance'. Often individual schools, by virtue of the limited subject sets they make available, force particular subjects into a 'compulsory' mould. The core curriculum, and what is examined and not examined, together with the allocated time span within the school timetable, imply psychological, philosophical, sociological and pedagogical ideas, that may be taken for granted, but are still open to question *(Curriculum 2005).*

2.5.8 Minimum number of pupils per subject

Another limitation that presents itself in the South African subject choice arena pertains to the inclusion of a subject in the curriculum, if the minimum requirement is met, of fifteen pupils selecting the course. If a subject is initially offered, which does not comply with this minimum requirement, it will not be possible to offer the subject together with the subject set in which it appears, unless permission has been granted by the DET (NW department). Pupils, who are affected by this, are encouraged to make a different choice, or change to another school in the comprehensive unit.

There are many problems that are encountered with the early classification of pupils into subject tracks. Some of these have been identified in the Differential Education Report *(HSRC, 1972, 81:9, 3)* and is still the problem. These problems however, are merely mentioned, and not tackled in depth. These include:

- There is uncertainty as to the best time to divide pupils into courses or tracks, i.e. before or after grade eight.
- There is a lack of criteria, which will give a reliable picture of the pupil's capabilities, according to which they are classified in the courses (A need of career guidance teacher).
- The age of these pupils is seen as problematic as they are believed to lack singleness of purpose and an accurate conception of the future, which makes a choice of course difficult (Over aged learners to be placed at Abet institutions).

- Course changing cannot be carried out very easily in practice.
- The classification into courses has a restrictive influence on subject choice because certain subjects are offered only in a specific set.
- The subject choice of pupils, compels them to take a certain course, which may not correspond with their abilities.
- Course classification prevents some pupils from undergoing certain forms of tertiary training.

2.6 SUMMARY

Restrictions placed on the individual's choice of subjects, within the official structure and organization needs to be understood within two frameworks. Firstly, the rules and criteria that are officially declared and appear in government documents, dictate the inclusion of various subjects and the organisation of them. Secondly, the underlying ideological motives that are not often overtly declared form a hidden agenda that also governs the organisation and structure of the official curriculum, and influences pupils' perceptions of curriculum, accessibility. Two theoretical stances are adopted, both of which have implications for early subject choice specialization, and seek to explain curriculum structure and organisation. These are the 'received' perspective and the 'reflexive' perspective. Whilst knowledge is viewed as absolute and unrelated to historical, sociological and ideological locations, in the case of the former stance, for the latter approach, knowledge is viewed as relative and unfixed, the implication being, that different bodies of knowledge are assigned differential levels of importance. In the case of the 'received' stance, subject choice would imply that individuals, precluded from studying some areas of knowledge, might be inhibiting the development of some necessary cognitive skills. In the case of the latter 'reflexive' stance, subject specialization would have implications for pupil's later social and occupational destinations, by virtue of the differential status awarded to different areas of knowledge. A study of subject choice should link theoretical and empirical components, and determine whether bodies of knowledge are perceived by pupils as 'neutral' constructs, with equal value, and hence allowing for 'equal' access of pupils, or whether different disciplines, by virtue of the particular socially-defined attributes they embody, are awarded differential status, resulting in pupils having differential perceptions of subject accessibility.

CHAPTER THREE

MOTIVATION INFLUENCE THE MAKING OF SUBJECT CHOICE

3.1 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. The 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 in a subject teaching method and classroom setting *(Slavin, 1991:318).* In this research 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 and choice of a subject 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. 3.2), as well as a specific theoretical framework (see par. 3.3). 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 subject choice 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.

Since motivation 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 3.5.3. In the final paragraph 3.7) factors that influence subject choice, such as age, sex, prior achievement of the student, and the educational level and teaching experience of the teacher will be discussed.

3.2 MOTIVATION INFLUENCE LEARNING

3.2.1 Value as 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.

3.2.2 Motivation as a positive self-image

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.

3.2.3 Characteristic features of motivation

3.2.3.1 Self-evaluative thought

Self-evaluative though 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 to 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.

3.2.3.2 *Intensity and direction*

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).*

3.2.3.3 *Value attached to subjects*

Learning behaviours, such as choice of subject, 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 failure the student attaches to a subject 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 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 subject *(Gross, 1992:135).* When such a student successfully does well in a subject 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 subject 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 a

subject as being aversive, might avoid choosing the subject, will give up quickly when difficulties are met and will tend to become anxious *(Slavin, 1991:329-330).*

3.2.3.4 The need to be in control of one's own actions

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 subject 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).*

3.2.3.5 Motivation as a construct

Motivation as a construct cannot be observed directly, cut consequences of thought and affect can only be inferred from what students say and do, such as how they choose their subjects, 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.

3.3 EXPECTANCY COMPONENT THEORY

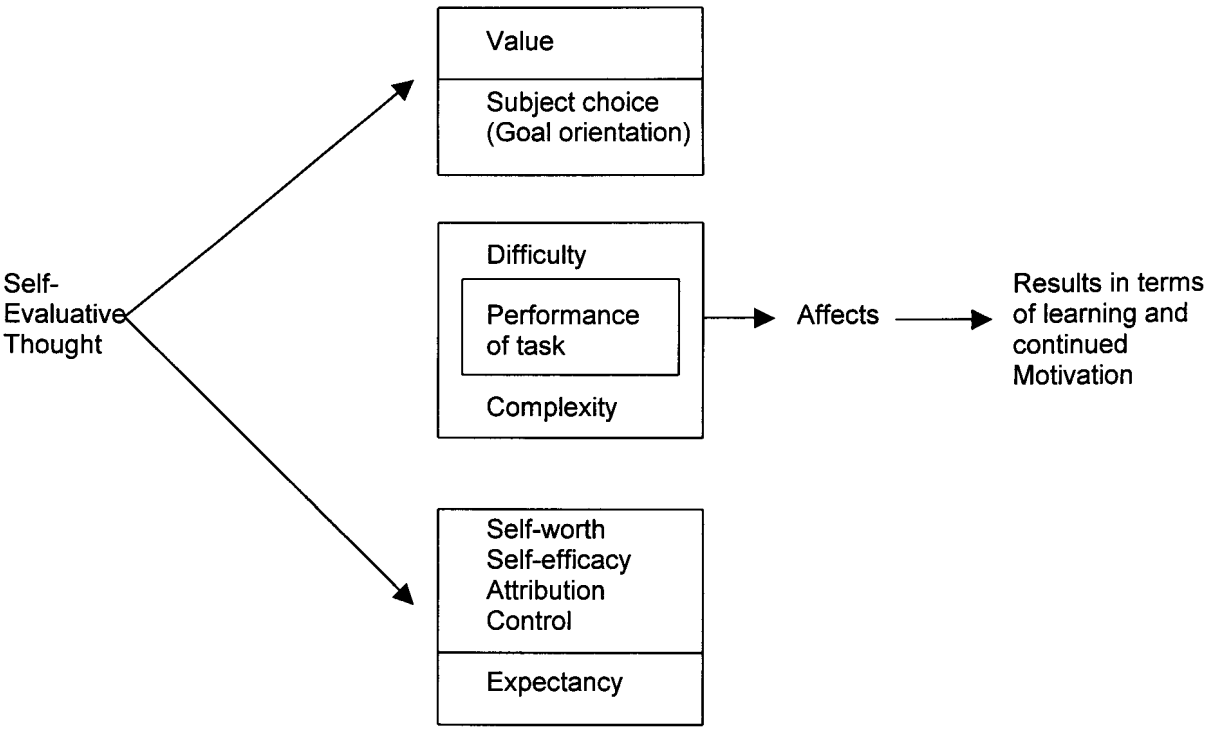
The value-expectancy framework organises the value students attach to a subject, what they expect to gain from the subject and the type of actions they will engage in *(Feather, 1988:381).* The expectancy component involves students' beliefs about their ability to perform a task in a particular subject, 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 determines the nature of the expectancy of success *(Pintich & 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 a luck *(Pintrich & Schrauben, 1991:154).*

The value component relates students' perceptions of the attractiveness or aversiveness of the subject and its expected outcomes, as well as the subjective value the student attach to the subject 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 of a subject. For instance, students who value acquiring new skills, select challenging subjects 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 subjects 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 subjects 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' choice of a secondary school since value determines the direction of subject choice whether the direction is 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. 3.2) 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. 3.4), and then to those that influence value (par. 3.5). Of all these variables attributions form the basis, since the attributional question "What causes success or failure?" exposes the motive for action.

3.4 THE EXPECTANCY COMPONENT

3.4.1 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 subjects *(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 subject 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 subject 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 evokes 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).*

3.4.2 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 subject, 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 is 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 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 subject choice is discussed in depth.

3.4.3 Self-efficacy

3.4.3.1 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 unpredictable tasks. This judgement is based on a personal interpretation of feedback received from various sources. 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).*

3.4.3.2 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, 1986:39).* 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 a subject in relation to his/her past performance in a similar subject. Hence, a student who repeatedly fails tends to doubt his/her ability to perform in that subject. However, a student who repeatedly performs well has his/her self-efficacy increased when a similar task in a subject is given *(Covington, 1984:95).*

Physical symptoms refer to bodily reactions, which show when a student doubts his ability to perform a given activity. For instance, when a student trembles and sweats when asked to perform a particular activity, his/her reaction comes to mean that he/she is not capable of performing the given activity *(Schunk, 1991:122).* Feedback from teachers refers to marks, remarks or comments given by the teacher on how the student performed in given activity or that subject. From these remarks students' self-efficacy can either decrease or increase depending on how the comments were interpreted *(Andrews & Debus, 1978:157).* 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) 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).*

3.4.3.3 The effects of self-efficacy

Self-efficacy focuses on beliefs about how one feels about ones ability to act and aims at answering the question "Can I do good in this subject?" 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).*

3.5 END PRODUCT TOWARDS WHICH EFFORT IS DIRECTED

3.5.1 Concept clarification

In learning context the end product may be a variety of emotional reasons why students choose to certain subjects 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 is a lasting tendency or an inclination *(Scott, 1991:36).* Subject orientation refers to a tendency that develops as a result of continuous experience of the same thing, such as feedback. End product can therefore be described as a tendency or an inclination that develops through continuous experience of the same result in a subject as one works towards achieving goal *(Scott, 1991:36).* Within a value-expectancy framework end product which is referred to as value, meaning that the type of value a student attaches to attaining his goal is determined by the specific orientation of the student in a particular subject.

3.5.2 Choices versus learning and performance orientation

Due to their human nature students usually have contrasting choices, such as the choice of enjoying a party instead of preparing for a test. The choice that the student decides on depends on how much value he attaches to that choice 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. 3.2). In the context of motivation to learn, three types of end products can be differentiated,

namely master orientation, performance orientation, and the third is a combination of the two end products already mentioned *(Ames, 1992:262).* Different researchers give different names to these orientations, which, however, mean more or less the same thing. For instance, *Dweck (1989:291)* talks of learning orientations and performance orientation; *Nicholls (1984:42)* talks of task involvement goals and ego involvement goals, while *Dweck, (1989:291)* refers to them as mastery orientation and performance orientation as goals.

A student with a mastery orientation/end product views intelligence as being incremental, meaning that it changes as the learner increases his/her skills and knowledge. Conversely, with a performance as end product 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).* The most important issue is that perceiving intelligence as being incremental allows one not to give up quickly when difficulties are met *(Meece et al., 1988:514).*

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

A mastery orientation is an end product related to a variety of motivational variables such as confidence, intrinsic interest in learning activities and production of positive achievement. In contrast, performance orientation 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).* End product as orientation can therefore be expected to influence the student's choice of subject, 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 end product as goals i.e. mastery goals and performance goals. A student with such a versatile orientation knows how to analyse a subject and selects the correct strategy for each aspect of the subject surface strategies for memorizing definitions and deep strategies for understanding and applying principles and solving problems *(Dweck, 1989:98).*

3.5.3 The effect of perception ability on subject choice

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).* Motivation, and the accompanying conception of ability (static vs. incremental) thus influence subject 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 subject develop a low perception of ability in that subject, become anxious and tend to avoid such a subject *(Scott, 1991:54).* In contrast, students who experience success become confident in their ability to perform the given task in a subject, hence they choose and actively engage in challenging subjects *(Covington, 1984:95). Schunk (1985:244)* points out that students also estimate their ability to perform in a subject through vicarious evaluation; i.e. measuring themselves against how others may possibly do. Ego-oriented students define task difficulty in a subject by comparing their performance with that of their peers, thus their hope of attaining their expectancy of success depends on how others will do *(Nicholls, 1984:47).* When many students do well in a subject, it is an indication that the subject is easy. Good performance then does not indicate high ability. However, when a student fails a subject 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 subject stimulates choice of easy subjects that ensure success while high estimates of ability leads to choice of challenging 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 Ga-Rankuwa circuit, 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. However, perceptions of one's ability are a powerful predictor of whether a student will choose a subject or not. Perceptions of a subject's difficulty depend 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 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 perception 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 orientation probably also fail because they use ineffective strategies like memorization and rehearsal *(Meece & Holt, 1993:582-590).* Hence, they become discouraged and give up easily, while students with learning orientation 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 subject is not as bad as failing an easy task in a particular subject, hence ego-oriented students sometimes choose difficult subject 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 are 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)*.

3.5.4 Ego orientation as an influence to subject choice

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 in a subject *(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 actors 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, 1990:132; 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 (1990:133)* 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 choosing the subject.

Students need to experience success before they can explore unfamiliar or difficult subject with confidence. Hence, ego-oriented students need to be encouraged to do tasks in a particular subject 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 children's' education, since much of students' motivation and performance depends on their home environment.

3.6 THE AFFECT COMPONENT

Text anxiety is a motivational variable that forms part of the affect component of the value-expectancy framework (see figure 3.1), 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 subject. 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.

3.7 *VARIABLES INFLUENCING SUBJECT CHOICE*

Although many variables influence a student's subject choice, as stated in chapter 1, attention will only be given to those variables that were used as control variables in

the empirical study, namely: type of tasks, the effective teaching skills, educational level and educator teaching experience, and students' age and sex.

3.7.1 Effective teaching skills influences subject choice

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 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' subject choice, 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 & Chiarellot, 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)*.

3.7.2 The influence of the educator's teaching experience on students' subject choice

More experience is better than less experience depending on the type of teacher/educator 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 in a particular subject which involve the student actively. Such a teaching style encourages students to actively engage in learning thus developing a mastery orientation of the subject. *Ashton (1984:143)* however, suggests that some educators 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 subjects. As a result students of such educators 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).*

3.7.3 The influence of task structuring on subject choice

A well-trained, confident teacher first analyses tasks in subject before he/she attempts to teach the task to students. As pointed out by *Ames (1992:263)*, subject structuring can lead to the development of a particular orientation. She noticed subjects 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 subjects tend to create intrinsic interest in learning. *Ames (1992:263)* maintains that the manner in which tasks in a particular subject are structured and delivered to the class greatly influences the subject choice. In line with *Ames's (1992:263)* view *Perry, Van der stoep* and *Yu (1993:33)* conducted research to examine whether asking high order cognitive questions leads to better learning than answering questions that require role responses. They found that high order questions in subjects 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.

3.7.4 The influence of teachers' educational training level on subject choice

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 subject choice is bought 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 & Chiarellot, 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, 1990:49-587).* Hence, they use innovative techniques, which involve motivating, focusing on meaning and understanding, by demonstrating and by giving lively process explanations *(Czerniak & Chiarellot, 1990:49-58).* Such methods of instruction lead to deep information processing which is associated with a mastery orientation *(Graham & Golan, 1991:19-194).*

3.7.5 The influence of students' age on subject choice

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 to make a choice does not depend on how well other 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 middle school students, and not among senior high school students. It can therefore be postulated that the development of a specific choice of subject varies with age.

3.7.6 Sex stereotypes, gender identity and subject choice

There is prima-facie evidence to suggest that subjects are perceived as appropriate for one sex rather than the other because of their relationship to other sex stereotypes in society.

According to *Whitehead (1994),* a sexual division of labour based on the crucial difference between males and females, namely childbearing, tended to put males into the adaptive instrumental role – manipulation of the environment to attain group goals – and females into the integrative-expressive role – the maintenance of good interpersonal relationships. Males and females are then thought to have personality traits to go with these roles. Meaning that those who have to manipulate the environment are stereotypically seen as assertive, rational, logical and competent, good at problem solving and interested in the world of objects and phenomena. Women, on the other hand, who have to ensure good social relationships, are stereotypically seen as sympathetic, emotional, aware of others' feelings, tactful, good at expressing feelings and, above all, interested in people and their concerns.

The link between these different traits and certain fields of study is fairly obvious. Science and Mathematics are concerned with phenomena and the world of objects; rationality and logic are the cornerstones of scientific thinking. Literature, art and music, on the other hand, are concerned with the expression and exploration of human emotions where intuition and empathy are held to be important. This, of course, makes them highly suitable for females. History, the Social Sciences and, to some extent, Geography are about people, thus making them more suitable for females than males.

Other subjects are quite strongly linked to sex roles. Subjects such as domestic science, childcare and needlework are linked to the feminine sex-role stereotype of wife and mother and were introduced into the curriculum specifically to prepare girls for that role *(Hunt, 1991).* Others may be linked to the stereotypical male role of

breadwinner because they are seen as 'career orientated' subjects. It is interesting to note, in this context, that when languages, particularly the ancient languages, were the passport to many careers, they were regarded as 'masculine' subjects and too taxing for females; while, at the same time, sciences, such as Botany and Chemistry, were thought suitable subjects for Victorian middle-class women to pursue as they would not inflame the imagination *(Manthorpe, 1987).* Perceptions of subjects have clearly changed. While Biology is still seen as appropriate for females, Physics and Chemistry are now seen as more appropriate for males. Furthermore, Physics is much more likely than Biology to be seen as useful for a wide range of occupations which both boys and girls view as most appropriate for men and that appear to influence pupils' choice of subjects. Biology is chosen largely because it is seen as an interesting subject.

3.7.7 *Subject choice and the role played by significant others in the pupils'* environment

Parents, by virtue of their relationship to, and presence in, the child's intraschool and extraschool environments, need to be examined also as potential subject choice mediators. *Woods (1977:174)* has described decisions such as subject choices, as 'triangular affairs', involving parents, teachers and the pupils themselves. Influence may take the form of overt 'guidance', given through direct advice, or through a more covert type of influence, in the form of expectations or subtle messages. Such 'messages' have been found to influence the perceived value of a subject, and attitudes towards it *(Raymond & Benbow, 1986).*

Two issues emerge in the study of inter-personal influence. Firstly, information should be sought from parents and peers independently of one another, as, when grouped together as a composite index. *Dovey et al. (1984)* have confirmed that theoretical considerations pertaining to the social psychology of adolescent development, requires that the influence of parents and peers be examined, and discussed separately. Secondly, in the study of inter-personal influences, perceptual variables should not be used in preference to self-reports. *Duncan, Featherman & Duncan (1972:137)* have explained that the use of data that is based essentially on the pupils' perceptions of those influencing them, as opposed to examining the self-reports of significant others themselves, leads to a situation in which the independent

variable 'may well be contaminated to some degree, by the dependent variable which it supposedly helps to explain'. Parents may have exerted subtle influences, without the child's awareness. The use of perceptual data, has also tended to over-estimate the importance of significant others.

3.7.7.1 The influence of parents and peers in the subject choice context

> *'The encouragement of ones' parents, and the plans of ones' peers appear to shape ambitions more directly and with greater impact than any other source. Their effects are stronger than the direct influence of ones' scholastic aptitude or previous academic achievement, and much stronger than any direct influence from ones' social origins per se'.*
>
> *(Spencer & Featherman, 1978, p. 392)*

Results from studies that have focused on the relative influence of parents and peers, on the educational plans of adolescents, are contradictory. Although studies seem to accept that the adolescent sub-culture adheres mostly to peer conformity. The trend observed, appears to be closer peer affiliation in late childhood and adolescence, while family and parental influence decrease. *Taylor & Hawkins (1978) and Davies & Kandel (1981),* found that although there was little doubt that peers exerted a very strong influence in certain aspects of adolescent behaviour, in matters relevant to future life goals, parents took a more important role. More specifically, in relation to subject preference and subject choice, *the HSRC Report (1981)* found parents to be by far the most important party to influence the choice of Maths, Science and Biology, whilst peers played a minor role.

Additional variables have been explored as intervening links, in the degree and nature of parental guidance given. These include, family size, parent identification, social class and gender. Family size influences the degree of parental guidance in the subject choice context, and is inversely related to the amount of guidance given. *Stamp (1979),* investigated how subject choice was related to father or mother identification, and found that choice was related to both parents' attitude, whilst specific attitudes towards subjects, seemed to be related to the mother's attitude only.

The influence of social class, through more covert parental expectations, aspirations and value socialization, has also been confirmed in may studies as an influence on parent-child interaction, and hence warrants exploration as an intervening link in the subject choice process, as well. *Curtis (1975) and Woods (1977),* observed that parental advice to children, differed in accordance with class, with a trend towards stronger counselling for the middle class child. Parental influences is also seen as a crucial intervening link by *Davies et al. (1981),* explaining the effect of social class, mediated through parental aspirations for their children. Parents influenced their children's' behaviour, through their roles as models, and through their more direct roles of expectancy and value socialization *(Eccles, in Armstong, 1985).* Pupils' perceptions of their parents' attitudes, in turn, is related to the pupils' own course-taking intentions *(Fennema & Sherman 1977).* Self-expectations that adolescents had of themselves as adults, is very closely related to the adolescents' perceptions of his/her parents' expectations. Findings then suggested, that adolescents distinguished between values relevant to their current peer relations, and those relevant to roles they would play as future adults. Findings, regarding the influence of gender on the type of parental influence given, are inconsistent. *Raymond & Benbow (1986),* found that the differential parental encouragement given to sons and daughters in Maths related fields, differed not in terms of gender, but rather talent (or achievement).

Although parents have been reported to be the most important sources of influence in pupils' educational decisions, this does not necessarily suggest they are the best equipped to guide such decisions. Studies have found that parents were not well qualified to provide educational guidance, because unlike teachers, they were unable to be simultaneously aware of the intellectual strengths and weaknesses of the child, and aspirations were often unrealistic. Contrasted parental aspirations with the child's capability and found that amongst upper and middle-class parents, college going expectations persisted independently of whether the child's capability was high or low. Children were found to consistently reflect these expectations. Parental knowledge of educational requirements however, was casual and unsystematic. No studies have sought to determine whether parents themselves feel adequate in this role, and if not, how the role of parental influence on subject choice, could be made more effective *(Meyer et al, 1993).*

3.7.7.2 *The influence of guidance teachers in the subject choice context*

> *'It is the responsibility of the counsellor to respond to the needs of all people and to contribute to the provision of equal opportunity for all. Certainly there is a need for counsellors to examine their own attitudes and to encourage others to do the same. It is most important that counsellors be sensitive to the pressures of sex bias and to be aware of forces, both external and internal, that may limit the potential of any individual'.*
>
> *(Price & Borgers, 1977, p. 242 & p. 243)*

In the light that a number of pupils may be ill equipped and inadequately prepared for subject choice, school guidance becomes an important consideration. According to *Jacobs et al. (1991:45).* Guidance teachers however have an equivocal role, and are expected to promote the ideology of the institution in which they operate, whilst being expected to maximize the individual's potential. Those who focus on the former have been referred to as 'system orientated', and are likely to act as choice inhibitors, whilst the latter, are considered to be 'person orientated', and are likely to be choice facilitators. The incongruity between professional services (school guidance) and client needs (pupils) or interests, is problematic, and demands that studies address this 'discord'.

It is often through coercive practices, that pupils' available choices become limited, and their views of themselves shaped, although the belief that they themselves have made the choice, remains *(Gaskell, 1985).* The fundamental pedagogical ideology, within which much of South African educational theory, and in particular guidance practice, is steeped, is one such approach, and may be criticized for limiting the choices pupils make. This is due to the degree of control it attributes to school guidance, and the role of the educator. The role of the 'adult' in general, in 'guiding' the child's choices, is regarded as extremely important. The adult or educator is seen to represent the 'ideal' person *(Barnard, 1971; Viljoen, 1970)* and hence, is given authority over the child, who it is believe needs to be 'moulded' and inculcated into an attitude of obedience and submission, towards the instruments of authority.

The Pedagogical framework, sees childhood in a negative way as a not-something or an unsomething, to be led by the parent/adult who must help the child . . .

'. . . to lead a life of voluntary obedience to specific norms'.

(Gunter, 1974, p. 36)

Implications of such a frame of reference for school guidance in the whole area of subject choice are serious. 'Choice' seems to be a misnomer, as 'readiness' for choice implies a readiness to embrace the principles of Christian National Education, associated with Calvinism and Authoritarianism, implying a channelling procedure, and no choice at all.

Dovey & Mason (1984), have also described the South African guidance system as serving the political and economic ends, of the ruling group, and 'moulding' children according to Christian National values *(HSRC Report, 1972, p. 121 & p. 122).* Emphasis appears to be on 're-orientating' the child who might 'deviate' in some way *(Moreland & Vermeulen, 1975; Swanepoel, 1975)* the emphasis being on 'socialization', as opposed to 'individualisation' *(Watts, 1980).*

School guidance services, may therefore serve to restrict pupils subject options, either by promoting an ideology that fails to serve all pupil needs, or through the inability to reach the individual, due to inadequate facilities. The official policy statement, describing the South African school guidance system, stems largely from the *National Education Policy Act of 1967 and the HSRC Report of 1972,* where guidance was seen as an integral part of an education system for differentiated education. It was assumed that differentiated education could only be meaningfully implemented if accompanied by appropriate and effective guidance. According to *Watts (1980),* the adequacy of guidance facilities within South African schools differs from province to province. In general, guidance in the North West province is less well developed than in the Cape and Natal. The relatively recent organisation of senior staffing has also resulted in those already in senior posts that have fallen away, shifting into new established head of department posts for educational guidance, even though they may be unqualified for the job.

Oakley-Smith, Skuy & Westway (1988), have associated the unsatisfactory state of guidance amongst both Blacks and Whites in South Africa, with the problematic segregated structure, and dominant ideology, of the education system in general. They conclude, that the inhibition of freedom in the society in general is detrimental, as freedom is 'fundamental to the conceptualisation of guidance' (p. 112). It is perhaps only through the desegregation of the South African society, that true freedom within education could be ensured, and more particularly, freedom of the individual, to make subject choices, that will be conducive to the maximization of individual potential. This type of approach, in conjunction with the support of a 'person-centred' guidance system, may fulfil the needs of the individual more effectively.

3.8 SUMMARY

In chapter three, an attempt to define, as well as describe, motivation as an influence to the making of subject choice was made since it is such a difficult and complex structure. Several perspectives on motivation were examined but the choice 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 subject choice is not only influenced by student variables but also depends on classroom structures such as the teacher, peers and different tasks in different subjects. Research dealing with the question of factors influencing subject choice, were also examined. Chapter four will describe the method that was used in an attempt to investigate the making of subject choice.

CHAPTER FOUR

RESEARCH METHOD

4.1 INTRODUCTION

Two avenues of investigation are adopted by research on choice of senior secondary and subject choice. Research with an empirical focus considers structural factors. For instance, *Furlong and Cartmel (1995)* have argued for the importance of local opportunity structures in the development occupational and educational aspirations. Psychological approaches, in contrast, emphasise the decision-making aspects of such choices. *Khabele (1995)* propose that competent decision-making involves consideration of five steps — goals, options, facts, effect of choices and a review of choices before implementation. An investigation of subject choice within this framework focuses primarily on the making (process involved).

It is possible to incorporate both levels of analysis. Indeed, *Gottyredson's (1981:548)* work on career compromise suggests that people develop a 'zone of acceptable alternatives' within which compromise are made. The argument considers the opportunities available at the structural level while taking account of the subjective meanings of vocations given by individuals. The present study also addresses both structural and individual issues. It was conceptualised to investigate subject choice rather than vocational choice, subject choice at the point from a middle school phase to an entry into the senior secondary school – where the range of options and alternatives broaden. The data reported come from a longitudinal study, involving fourteen schools which were specifically chosen on the grounds that they made varying options and opportunities in terms of subject choice available to the learners.

4.2 AIMS OF RESEARCH

As stated in chapter one, the aims of the research is to determine whether subject choice and choice of a school of grade nine learners from Ga-Rankuwa circuit in the North West Province is influenced by: (i) the learners achievement in History and Mathematics, (ii) the difference in curriculum. Since research has shown that gender, student age, parental involvement and teacher-related variables mediate subject

choice (ref. Chapter 3), two secondary aims were to control for the influence these two variables have on subject choice.

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

4.3 HYPOTHESES

Around Ga-Rankuwa circuit in the North West Province, senior secondary schools are classified according to subject specialisation, that is:

- Natural sciences schools
- Commercial schools
- Human social sciences schools

Hypothesis 1

There is a relationship between choice of a secondary school and the choice grade nine learners in Ga-Rankuwa circuit of the North West Province have to make between Mathematics and History (as according to the cluster of schools).

Hypothesis 2

There is a relationship between subject choice and achievement in Mathematics and History of grade nine learners in the Ga-Rankuwa circuit of the North West Province.

Hypothesis 3

There is a relationship between teacher variables and the choice of subjects of grade nine learners in the Ga-Rankuwa circuit of the North West Province.

Hypothesis 4

There is a relationship between gender and the subject choice of grade nine learners in the Ga-Rankuwa circuit of the North West Province.

4.4 SAMPLE AND POPULATION

The population of this research constituted fourteen secondary schools in the Ga-Rankuwa circuit of the North West Province (The then T.V.B. states, i.e. Transkei, Venda and Bophuthatswana). Middle schools were selected since students have to make a curriculum choice at the end of grade nine, before advancing to the senior secondary school.

Five of the schools are middle schools in Ga-Rankuwa circuit and their phase of learning is from grade seven to grade nine, whereas seven of the schools are classified as senior secondary schools and their phase of learning is from grade ten to grade twelve (Classification of schools of the then Transkei, Venda and Bophuthatswana states). Most of these schools have an average enrolment exceeding 600 students and a teacher-student ratio rounded to 1:40. Setswana is the mother tongue of the majority of the learners, although a small percentage are Zulu, Tsonga-speaking and other South African languages.

Grade nine learners 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.

4.4.1 A random cluster sample of five schools from the fourteen schools.

Table 4.1: Descriptive features of standard 7 classes of the sample schools.

School	Student number	Students per teacher	Boys	Girls	No. of st. 7 classes
01	240	1:40	140	100	6
02	186	1:46	98	88	4
03	206	1:41	105	101	5
04	266	1:44	136	130	6
05	250	1:42	141	109	6

Since each of the schools was found to have more than one (grade nine) class, one class was randomly drawn from each school, giving a total number of 205 students in the sample. See table 4.2 for a description of these classes. These were the students who completed the test battery.

Table 4.2: Descriptive features of the sample classes

School	Student number	Boys	Girls	15-15 years	16-17 years	18-19 years	20 + years
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, four 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 educators teaching each of the five selected classes was also obtained by means of a biographical questionnaire (see par. 4.5.2).

4.5 INSTRUMENTATION

The motivational variables, including choice of subject, were measured by means of two motivational questionnaires, namely the Motivational strategies for Learning Questionnaire (MSLQ) (par. 6.4) and the Attribution Scale for Mathematics (par. 4.5.1). Information on the control variables (see par. 4.6) 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. 4.5).

4.5.1 The Mathematics Attribution Scale (MAS)

Subject-specific attributions students give for success and failure 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. A similar questionnaire was adapted for History, using the principles for adaptation supplied by *Fennema et al. (1979).*

The modified MAS consist of eight events, of which four depict successful performance of a learning task and four unsuccessful performances. 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 source. ***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 agree 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 an aptitude for subject.							

The subscale reliability coefficients are reported by *Fennema et al. (1979)* and are given in table 4.3.

Table 4.3: 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	0.512	0.45	0.48
Failure-environment	0.51	0.45	0.48

4.5.2 Questionnaire

The questionnaire is in several sections. First, basic demographic information will be collected, as well as information about current subjects being attempted. Students will be asked about their reasons for choosing the school and the subjects they intended to choose. A major section of the questionnaire addressed subject choice, including students' preferred set of subjects in the absence of any restrictions, and the compromises they were willing to make to achieve their preferred choice. These compromises included the possibility of moving school or modifications to their original subject choice.

Of more general interest here are the questions to do with sources of information. Students were asked: (1) whether or not their preferred choice was available at their neighbouring secondary school, and if not, whether or not they were going to move schools to gain their choice; (2) how they obtained information about subjects; (3) whether the information provided by the school was helpful and adequate; and (4) whether or not they knew anything about the offerings at nearby schools. A 4-point response scale was used. The students were also given a list of possible sources of information about subject choice (self, parents, older siblings, other relatives, friends,

career advisers, students, school, other sources). For each information source nomi assess the usefulness of the information.

4.5.2.1 Perception of sex-trait stereotypes and self-description on the traits

A modified version of the sex-trait questionnaire designed by *Broverman et al. (1972)* was used as both a self-rating scale and to measure pupils' perceptions of the sex traits in society. The questionnaire was modified by changing the format to a Likert scale, and by excluding items, which were covered in more detail elsewhere in the questionnaire. The pupils' perceptions of sex traits yielded the same two factors as at *Broverman et al. (1972:123),* a competency-aggressiveness cluster containing traits that were considered typical of men in our society but not of women, and a warmth-expressiveness cluster of traits thought to be typical of women in our society but not of men. When the same items were used for the self-rating scale (completed first), slightly different results were obtained, in that the items measuring aggression yielded a separate dimension. Those pupils of both sexes who rated themselves as high on competence did not necessarily rate themselves as aggressive. Each pupil therefore had three scores, one on each of the dimensions of competency, aggression and warmth-expressiveness. Thus boys who describe themselves as high on competence and/or aggression and low on warm-expressiveness would be regarded as conforming to the masculine stereotype; conversely, girls who described themselves as high on warmth-expressiveness and low on competence and aggression would be regarded as conforming to the feminine stereotype.

4.5.2.2 Pupil perceptions of subjects and subject choice

Pupils were asked to indicate which subjects they thought boys or girls were best at, grouped under 12 headings. They were also asked to say which subjects they will choose for secondary school.

4.5.3 Subject choice and academic achievement

Mathematics and History will be 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 could 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 will nowhere in this research be 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 will be obtained through questions posed in the biographical questionnaire for the students.

4.6 VARIABLES USED

4.6.1 Independent variables

a. Control variables: age, sex and teacher-related variables.
b. Experimental variable: subject choice

4.6.2 Dependent variables

a. Choice of a school in terms of either Mathematics or History.
b. Marks obtained in June examination for Mathematics and History.

4.7 EXPERIMENTAL DESIGN

An *ex post facto* design with analysis of variance will be used to determine the interaction between goal orientation (choice of high school), subject choice and achievement of standard 7 students.

4.8 STATISTICAL ANALYSES

The data was computed with the mainframe computer of the school for excellence in Ga-Rankuwa.

Firstly, a cluster analysis, using Ward's Minimum-Method, will be used to cluster students into groups differing in the fourteen variables constituting subject choice. 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" *(SAS Institute Inc., 1988:297)*. Secondly, the significance of the differences in the subject choice 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 fourteen variables simultaneously *(SAS institute Inc., 1988:601)*.

For testing the differences between the means of the fourteen subject choice variables for the clusters, a series of one-way analyses of variance (ANOVA) on subject choice and cluster will be 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, and interactions between the two types of effects. 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 will be 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 will be determined by computing the effect sizes using the following equation:

$$D = \frac{\overline{X}_1 - \overline{X}_2}{\sqrt{MSE}}$$

D = standard deviation
$\overline{X}_1$ = mean of cluster 1
$\overline{X}_2$ = mean of cluster 2
MSE = mean square error from anova

4.9 PROCEDURE

Once the appropriate permissions (from the N. W. Department of School Education, school principals and year nine pupils) will be obtained, arrangements were made for the administration of the questionnaire. In all but one school, the decision by the school executive was to distribute the questionnaire some days after students had submitted their subject choices for the following year. In the remaining school, the questionnaire was completed before students made their choices.

The questionnaires were completed by all year nine students during class time, under the supervision of their usual teachers. A research assistant will be available to answer any queries. On average, the questionnaire will take approximately 40 minutes to complete.

The analysis will be conducted in two phases. First, a general description of the responses will be provided. Then analyses to assess the effect of three variables – proximity, subject match and gender – will be conducted. For dependent variables, which were categorical (e.g. whether or not an information source was utilised), logistic regressions will be conducted. Analyses of variance will be conducted on ordinal dependant variables (e.g. ratings of usefulness).

4.10 SUMMARY

The aim of the study will be to investigate the making of subject choice. The chapter was devoted to a description of the empirical investigation of this topic. The population and sample were discussed first, after which the questionnaire, statistical analyses and procedure were discussed.

CHAPTER FIVE

RESULTS OF THE EMPIRICAL RESEARCH

5.1 INTRODUCTION

As stated in paragraph 1.2.3, this study had a dual purpose, namely to determine: (i) whether subject choice influences the choice between Mathematics and History. Black learners from Ga-Rankuwa circuit of the North West Povince have to make at the end of grade nine, and (ii) whether subject choice influences these learners' achievement in Mathematics and History that result to a choice of senior secondary school. Since various factors, amongst others educator (teacher) and parents characteristics (see chapter 3) student's age and sex (see par. 3.7.7 and 3.7.6), mediate the choice students have for a specific subject and a senior secondary school, the study had the secondary aim of controlling for the influence of these two variables on subject choice.

Schools were deliberately selected so that they varied little in terms of standard socio-economic indicators such as occupation and education level of parents, in order that the effects of subject choices could be more clearly examined. In general, the sample came from middle to low socio-economic areas. Most students (77%) were from two-parent families, and 65% of the mothers were employed. Approximately 5% of the parents were reported as being unemployed. No attempt was made to standardise the information provided by schools to their pupils about subject choice.

Each school, however, provided students with a comprehensive booklet which outlined the choices available and gave brief subject descriptions along with requirements for the awarding of the senior certificate at the end of grade twelve.

One of the fourteen secondary schools in Ga-Rankuwa circuit is a comprehensive school. It offers learning from grade seven to grade twelve with a roll of about 1 048 learners (528 males) who reported that they were continuing to grade ten studies completed the questionnaire on subject choice, while a further 158 learners who

indicated that they were leaving school at the end of grade nine filled out a shorter questionnaire on career choice (those latter results are not reported here). This constituted the entire grade nine cohort in the fourteen schools, except for a small number (about 1%) of non-serious responses. (70% of the questionnaire is incomplete). School size varied: the number of usable questionnaires on subject choice within each school varied from 72 to 155.

5.2 RESULTS OF THE CLUSTER ANALYSES

5.2.1 Cluster analyses and MANOVAS

To initiate the attainment of the mentioned aims, students were first grouped in accordance with the variables composing their subject choice towards, firstly, Mathematics, and secondly, History. Ward's Minimum-Variance method of Cluster Analysis was used. Students were clustered into four groups, differing in questioning, the different subject choice variables (which will be discussed in par. 5.2.2) 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 5.1: 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 subject choice variables between the four clusters were highly significant (at the 1% level) for both Mathematics ($F[45] = 7.73$; $p < 0.0001$) and History ($F[45] = 10.68$; $p < 0.0001$). A series of analyses of variance (ANOVAS), one for each of the 14 subject choice variables, and for both Mathematics and History, was consequently done to determine how the variables differed between the four clusters.

5.2.2 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 subject choice were first calculated to differentiate between the four clusters (see table 4.2).

TABLE 5.2: 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 orientation	54.04[b]	15.58	72.89[a]	17.25	77.76[a]	12.35	73.69[a]	16.86	14.20	1.23-1.55
Extrinsic orientation	74.11[a]	17.47	57.55[b]	17.23	53.09[b]	19.42	48.33[b]	16.69	11.50	0.99-1.43
Task Value	52.79[c]	22.02	62.20[b]	17.23	85.08[a]	14.32	78.38[a]	15.09	35.24	0.58-2.03
Control	61.69[b]	9.88	57.48[b]	12.71	71.72[a]	13.12	61.07[b]	8.63	17.94	0.85-1.21
Competence	55.03[b]	22.86	62.55	14.89	66.63[a]	22.29	69.27[a]	15.53	3.42	0.61-0.75
Self-efficacy	55.12[c]	14.37	61.73[c]	12.61	83.00[a]	13.99	74.16[b]	15.35	36.92	0.63-1.99
Test anxiety	75.12[a]	21.84	55.23[b]	22.11	46.00[b]	24.94	80.03[a]	17.37	27.72	0.90-1.31
Success-task[*2]	56.37[b]	20.14	69.32[a]	17.29	69.95[a]	20.61	67.86[a]	15.94	3.35	0.70-1.10
Success-environment	45.50[b]	13.41	72.51[a]	16.19	74.38[a]	19.47	76.82[a]	15.74	20.02	1.58-1.83
Success-effort	53.73[b]	19.09	68.38[a]	17.18	70.05[a]	20.42	71.21[a]	17.73	5.21	0.78-0.93
Success-ability[*2]	50.78[b]	21.15	64.60[a]	17.26	63.43[a]	21.30	62.17[a]	16.59	3.12	0.59-0.72
Failure-task	65.99	17.16	58.42[b]	19.61	56.09[b]	18.67	70.48[a]	18.09	6.85	0.65-0.77
Failure-environment	56.52	21.06	66.71[a]	17.47	53.95[c]	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[b]	17.62	61.29	17.52	60.86	19.58	70.26[a]	16.65	3.45	0.76

1. Standard deviation = 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 14 variables both statistically and educationally (using effect sizes).

The students grouped into *cluster 1* have a much lower mean value for intrinsic orientation on subject choice (54.04) than for extrinsic 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 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 orientation* towards Mathematics and show a high level of test anxiety ($\overline{x}$: 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 orientation (72.89, 77.76 and 73.69) than for extrinsic 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) 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 = 612.07 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). Attribution wise, students from cluster 3 don't differ from those from cluster 4 for attributions for success (prioritising the environmental variables, then effort, task and lastly ability); they have a better attribution pattern for

failure, however, attributing firstly to effort (and 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 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 orientation*, but still highly *teacher-dependent*.

5.2.3 Description of the differences between clusters for History

TABLE 5.3: 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 N : 26		Cluster 2 N : 60		Cluster 3 N : 35		Cluster 4 N : 82		F Value	d Value [4]
	M	SD	M	SD	M	SD	M	SD		
Intrinsic orientation	53.57[b]	15.65	72.99[a]	16.72	72.85[a]	18.90	72.56[a]	16.62	9.75	1.21-1.15
Extrinsic orientation	82.86[a]	16.97	54.98[b]	18.71	58.57[b]	13.40	54.39[b]	15.92	20.39	1.44-1.69
Task Value	54.39[b]	15.79	72.53[a]	15.64	76.80[a]	17.86	77.78[a]	16.32	13.66	1.21-1.44
Control	62.41	13.43	56.48[c]	9.62	78.05[a]	12.69	68.71[b]	12.37	32.21	0.81-1.87
Competence	58.24[b]	17.50	74.87[a]	15.30	54.12[b]	23.33	58.95[b]	19.83	15.01	0.86-1.12
Self-efficacy	57.76[b]	12.26	73.64[c]	11.69	75.25[a]	15.44	75.29[a]	12.21	13.56	1.26-1.39
Test anxiety	60.98[a]	19.82	61.75[a]	26.25	42.85[b]	25.57	69.40[a]	24.28	8.45	0.73-1.06
Success-task	57.83[c]	17.90	75.69[a]	16.03	84.48[a]	16.31	72.61[b]	16.55	13.50	0.72-0.90
Success-environment[2]	69.09[b]	22.54	76.26	18.44	82248[a]	16.55	75.24	15.64	2.74	0.73
Success-effort	55.63[b]	19.49	78.70[a]	13.19	77.95[a]	19.35	70.00[a]	18.58	13.93	0.85-1.37
Success-ability	56.04[b]	24..68	71.51[a]	17.10	64.89	20.95	65.83	17.40	4.64	0.82
Failure-task	55.90[b]	91.51	68.59[a]	16.85	37.55[c]	17.09	61.13	16.68	27.21	0.74-1.81
Failure-environment	58.91[a]	21.41	65.50[a]	19.50	38.77[b]	14.62	64.28[a]	19.79	17.70	1.05-1.26
Failure-effort	69.92[a]	14.68	67.98[a]	17.99	49.79[b]	19.05	73.86[a]	16.64	14.83	1.04-1.56
Failure-ability	61.68[a]	21.32	68.81[a]	18.47	42.85[b]	19.09	69.29[a]	15.33	19.64	1.04-1.46

1. S. D = 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.

5.2.4 Comparison of Mathematics and History clusters

Cluster 1: Extrinsic orientation

As mentioned in paragraph 5.2.1 only three students from the total sample had an extrinsic orientation for both Mathematics and History; the orientation towards the two subjects differed from the other students.

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 orientation, than students from the other three clusters, since their means for extrinsic orientation (82.86) is much higher than their means for intrinsic orientation (53.57). Thy 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 orientation.

Students from the other three clusters can all be viewed to have more intrinsic orientations due to their high means on intrinsic 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 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: 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 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 orientation*. Cluster 2 students differ from students from clusters 3 and 4 in that they show a much lower level of control (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 self-helplessness. Group 2 (N = 60) will be termed *intrinsic, but tending to be helpless*.

Clusters are the higher extrinsic 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. 5.2.3). 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 orientation

Eleven students showed the same intrinsic orientation for Mathematics and History. Whereas 37% of Mathematics students had an intrinsic orientation, only 17% of History students had this most positive orientation. Mathematics students had higher means on intrinsic orientation as variable, task value, competence and self-efficacy, while History students had higher means on extrinsic orientation as variable and control (the latter probably ascribable to the perception that the subject is les difficult, which is corroborated by attributing success to the easy task). Once again with circumspection, the conclusion can be drawn that an intrinsic 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 orientation

Nineteen students had the same intrinsic but anxious 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 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 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 self-helpless when faced with too much failure.

5.2.5 Conclusions concerning the clustering of students for Mathematics and History

The results indicate that these standard seven students differ in the type of orientation they have towards both Mathematics and History; four different orientations were identified for each subject. Only 41 students (20% of the sample tested) had the same choice 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.

5.3 *THE RELATIONSHIP BETWEEN SUBJECT CHOICE AND THE SCHOOL VARIABLES*

To test the third hypothesis that there is a relationship between subject choice and school variables, a frequency analysis *(SAS Inc., 1988)* was done on subject choice and school variables (with the focus on the teacher) to determine how many students of each school would be classified as having extrinsic/intrinsic orientations (table 5.4: Mathematics; table 5.5: 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: Chi^2 = 54.41 (df = 12, N = 203), $p < 0.001$, Phi = 0.52); (History: Chi^2 = 30.66 (df = 12, N = 203), $p < 0.002$, Phi = 0.39) the perceived differences were significant.

5.3.1 *Differences in number of students per cluster between the schools for* **Mathematics**

TABLE 5.4: The relationship between school and choice for Mathematics.

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

* 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 on choice of subjects, contrasted to 28.29% 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 orientation on choice of subjects. It would appear that the majority of students tested from school 1 (78.33) rely on extrinsic factors when dealing with Mathematics. This is in direct contrast to students from school 3, of which none showed an extrinsic orientation on choice of subjects 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 school 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%) to choose school subjects. 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' choice of subjects and thus need to be considered when research on motivation to subject choice is undertaken.

5.3.2 *Differences in number of students per cluster between the schools for History*

TABLE 5.5: The relationship between school variables and choice of subjects.

Subject choice		School 1	School 2	School 3	School 4	School 5	Total
Extrinsic Orientation	Frequency	11	0	2	6	4	26
	Row pct.	42.31	00.00	7.69	23.08	26.92	12.81
	Col. Pct.	25.00	00.00	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 5.6: The relationship betweens school variables and subject choice

Subject choice		School 1	School 2	School 3	School 4	School 5	Total
Intrinsic Orientation	Frequency	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 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 orientation (46.15%), as has school 4 (55.25%). 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. (There is a relationship between teacher variable and subject choice).

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 subject choice. The fourth hypothesis can therefore not be accepted. (Age does not influence subject choice).

5.3.3 *The relationship between subject choice 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 choice of subjects, since students' choice of subjects is in part influenced by the teacher's self-efficacy, level of training and teaching experience.

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 expectances 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 orientation on choice of subjects.

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.

5.3.4 *The relationship between student age and subject choice*

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 subject choice.

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.

5.4 *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 subject choice 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)*

The answers to the first and second questions will only be divulged through further age and subject choice. Other researchers *(Nicholls, 1984; Stipek & Daniels, 1991)* did find relationships between subject choice 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 Phiri) 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 choice or subjects 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 subject choice 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.

This research gives some tentative answers to the last question concerning the differences between subject choice orientations. Consistent with the research done by *Dweck (1989), Graham and Golan (1991)* and *Ames and Archer (1988)* the main

differentiating feature between different subject choice 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 orientations (i.e. mastery-orientated students) reported a higher level of task value than students with an extrinsic orientation (i.e. achievement-oriented students). An intrinsic orientation is normally also accompanied by high levels of self-efficacy and control *(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 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 (Motivated strategies for learning questionnaire) alone, it would be safe to conclude that group 3-students had a mastery orientation, whereas group 1-students (the exclusively extrinsically-orientated 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 subjects and failure to difficult subjects. 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 subject it believes to be difficult, since it thinks outcomes are beyond its control.

The results of this study also shows that very few students have the same orientation towards both subjects (see par. 5.2.5). 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 subject choice

orientations towards Mathematics and History. Since the clusters differed significantly, their relationship to the two subjects, namely Mathematics and History were tested.

5.4.1 Stereotypical view of subject choice

The pupils' perceptions of subjects are given in Table 5.7; the results for boys and girls are combined because there were no significant sex differences in the perception of subjects.

Perhaps not surprisingly, the most stereotyped subjects are the 'craft' subjects, presumably because they reflect role divisions within society – i.e. the 'domestic' role for females and the 'handyman' image for males. Of the more academic subjects, it is interesting to note that of those that show the strongest bias only one is seen as 'feminine' – i.e. modern languages – the others are all masculine – i.e. Physics, Chemistry and Mathematics. It is, however, encouraging that in most cases the majority of pupils saw pupils of both sexes as being equally good at all academic subjects.

From the correlations given below, we can see the pupils' perceptions of subjects are part of a cluster of attitudes related to sex stereotypes. Pupils who strongly believe that boys and girls are better at different subjects also believe that certain occupations are appropriate for men and others for women. They also support the traditional sex roles for society in general, and are more likely to see themselves following this role. These relationships appear to be stronger for boys than for girls.

The next stage of the analysis looked at the relationship between subject choice and pupils' perception of subjects. Table 5.9 gives the number of choices for each subject and the percentage of each sex that is taking a particular subject. Subjects with very small numbers, such as the craft subjects, and religious studies for both sexes, have been excluded.

This pattern is the same as that for choices of A-levels nationally (Higher grade level). From Table 5.9 it appears that girls are spread more evenly than boys over the range of subjects, and that boys appear to be concentrated in the stereotypically

TABLE 5.7: Pupils' perceptions of subjects

Subject	*Girls better at:*		*Boys sexes equally good at:*		*Boys better at:*	
	N	%	N	%	N	%
Practical subjects, e.g. Domestic Science, Needlework, Office Practice	155	74.6	81	23.7		
Modern languages, e.g. French, German	216	63.1	120	35.1		
Classical languages, e.g. Greek, Latin	110	32.5	211	61.7		
Performing Arts, e.g. Art, Music, Drama	104	30.4	227	66.4		
Biological Sciences	82	24	233	68.1		
Arts subjects, e.g. English, Literature, History	96	28	238	69.9		
Social Sciences, e.g. Sociology, Psychology	84	24.5	235	68.7		
Geography and related subjects, e.g. HSS			260	76	99	20.2
Economics and related subjects, e.g. EMS			188	55	134	39.2
Mathematics and related subjects, e.g. Statistics			181	52.9	154	45.1
Physical Sciences, e.g. Physics, Chemistry			127	37.1	213	62.2
Practical subjects, e.g. Metalwork, Woodwork, Technical Drawing			82	24	255	74.6

TABLE 5.8: Variables that correlate with the belief that boys and girls are better at different subjects

	Boys		*Girls*	
Belief that certain occupations are Appropriate for men, others for Women	0.63	P<0.0001	0.60	P<0.0001
Support for the traditional sex roles in Society	0.44	P<0.0001	0.17	P<0.01
Intention to follow the traditional sex Role oneself	0.27	P<0.0001	0.29	P<0.0001

masculine subjects. This trend becomes more apparent if we organize the data in a slightly different way (Table 5.7).

Using the pupils' perception of subjects, discussed earlier, they can be divided into those that are strongly stereotyped as feminine or masculine and those that are neutral or only weakly stereotyped. Clearly subjects fall into those categories neutral

subjects were those which 66 per cent or more of pupils said boys and girls were equally good at.

TABLE 5.9: Subject choices of girls and boys

Subject	*Girls (N = 195)*		*Boys (N = 147)*	
	N	*%*	*N*	*%*
Languages	74	37	8	5
Biological Sciences	44	22	31	21
History	49	25	30	20
Social Sciences	36	20	15	10
Geography	25	13	35	24
Economics	33	17	35	24
Mathematics	56	28	86	58
Chemistry	29	15	51	35
Physics	18	9	73	50

Subjects included in table 5.9 are neutral subjects, namely the biological sciences and art subjects – e.g. English literature and History, the Social Sciences and Geography. The stereotypically feminine subjects are languages, and the stereotypically masculine ones are Economics, Mathematics and the physical sciences – e.g. Chemistry and Physics. The number of pupil choices that fall into these three groups of subjects are given in Table 5.10. The percentages are calculated as a percentage of the total number of Higher grade being taken by each sex. The total number of higher grades being taken by girls is 364 and of these 74 are in languages; therefore entries in languages 37 per cent of all entries for girls. For boys the total number of entries is 392, of which eight are in languages; entries in languages therefore make up 5 per cent of entries for boys.

From this table we can see that boys do indeed show more interest in subject that require inductive reasoning than girls. Boys heavily concentrate in the stereotypically masculine subjects, 63 per cent of their choices being in these subjects. They are clearly avoiding subjects defined as feminine (fiver per cent of choices) and are also, though not to the same extent, avoiding neutral subjects. Girls' choices, on the other

hand, show less bias. Although the largest number of choices are in neutral subjects, a larger percentage of them are taking stereotypically masculine subjects than stereotypically feminine ones. Girls therefore are not avoiding masculine subjects to anything like the same degree as boys are avoiding feminine ones, nor are they concentrated in subjects thought 'appropriate' for them, again unlike boys.

TABLE 5.10: frequency of choices

Subjects	*Girls*		*Boys*	
	N	*%*	*N*	*%*
Stereotypically feminine	75	15	8	2
Neutral	272	56	139	35
Stereotypically masculine	136	29	245	63

The impression gained from looking at subject choice is that boys appear to be more influenced by stereotypes than are girls. This impression was confirmed when subject choice was looked at in relation to pupils' attitudes.

It was argued that if appropriateness of a subject for one's sex is an important factor in the decision-making process, then one would expect that pupils who choose only sex-appropriate subjects have more sex-stereotyped attitudes and to be more conforming to the sex stereotypes generally. The analysis reported below found some support for this hypothesis in the case of boys, but not for girls.

For this part of the analysis the subjects studied were grouped into masculine or feminine ones, based on the pupils' own perception of subjects. By grouping subjects in this way, it was possible to identify pupils who were taking feminine only or masculine only, or mixed subjects. Table 5.11 shows the proportion of pupils of each sex who fell into these categories.

TABLE 5.11: Numbers taking masculine and feminine subjects

Subjects	*Girls*		*Boys*	
	N	*%*	*N*	*%*
Masculine subjects only	60	42	19	9.8
Mixed – majority masculine	44	31	24	12.5
Equal (i.e. one of each)	13	9	18	9.3
Mixed – mainly feminine	13	9	33	17
Feminine subjects only	12	8.4	98	57

The fact that pupils do not fall neatly into two groups, those taking masculine and those taking feminine subjects, does present some difficulties. To mitigate these difficulties two different approaches were used in analysing the data. First of all, pupils were given a score based on the number of masculine and the number of feminine subjects they were taking, thus for each category each pupil had a score ranging from 0 to 4. This gave a measure of the degree to which pupils were conforming to stereotypes in their choice which could be related to the strength of their attitude towards sex stereotypes in general. Secondly, the most conforming and the least-conforming groups were compared by looking at differences between the two extreme groups – i.e. those doing all masculine subjects were compared with those doing all feminine subjects for each sex separately.

Looking first at girls, to explore the relationship between subject choice, attitudes and motivation, factor analysis was used. This produced two factors which are given below with the factor loadings for each item:

Factor 1 item	*Loading*	*Factor 2 item*	*Loading*
Stereotypical view of subjects	0.75	Extrinsic motivation for status and recognition	0.69
Stereotypical view of occupations	0.84	Extrinsic motivation for money	0.43
Traditional view of sex roles for society	0.54	Competence	0.56
Liberal view of sex roles for self	0.52	Aggression	0.69
Intrinsic motivation	0.44	Liberal view of sex roles for self	0.42
Competence	0.30	Doing mainly masculine subjects	0.62
Doing mainly feminine subjects	0.30		

The first factor indicates that doing mainly feminine subjects is associated, contrary to what might have been expected, with rejection of the sex stereotypes not only in relation to subjects, but occupations and roles as well. These girls also describe themselves as high on the stereotypical masculine trait of competence and do not see themselves conforming to the traditional sex roles. They are also highly intrinsically motivated. Taking mainly masculine subjects is also associated with rating oneself as high on the masculine trait of competence, combined in this case with aggression and a high level of extrinsic motivation. Their liberal view of sex roles for themselves, however, is not necessarily combined with a liberal ideology for society as a whole, nor with rejection of the sex stereotypes. In fact, if anything, the

reverse is the case, doing masculine subjects also loads positively on Factor 1, albeit rather modestly (0.26), showing that these girls are perhaps more likely to have stereotyped views about subjects and occupations and traditional views about sex roles.

These findings support those of *Weinreich-Haste and Newton (1983).* They found similar attitudes among women engineers who were politically conservative, but supported equal pay and opportunities for women, seeing them as necessary for individual achievement. So although they supported the status quo for society as a whole, they saw themselves as exceptions to that situation. Similarly, *Head and Ramsden (1990:120)* in their study of personality characteristics and pupil choice, found that female sixth-form scientists, unlike those studying arts subjects, tended to be.

> "realistic decision-makers who focus on facts of immediate experience. They seek an ordered environment and are organised and dependable . . . and dislike ambiguity in a situation'.

Thus their preference for an ordered, stable environment may lead them to conservative views about society as a whole – the need to maintain traditional structures; focusing on their own experience, however, leads them to support issues of equality when it relates to them personally.

The second stage of the analysis looked at group differences, using the two extreme groups, those doing masculine only subjects and those doing feminine only subjects. The results of the t-test showed that there were no significant differences between the two groups of girls. The discriminant analysis did not predict group membership particularly well, although it was better than change, 70 per cent of those doing feminine subjects and 63 per cent of those doing masculine subjects.

Turning now to boys, the factor analysis also produced two factors which are given below:

Factor 1 item	*Loading*	*Factor 2 item*	*Loading*
Stereotypical view of subjects	0.76	Aggression	0.73
Stereotypical view of occupations	0.81	Competence	0.66
Traditional view of sex roles for society	0.76	Extrinsic motivation for status and recognition	0.52
Intrinsic motivation	0.41	Extrinsic motivation for money	0.66
Liberal view of sex roles for self	0.40		
Competence	0.39	Doing mainly masculine subjects	0.35
Doing mainly feminine subjects	0.26		

The two factors are orthogonal ($r = 0.01$). The first factor is the same as that for girls, showing that boys doing mainly feminine subjects are likely to have non-stereotyped views, high intrinsic motivation and to see themselves as high in competence. Factor 2 identifies the variables associated with choosing mainly masculine subjects. Boys taking these subjects are more likely to be extrinsically motivated for status, recognition and for a highly paid job and are likely to describe themselves as high on the traits of competence and aggression, characteristics associated with masculinity *(Doyle, 1989)*. These characteristics may be associated with a stereotypical view of subjects and occupations and traditional views about sex roles

5.4.2 Overall findings: Subject choice and choice of a senior secondary school

The first questions of interest were whether or not students were familiar with range of offerings at their own school (comprehensive school), and intending moving for their senior years. In total, 314 students (31% of responses) stated that their current school did not offer the particular choice of subjects they wanted. A further 19.6% did not know whether or not their choice was available. Approximately 10% of the entire sample intended changing schools for the senior years, and although a disproportionate number of these students said that their current school did not offer their preferred choice of subjects, subject choice was by no means the only reason

for moving. Indeed, only 32% of those intending to move gave subject choice as the reason.

In terms of information about subjects, 70% of students reported that they were given the relevant information by their neighbouring school – a surprisingly low figure, since all schools surveyed did not distribute extensive information booklets to their students. Almost half the student sought information about subject choices from additional sources. Despite this, the information provided by the school as generally regarded as helpful and adequate, although 15% of the sample did suggest that the school needed to provide more detail.

Students were then asked to rate on a 4-point score what they knew about year 10 subjects at nearby schools (1 = nothing, 2 = a little, 3 = something, 4 = a lot). The overall level of knowledge was 1.86, with approximately half of the students (48.3%) claiming that they knew nothing about offerings at nearby schools, and a further 26.7% saying they knew a little. This ignorance is not surprising, given that schools did not actively encourage students to enrol at their school by providing information about offerings to their school.

Students were also asked from whom they obtained their information about subject choices. They were presented with a list and checked those they consulted as well as rating each source for the usefulness of the information provided. Table 5.12 gives the mean usefulness rating for each of the possible sources, along with the percentage of the sample which nominated each source. The majority of students (70%) reported that they received information from parents and/or teachers, with career advisers (64%) and friends (65%) also being consulted by a high proportion of the sample. The sources students were most likely to consult, however, were not necessarily seen as providing the most useful information. The small percentage of students (15%) who sought other information sources (usually potential employers, work-experience contacts, or schools other than the one at which they were currently enrolled) gave this information source a very high rating (3.58 on a 4-point scale). Teachers and career advisers were also rated highly (mean ratings above 3), while friends (2.67) and parents (2.85) were rated as providing less useful information than school authorities. Relatives other than parents or older siblings were rated as providing the least useful information overall (2.37).

TABLE 5.12: Sources of information and their perceived usefulness

Source of information	*Frequency (and %) using source*	*Mean (and SD) Usefulness**
Parents	712 (70)	2.85 (0.88)
Older siblings	429 (42)	2.83 (0.95)
Other relatives	275 (27)	2.37 (0.96)
Friends	657 (65)	2.67 (0.82)
Students in other years	471 (46)	2.76 (0.94)
Career adviser	649 (64)	3.15 (0.96)
Teacher/Year adviser	711 (70)	3.11 (0.91)
Other source	154 (15)	3.58 (0.78)

* Mean usefulness ranges fom 1 = not at all useful to 4 = very useful.

Although students could consult as few or as many information sources as they wished, most reported using multiple sources, with the mean number of sources being 3.9. Some patterns of information use were apparent from the data. Almost half the students (n = 488) consulted both the career advisers and other teachers, and rated the usefulness of the information provided in a consistent fashion (r = 0.43, p<0.01). In contrast, although a similar number of students (488) used information from both parents and career advisers, there was no consistency in the usefulness rating for the two sources (r = 0.02). Another large group (n = 382) reported using both other students and friends as information sources (r = 0.44, p<0.01). Clearly, these groups overlap in that a number of students consulted three or four of these popular sources (career advisers, teacher, parents, and friends) but it is noteworthy that the information gained was not regarded in an identical manner.

5.4.2.1 Effect of specific variables

The factors of interest in the detailed analysis were subject match (choice available at the present school, not available, don't know), proximity to a senior high school (near v. far), and gender.

Subject choice in the senior school

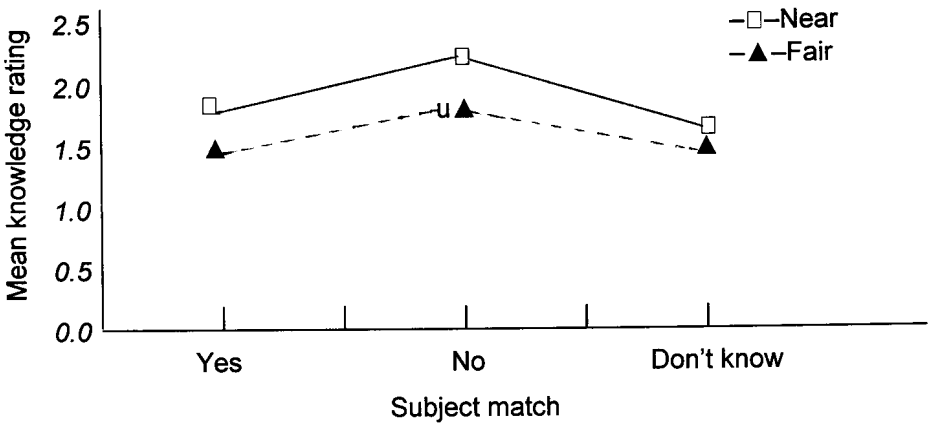


FIG. 1; Mean rating of knowledge of subject offerings at other schools as a function of proximity to a senior high school and subject match.

As an initial check, it was determined that there were no significant differences as a function of proximity in the proportions of students who reported receiving subject information from their existing school, and in the extent to which this information was regarded as helpful and adequate. There were also no reported differences in the availability of students' subject choices at their current school. Knowledge of subjects at nearby schools, however, differed significantly. A three-way ANOVA (sex v. proximity v. subject match) revealed significant main effects on all factors ($p<0.001$ in all cases) as well as a significant school by subject match interaction ($p = 0.023$). In effect, girls reported knowing more about offerings at other schools than did boys (means of 2.03 and 1.68 respectively). In those schools close to a senior high, students who reported a lack of match in their choices also reported having greater knowledge about offerings at other schools Figure 1 displays this interaction.

5.5 SUMMARY

In terms of information about subject choices, there were no differences attributable to sex, proximity or subject match in the total number of sources accessed. There were, however, differences in the pattern of utilised sources and in their perceived usefulness. Logistic regression, with sex, proximity and subject match as independent variables, was used to investigate the relationships, and because of the large number of significance tests 0.01 was taken as the appropriate alpha level. These analyses revealed that proximity was related to the extent to which parents

and students were used as sources of information. Adolescents from schools close to senior high schools were more likely to use fellow students as a source of information than were adolescents from more distant schools (50% v. 42%), while the converse was true for parents as a source of information (65% v. 76%). In terms of perceived usefulness of information, girls judged the advice from friends and students as more useful but advice from parents as less useful than did boys (mean ratings for girls and boys respectively were: friends 2.77 v. 2.59; other students 2.90 v. 2.63; parents 2.75 v 2.93). Subject match was also significant in that students who did not know if their choice was available at their school rated parents as a less useful information source than did other students.

CHAPTER SIX

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

The main aim of this study was to empirically investigate the making of subject choice from middle school phase to senior secondary phase of grade nine learners from Ga-Rankuwa circuit in the North West Province. To attain this aim, a literature review was first undertaken by means of which the nature of the above-mentioned variables, were determined (see chapter 4). Attention was also given to the influence of external variables, the school and the teacher parents in particular, have on students motivational patterns in choice of subjects. Following the literature study, the empirical study was undertaken, of which the method of research was reported in chapter four and the results and discussion were reported in chapter five.

In this last chapter a summary of the literature study and conclusions drawn from this review is first given (viz. par. 6.2), followed by a summary of the empirical research and results (viz. par. 6.3). The limitations of the study are stated in paragraph 6.4 and recommendations for further research are made in paragraph 6.5.

6.2 LITERATURE STUDY

A summary of the literature study will first be given (6.2.1), followed by the conclusions drawn (6.2.2).

6.2.1 Summary of the literature study.

The literature study revealed subject choice to be a very complex construct. It was found that subject choice needed to be placed in a specific context before it could be investigated or described lucidly. The value-expectancy framework was used for this purpose (see chapter 3), since it relates the value learners attach to any school subject, and their expectancy to succeed in that subject, to the actions and strategies they employ for learning, and to the outcomes of the learning endeavour.

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 actions in order to perform in different subjects. Students who doubt their ability to perform become demotivated and they are unable to make sound subject choices, while those that have a positive judgement of their abilities are motivated and perform better and they are able to make sound subject choices. 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 subject choice (see par. 3.4). Two types of orientations were stated, namely a mastery orientation, meaning that competencies and skills gained through hard work are important to the leaner, an ego- orientation which values social approval gained through marks and grades. The subject chosen 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.

It was also found that student age and sex impact on subject choice (viz. par. 3.7.5 and 3.7.6) 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-centred 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' subject choice. Students' characteristics interact with environmental variables to produce

student choice of subject 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 subject, thus they experience intrinsic rewards. Students of inefficacious Mathematics teacher 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 uncertainty in choice of subjects.

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 choice of subjects in students.

6.3 SUMMARY AND CONCLUSIONS OF THE EMPIRICAL RESEARCH

6.3.1 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. 4.4). A questionnaire was used to investigate the making of subject choice 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 investigate the making of 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.

6.3.2 Summary and Conclusions of results

The clustering procedure, which classified the students according to their preferred subject 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 two secondary hypotheses for the two subjects.

6.3.2.1 Motivation influences academic achievement and subject choice.

The research looked at the influence of pupil motivation on subject choice. Pupils who are intrinsically motivated are likely to choose subjects that interest them, while those who are extrinsically motivated are likely to choose subjects that they believe will give them the rewards they are seeking, for example, a highly paid job. *Whitehead (1994)* has shown that Year 10 and 11 pupils can be grouped into three broad types:

1. Those who show high levels of intrinsic motivation – they are interested in academic pursuits for their own sake – and low levels of extrinsic motivation.
2. Those who show high levels of extrinsic motivation – they see education as a means to an end, usually a high-status job – combined with a pragmatic approach to school, doing the minimum of work to achieve what you want.
3. Those who are also highly extrinsically motivated but who combine this with a reasonably high level of intrinsic motivation.

Previous research has shown *(Whitehead, 1994)* that girls are more likely to be exclusively intrinsically motivated in Years 10, 11 and 12 than boys, while boys are more likely to combine intrinsic motivation with extrinsic motivation or to be exclusively extrinsically motivated. It will be interesting to see if type of motivation influences subject choice to a greater or lesser extent than sex stereotypes. Data

was therefore collected on a number of variables, each of which is discussed briefly below.

6.3.2.2 Choice of the secondary school influences the subject choice (curriculum)

Why Mathematics?

Studies have found that the largest and most consistent effects of tracking and grouping on achievement are in Mathematics. Both logic and evidence support the fact that Mathematics is an area of the curriculum in which learning is particularly responsive to school experiences *(Lee et al. 1998:317-18).* First, measures of mathematical performance more closely approximate the training that students receive in school than do measures of other school subjects. Second, the high school Mathematics curriculum is relatively standardized in both content and sequence. Teachers rely heavily on a few widely used texts, and the training of Mathematics teachers is relatively traditional.

Although a close alignment of teaching and testing may not converge on the best mathematical concepts, it suggests that Mathematics is a fruitful subject in which to locate a study of the effects of schools on students' course-taking behaviours. In sum, we targeted this subject for several reasons (1) its linear sequencing, (2) the ability to identify course content by course title (for example, Algebra II has more specified content than English II), (3) differentiation of the curriculum by track or level, (4) its special importance for further education, and (5) the fact that it is learned almost entirely in school. A focus on Mathematics allowed us to capture the multidimensional nature of schools' behaviour in relation to the curriculum.

6.3.2.3 Sex stereotypes, gender identity and subject choice.

The perception of science subjects as more career orientated is, however, something of a fallacy. There are many careers for which arts subjects and languages are more, or equally appropriate, for example, journalism, librarianship, the law, the diplomatic service, the administrative grades of the civil service, accountancy, banking, management and teaching. The Social Sciences, particularly are also appropriate for many careers, particularly educational, clinical and industrial psychology, personal

management and social work. That pupils do not necessarily regard only science subjects as career-orientated was shown by *Brady (1987).* However, the belief that the physical science are the career-oriented subjects, particularly for jobs seen as more appropriate for men, could well have contributed towards them being seen as masculine subjects.

This view of science has also been largely responsible for the concern over the bias in subject choice which has been directed primarily towards the number of girls choosing masculine subjects, particularly Physics, Chemistry and Mathematics – see e.g. see *Archer and McCrae (1991).* This concentration on subject choices of girls has had both positive and negative effects. On the positive side, it does appear to have reduced the bias in their subject choices. In the decade 1981 to `1991 the number of girls gaining O-level or GCSE grade 1 in masculine subjects increased, in Mathematics from 24 to 38 per cent of school leavers, in Physics from 7 to 11 per cent and in Chemistry from 9 to 14 per cent *(DFE, 1992).* On the negative side, it has led to a relative neglect of the bias in the subject choices of boys, with the possible exception of a small amount of work in the area of modern languages – see e.g. *Loulidi (1990).*

6.3.2.4 School variable (with the focus on the teacher influences subject choice)

This study found interaction between subject choice 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.

6.4 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 of 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. Anyone 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 investigating the making of subject choice with a South African sample.

6.5 RECOMMENDATIONS FOR FURTHER RESEARCH

The research was aimed at investigating the making of subject choice from a middle school phase to a senior secondary phase and to identify some of the variables that influences subject choice. It is recommended that further research be conducted:

— to investigate the liberation of subject choice from a sex stereotypes, concentrating on the subject choice for boys;
— Sector differences in high school course taking: A private school or catholic school effect;

— In the planning of in-service programmes aimed at improving teaching techniques, necessary for subject choice, and
— In the new democratic South Africa educational system with culturally diverse classrooms, to investigate whether there is any differences in motivational patterns on subject choice between students of different ethnic groups.

APPENDIX A

STANDARD SEVEN QUESTIONNAIRE

NAME : _____

SCHOOL : _____

Your school is one of the Fourteen schools around Ga-Rankuwa that has been randomly selected to participate in this study. You are kindly requested to respond to all the questionnaires. Any information that you volunteer will be held in the *strictest confidence* available only to the researcher concerned. You are asked to please respond to this questions on your own and to be as honest as possible, as this is essential if the study is to be considered reliable.

This research is being conducted within the Department of Education Guidance and Counselling at the University of Pretoria, by FRANCINA LISEKO PHIRI, (BA; BEd), for the purpose of the MEd degree. The research is supervised by PROF. L.J. JACOBS.

Thank you for your time.

Please mark the relevant blocks with a cross [X] .

1. BIOGRAPHICAL INFORMATION

1.1 Father's present occupation:

Mother's present occupation:

1.2 Sex: Boy [1] Girl [2]

1.3 How many children are there in your family?

[1] [2] [3] [4] or more

1.4 How many have already completed std. 7?

[1] [2] [3] [4] or more

2. ACHIEVEMENT

2.1 What overall average did you achieve at the end of std. 6?

A [1] B [2] C [3] D [4] E [5] F [6]

2.2 What overall average did you achieve in the previous std. 7 term?

A [1] B [2] C [3] D [4] E [5] F [6]

2.3 Irrespective of the above marks what would you say your achievement ability is?

Above average [1] Average [2] Below average [3]

3. *SCHOOL GUIDANCE*

3.1 Have you ever made use of your school guidance department out of your own free will?

Yes [1] No [2]

3.2 If your above answer is 'yes', what types of guidance have you received?

Personal [1] Career [2] Educational (Subjects) [3]

Other [4]

3.3 What *major* function, if any, do *you* see your school guidance department to play?

Personal [1] Career [2] Educational [3] Other [4]

None [5]

3.4 Have you felt the *need* this year to get individual advice from a guidance teacher regarding subject choice?

Yes [1] No [2] [1] [2]

3.5 If your above answer is 'yes', did you go ahead and meet with a guidance teacher?

Yes [1] No [2] [1] [2]

3.6 *Mark the appropriate block with an x that best illustrates your attitude.*

3.6.1 My Guidance Teacher is helpful in giving advice about what subjects and career I should choose.

Strongly Agrees [1] Agree [2] Unsure [3]

Disagree [4] Strongly Disagree [5]

3.6.2 My Guidance Teacher always makes sure he/she is available and willing to help me with advice.

Strongly Agrees [1] Agree [2] Unsure [3]

Disagree [4] Strongly Disagree [5]

3.6.3 I find it difficult to talk to my Guidance Teacher.

Strongly Agrees [1] Agree [2] Unsure [3]

Disagree [4] Strongly Disagree [5]

3.6.4 I find it easy to get on with my Guidance Teacher.

Strongly Agrees [1] Agree [2] Unsure [3]

Disagree [4] Strongly Disagree [5]

3.6.5 My Guidance Teacher is often too busy to help and give advice.

Strongly Agrees [1] Agree [2] Unsure [3]

Disagree [4] Strongly Disagree [5]

3.6.6 My Guidance Teacher has been very helpful in advising me about careers and subject choice.

Strongly Agrees [1] Agree [2] Unsure [3]

Disagree [4] Strongly Disagree [5]

3.6.7 My Guidance Teacher hasn't been very helpful in advising me as to what I am good at and what I should do in the future.

Strongly Agrees [1] Agree [2] Unsure [3]

Disagree [4] Strongly Disagree [5]

3.6.8 My Guidance Teacher usually makes an effort to be fair when advising me.

Strongly Agrees [1] Agree [2] Unsure [3]

Disagree [4] Strongly Disagree [5]

4. *INFLUENCE*

4.1 In the first block, note with a cross those individuals who are likely to influence your final subject choice. In the second block, note the influence of each in order of importance with a 1, 2, 3, etc.

Mother		1	2	3
Father		1	2	3
Brother(s)/Sister(s)		1	2	3
Friends		1	2	3

Subject Teachers	☐	1	2	3
Guidance Teachers	☐	1	2	3
Other Teacher(s)	☐	1	2	3
No – one	☐	1	2	3
Others	☐	1	2	3

4.2 Which parent, mother or father, both or neither do you think you resemble most in character and personality?

Father [1] Mother [2] Both [3] Neither [4]

5. *CAREER CHOICE*

5.1 Have you decided on a career yet?

Yes [1] No [2]

5.2 Do you have a career in mind that is influencing your choice of subjects?

Yes [1] No [2]

5.3 Would *you* prefer to choose a group of subjects that would allow you university entrance?

Yes [1] No [2]

5.4 Would *you* like to continue studying after school at

University [1] College [2] Neither [3] ?

6. *SITUATIONAL FACTORS*

6.1 Do you regard the subject choice you will make this year as

Very Important [1]

Quite Important [2]

Not really Important [3]

6.2 Do you think that your choice of subjects is being forced on you [1] , or that you have *some control* over the choice you are making [2] , or that the choices you are making are entirely *your own* [3] .

6.3 Do you think that your school offers a variety of subjects allowing you to choose:

most of the subjects you desire [1]

only some subjects you desire [2]

basically no subjects you desire [3]

Subject choice for a comprehensive school.

6.4 Do you think your school provide you with more information on subjects they offer?

Yes ☐

No ☐

Not certain ☐

6.5 Do you have information on subject offered in your school?

4 = ☐ A lot

3 = ☐ Something

2 = ☐ A little

1 = ☐ Nothing

6.6 Do your school provide the subject you wish to make selection for grade ten?

Yes = ☐ No = ☐

If yes (motivate) _____

_____

If no (motivate) _____

_____

APPENDIX B

7. *SUBJECT PREFERENCE*

The following items list single subjects that you are required to compare with other subjects. Indicate in each case which subject you prefer. In the example, Biology is compared to those subjects listed beneath it.

For example

BIOLOGY (Bi)				
Sciences (Sc)	Geography (Ge)	Maths (Ma)	Latin (La)	Music (Mu)
Bi	Bi	Ma	Bi	Mu

List of Abbreviations

T	=	Technical Subjects, e.g. Technical Drawing.
HH	=	Handicraft, e.g. Woodwork, Metal Work/Housecraft
Mm	=	Motor mechanics
EW	=	Electrical Work
FT	=	Fitting & Turning
Sc	=	Physical Science
Bi	=	Biology
Ma	=	Maths
BL	=	African Language, e.g. Zulu
Fr	=	French
Bus	=	Business Economics
Ty	=	Typing
Sho	=	Shorthand
Acc	=	Accountancy
Ar	=	Art
Hi	=	History
Ge	=	Geography

7.1

T												
H/H	MM	EW	FT	Sc	Bi	Ma	BL	Fr	Bus	Ty	Sho	Acc
Ar	Hi	Ge										

7.2

H/H												
MM	EW	FT	Sc	Bi	Ma	BL	Fr	Bus	Ty	Sho	Acc	Ar
Hi	Ge											

7.3

MM												
EW	FT	Sc	Bi	Ma	BL	Fr	Bus	Ty	Sho	Acc	Ar	Hi
Ge												

7.4

EW												
FT	Sc	Bi	Ma	BL	Fr	Bus	Ty	Sho	Acc	Ar	Hi	Ge

7.5

FT											
Sc	Bi	Ma	BL	Fr	Bus	Ty	Sho	Acc	Ar	Hi	Ge

7.6

Sc										
Bi	Ma	BL	Fr	Bus	Ty	Sho	Acc	Ar	Hi	Ge

7.7

Bi									
Ma	BL	Fr	Bus	Ty	Sho	Acc	Ar	Hi	Ge

7.8

Ma								
BL	Fr	Bus	Ty	Sho	Acc	Ar	Hi	Ge

7.9

BL							
Fr	Bus	Ty	Sho	Acc	Ar	Hi	Ge

7.10

Fr						
Bus	Ty	Sho	Acc	Ar	Hi	Ge

7.11

Bus					
Ty	Sho	Acc	Ar	Hi	Ge

7.12

Ty				
Sho	Acc	Ar	Hi	Ge

7.13

Sho			
Acc	Ar	Hi	Ge

7.14

Acc		
Ar	Hi	Ge

7.15

Ar	
Hi	Ge

7.16

Hi
Ge

7.17 Is Mathematics one of your difficult subjects at school?

Yes [1]

No [2]

7.18 Do you get extra tuition in Mathematics after school hours?

Yes [1]

No [2]

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

[ ][ ]

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

[ ][ ]

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

Yes [1]

No [2]

7.22 Is History one of your difficult subjects at school?

Yes [1]

No [2]

7.23 Do you get extra tuition in History after school hours?

Yes [1]

No [2]

7.24 What is the percentage you would like to obtain in History? [ ][ ]

7.25 What is the lowest percentage you would be happy with in History? [ ][ ]

7.26 What percentage did you obtain for History in the June/July examination? [ ][ ]

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

Yes [1]

No [2]

7.28 Do you intend taking History next year?

Yes [1]

No [2]

APPENDIX C

8. SUBJECT CHOICE AND TEACHER PREFERENCES

8.1 Below each subject, note with the following symbols whether you *like* the Std. 7 subject teacher concerned (+), *dislike* the teacher (-), or whether you are *uncertain* (?).

Note: Leave out subjects you are not doing at the moment in Std. 7.

T	H/H	MM	EW	FT	Sc	Bi	Ma	BL	Fr	Bus	Ty	Sho
Acc	Ar	Hi	Ge									

8.2 Below each subject, note with the following symbols whether you intend *taking* (T) a subject, *not taking* a subject (D), or whether a subject is *compulsory* (C) at your particular school.

Note: Leave out subjects not offered by your school.

T	H/H	MM	EW	FT	Sc	Bi	Ma	BL	Fr	Bus	Ty	Sho
Acc	Ar	Hi	Ge									

8.

9. ATTITUDES TOWARDS SUBJECTS

In each block, within each subject column, cross 1 or 2 depending on whether you agree with the Comment 1 category, or Comment 2 category.

Note: Respond to subjects offered by your school only.

COMMENT 1	SUBJECT					COMMENT 2
		1	2	1	2	
1.	Rather dull and monotonous					Can be exciting
2.	Helps to satisfy my curiosity about life					Does not really satisfy my curiosity
3.	My own ideas can be used					Not much room for my own ideas
4.	Most pupils can do it quite well					Few seem able to do it well
5.	Usually precise and exact					Often vague and woolly
6.	Doesn't require too much hard work					Needs really hard work
7.	Rather narrow and specialised					Of fairly general interest
8.	A lot of learning by heart					Learning by heart not really important
9.	Needs quite a lot of imagination					Imagination seldom required
10.	Tends to be difficult					Fairly easy
11.	Knowledge useful in every day life					Knowledge not much use in everyday life
12.	Requires wide reading outside lessons					School books and lessons enough
13.	Usually interests me					Often bores me
14.	We don't spend enough time on it					Enough time on the whole
15.	Important for solving world problems					Not particularly important for solving world problems
16.	Gives opportunity to think things out for myself					Too much of other people's knowledge
17.	Tends to be complicated					Generally straight-forward
18.	I enjoy it more than I used to					My liking for it has decreased
19.	Knowledge of it helps people to understand one another					Knowledge of it doesn't seem to help in understanding people
20.	Facts and ideas hard to grasp					Facts and ideas not really difficult

10. *What field of study do your group of subjects fall into?*

Humanities Field, e.g. Geography, History	1
Natural Sciences Field, e.g. Maths, Science, Biology	2
General Field, e.g. a mixture of Sciences and Humanities	3
Commercial Field, e.g. Typing, Accountancy	4
Home Economics Field	5
Art Field, e.g. arts subjects	6
Technical Field, e.g. Technical Drawing	7

11. *PERSONAL CHARACTERISTICS*

On the following page, you will be shown a large number of personality characteristics. We would like you to use these characteristics in order to describe yourself. That is, we would like you to indicate, on a scale from 1 – 7, how true of you these various characteristics are. Please do not leave any characteristics unmarked.

Example: Sly

Marks a 1 if it is *Never true* that you are sly.

Mark a 2 if it is *Usually not true* that you are sly.

Mark a 3 if it is *Sometimes but infrequently true* that you are sly.

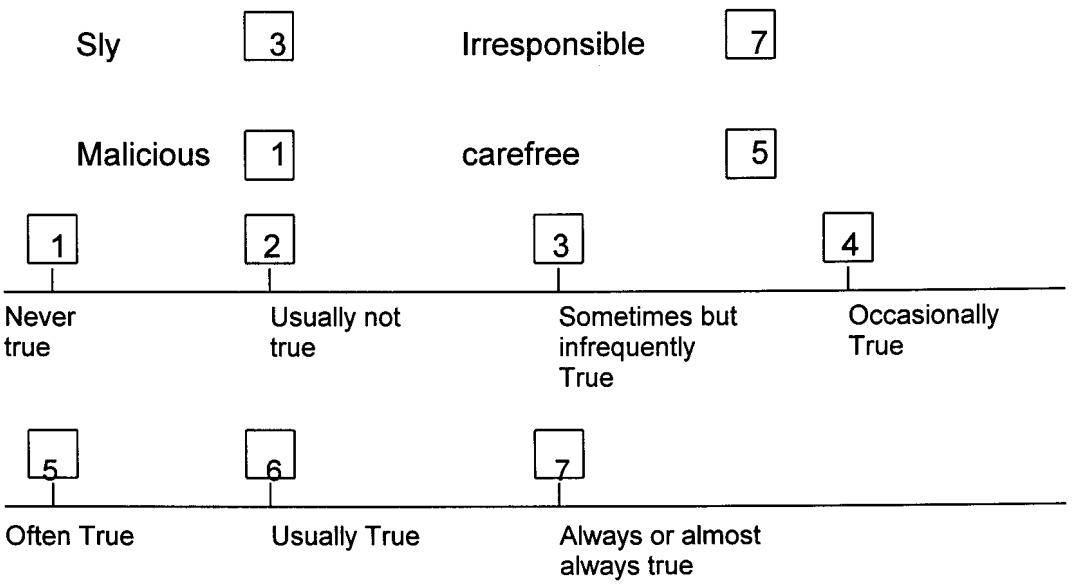
Mark a 4 if it is *Occasionally true* that you are sly.

Mark a 5 if it is *Often true* that you are sly.

Mark a 6 if it is *Usually true* that you are sly.

Mark a 7 if it is *Always or Almost always true* that you are sly.

Thus, if you feel it is *sometimes but infrequently true* that you are "sly", *never or almost never true* that you are "malicious", "*always or almost true*" that you are "irresponsible", and *often true* that you are "carefree", then you would rate these characteristics as follows:



Independent – don't depend on others for assistance		Reliable
Yielding – give in to other easily		Analytical – Analyse things carefully
Helpful		Sympathetic
Defends own beliefs		Jealous
Cheerful		Has leadership abilities
Moody		Sensitive to the needs of others
Independent		Truthful
Shy		Willing to take risks
Conscientious		Understanding
Athletic		Secretive
Affectionate		Makes decisions easily
Theatrical		Compassionate
Assertive		Sincere
Flatterable		Self sufficient
Happy		Eager to soothe hurt feelings
Strong personality		Conceited
Loyal		Dominant – usually take charge
Unpredictable		Soft-spoken
Forceful		Likable
Feminine		Masculine
Warm		Individualistic Likes to be different
Solemn – serious-minded		Does not use harsh language
Willing to take a stand		Unsystematic – don't usually follow a pattern
Tender		Competitive
Friendly		Loves children
Aggressive		Tactful
Gullible – easily fooled or tricked		Ambitious
Inefficient		Gentle
Act as a leader		Conventional – Ordinary in behaviour
Childlike		Adaptable

APPENDIX D

PARENTS QUESTIONNAIRE

NAME OF PARENT(S): _____

NAME OF CHILD IN STUDY: _____

HOME LANGUAGE: _____

Are you South African? Yes ☐ No ☐

NAME OF SCHOOL: _____

Your child is one of the learners from Fourteen secondary schools around Ga-Rankuwa Circuit who has been randomly selected to participate in a study about subject choice. Permission to conduct this study in the schools has been granted by the Circuit Manager of the circuit and the principals of the various schools. In addition to collecting information from your child, it is necessary to collect information from parents too. It would be greatly appreciated if you would respond to the following items together. Do not consult your child at any time while responding. The information that you volunteer will be held in the strictest confidence, available only to the researcher conducting the study and not to school personnel.

This research is being conducted within the Department of Educational guidance and counselling at the University of Pretoria by FRANCINAH LISEKO PHIRI (BA, Bed), for the purpose of the degree of Magister Educationis. The research is supervised by PROF. L.J. JACOBS, University of Pretoria.

Thank you for your time.

Please mark the relevant blocks with an ☒

1. *OCCUPATION*

1.1 Husband's occupation _____

1.2 Wife's occupation (prior to being e.g. housewife)

_____

2. *POST-SCHOOL EDUCATION*

2.1 *Husband*: have you studied at a University [1]

a College [2] or Neither [3]

2.2 If you responded to [1] or [2], how many years did you study for?

[1] [2] [3] [4] more than [4]

2.3 *Wife*: have you studied at a University [1]

a College [2] or Neither [3]

2.4 If you responded to [1] or [2], how many years did you study for?

[1] [2] [3] [4] more than [4]

3. Mark only those subjects that your child intends to study for matric.

T	H/H	MM	EW	FT	Sc	Bu	Na	BL	Fr	Bus	Ty	Sho	Acc

Ar	Hi	Ge

4. *Please mark one of the three blocks that best suggests the degree of your involvement in guiding your child's subject choices* [X]

4.1 Decisions were left completely up to your child with no interference or discussion on our part [ ]

4.2 Some time was spent discussing what subjects our child should select, however we didn't go into too much detail at this stage as regards our child's educational and vocational future [ ]

4.3 Some time was spent discussing the subject choices that our child planned to make, as well as some discussion regarding our child's future educational and vocational plans [ ]

5. *ABILITY*

Do you regard your child's ability to be:

Above average	1
Average	2
Below average	3

6. Do you feel sufficiently equipped to guide your child in this choice of subjects?

Yes [1] No [2]

7. *SCHOOL GUIDANCE*

Please mark the block that best suggest your attitude with an [X]

7.1 How satisfied are you with the subject choice guidance your child has received at school? Provide reasons

Highly satisfied	☐	_____
Satisfied	☐	_____
Indifferent/other	☐	_____
Dissatisfied	☐	_____
Highly Dissatisfied	☐	_____

Thank you for your time. Please would you check to see that all questions have been answered.

BIBILIOGRAPHY

AMES, C. 1984. Competitive, cooperative and individualistic goal structures: a cognitive-motivational analysis. (*In* Ames, R.E. and Ames, C. *eds*. 1984. Research on motivation in education. Vol. 1: Student motivation. New York : Academic Press, Inc. p. 177-207.

AMES, C. 1992. Classrooms: Goals, structure and students' motivation. *Journal of educational psychology*, 80(3):260-267.

AMES, C. & ARCHER, J. 1988. Achievement goals in the classroom: Students' learning strategies and motivation processes. J*ournal of educational psychology*, 80(3):260-267.

ANDREWS, G.R. & DEBUS, R.L. 1978. Persistence and the causal perception of failure: Modifying cognitive attributions. *Journal of educational psychology*, 70:154-166.

ARCHER, J. 1994. Achievement goals as a measure of motivation in university students, *Contemporary educational psychology*, 19:430-446.

ARCHER, J and MACRAE, M. (1991). "Gender perceptions of school subjects among 10-11 year olds', *British Journal of Educational Psychology*, 61, 99-103.

ARMSTRONG, J.M. (1985). A national assessment of participation and achievement of women in Mathematics. In CHIPMAN, S.F., BRUSH, L.R. & WILSON, D.M. *eds*. (1985). Women and Mathematics: Balancing the equation. Hillsdale, N .J. : Erlbaum.

ASHTON, P. 1985. Motivation and the teacher's sense of efficacy. (In Ames, C. and Ames, R., eds. 1984. Research on motivation in education. Vol. 2: The classroom milieu. Orlando, Florida : Academic Press. P. 141-171.)

BANDURA, A. 1982. Self-efficacy mechanism in human agency. *American psychologist*, 27:122-147.

BANDURA, A. 1986. Social foundations of thought and action. A social cognitive theory. Englewood Cliffs, N.J. : Prentice-Hall.

BARNARD, J.S. 1971. *The student and the World in which to live*. Lecture in Tertiary Education organized by the TED, 1971.

BENNETT, N., CRAWFOR, M. & RICHES, C. 1992. Managing change in education: Individual and organizational perspectives. London : Paul Chapman Publishing Ltd.

BLEUER & WALTZ. 1993. Eric digest article. "Striving for Excellence". *Journal of educational psychology* (134-150).

BLUMENFELD, P.C. 1992. Classroom learning and motivation: Clarifying and expanding theory. *Journal of educational psychology*, 84(3):272-281.

BRADY, P. 1987. "The feminisation of sociology', *Social Science Teacher*, 17, 3-6.

BROVERMAN, I.K., BROVERMAN, D.M., CLARKSON, F.E., ROSENKRANZ, P.S. and VOGAL, S.R. (1972). 'Sex-role stereotypes: a current appraisal', *Journal of Social Issues*, 28, 59-78.

BROWN, T.J. 1990. The impact of culture on cognition. *The clearing house*, 63:305-309.

BRUSH, L.R. 1980. *Encouraging girls in Mathematics. The problem and the solution.* Cambridge : Abt books.

BRYAN, E.D.T. 1994. Attribution instruction. *Teaching exceptional children*, 26(4):6-63.

BURTON, L. 1986. *Girls into Maths Can Go. London* : Holt Education.

CLEIBARD, HERBERT, M. 1986. The struggle for the American curriculum 1895-1958. New York : Routledge.

COHEN,R.1977. Statistical power analysis for the behavioural sciences. Revised edition. Orlando: Academic press.

COLADARCI, T. 1993. The teacher's sense of efficacy and commitment to teaching. *Journal of experimental education*, 60(4):323-337.

COLE, P.G. & CHAN, L.K.S. 1994. Teaching principles and practice. New Jersey : Prentice-Hall of Australia Pty.

CORNO, L. 1988. The study of teaching for mathematics learning: Views through two lenses. *Educational psychologist*, 23(2):181-202.

COVEY, S.R. 1994. The seven habits of highly effective people. Sydney. Simon & Schuster of Australia.

COVINGTON, M.V. 1984. The motive for self-worth. (*In* Ames, R.E and Ames, C., *eds*. 1984. *Research on motivation in education*. Vol. 1: Student motivation. New York : Academic Press. P. 81-95.)

CURRICULUM 2005, (1996): Lifelong learning for the 21st century. Pretoria : Department of Education.

CURTIS, R.L. 1975. Adolescent orientations towards parents and peers: Variations by sex and age. *Adolescence*, 1975, Vol. 10, p. 483-494.

CZERNIAK, C. & CHIARELOTT, L. 1990. Teacher education for effective science instruction – A social cognitive perspective. *Journal of teacher education*, 41(1):49-58.

DAVIES, M. & KANDEL, D.B. 1981. Parental and peer influences on adolescents' educational plans: some further evidence. *American Journal of Sociology* 1981, vol. 87, p. 363-387.

DEMBO, M.H. 1991. Applying educational psychology in the classroom. New York : Longman.

DFE (1992). *School Examination Survey, Statistical Bulletin*, 15/92. London : HMSO.

Die TUKKIE, November 2001. Vol. 9, no. 2. *Innovation in the institutions of higher lelarning*. University of Pretoria. Pretoria.

DOVEY, K.A. & MASON, M. 1984. Guidance for submission: Social control and guidance in schools for Black pupils in South Africa. *British Journal of Guidance and counselling*. Jan., 1984, vol. 12, No. 1, p. 15-24.

DOYLE, J.A. (1989). *The Male Experience* (2nd edn). Dubuque, Iowa : Win C. Brown.

DUNCAN, O.D., FEATHERMAN, D.O & DUNCAN, B. 1972. Socio-economic Background and Achievement. New York : Seminar.

DWECK, C.S. 1986. Motivational process affecting learning. *American psychologist*, 41(10):1040-1048.

DWECK, C.S. 1989. Intrinsic motivation, perceived control, and self-evaluation maintanance: An achievement goal analysis. (In Lesgold, L. and Glaser, R., eds. Foundations for a psychology of education. Hillsdale, N.J. : Lawrence Erlbaum. P. 284-303.)

FARMER, H.S., VISPOEL, W.P. & MAEHR, M.L. 1991. Attributions of female and male adolescents for real life failure experiences. *Journal of experimental education,* 58(2):127-140.

FEATHER, N.T. 1988. Values, valences, and course, enrollment: The role of personal values within an expectancy-value framework. *Journal of educational psychology*, 80(3):381-391.

FENNEMA, E. & SHERMAN, J. 1977. Sex-related differences in spatial visualization and affective factors. *American Educational Research Journal*, 1977, vol. 14, no. 1, p. 51-72.

FENNEMA, E., WOLLEAT, P. & PEDRO, J.D. 1979. Mathematics attribution scale: An instrument designed to measure students' attributions of the causes of their successes and failures in mathematics. *Catalogue of selected documents in psychology*, 1979, 9(2):26.

FöRSTERLING, F. 1985. Attributional retraining: A review. *Psychological bulletin*, 98(3):495-512.

FURLONG, A. & CARTMEL, F. 1995. Aspirations and opportunity structures: 13-year-olds in areas with restricted opportunities. *British Journal of Guidance and Counseling,* 23, 361-375.

GAMORAN, Adam. 1987. "The Stratification of High School Learning Opportunities". *Sociology of Education* 60:135-55.

GASKEL, J. 1985. course enrolment in the high schools: The perspective of marking class females. *Sociology of Education*. Ja., 1985, vol. 58, p. 48-59.

GOTTFREDSON, L.S. 1981. Circumscription and compromise: a developmental theory of occupational aspirations. *Journal of Counseling Psychology*, 28, 545-579.

GOVERNMENT GAZETTE, Vol. 353. No. 16085 (1994).

GOVERNMENT GAZETTE, Vol. 377. No. 167579 (1996).

GRAHAM, S. & GOLAN, S. 1991. Motivational influences on cognition: Task involvement, ego involvement, and depth of information processing. *Journal of educational psychology*, 83(2):187-194.

GROSS, R.D. 1992. The science of mind and behaviour. London : Hodder and Stoughton.

GUNTER, C.F.G. 1974. Aspects of Educational Theory. Stellenbosch, Grahamstown: University Publishers.

HARTER, S., WHITESELL, N.R. & KOWALSKI, P. 1992. Individual differences in the effects of educational transitions on young adolescents' perceptions of competence and motivational orientation. *American Educational Research Journal,* 29(4):777-807.

HEAD, J. and RAMSDEN, J. 1990. 'Gender, psychological type and science',, *International Journal of Science Education*, 12, 115-21.

HIRST, P. 1974. The behavioural approach to classroom management. In: Van Zyl, R. (red): *Recent Advances in Classroom Research*. New York: McGraw-Hill.

HUMAN SCIENCE RESEARCH COUNCIL 1972. Differentiated Education Report, 1972, Part 1.

HUMAN SCIENCE RESEARCH COUNCL 1981. *Provision of education in the Republic of South Africa*. Report of the working committee on guidance, No. 7, Pretoria : HSRC, 1981.

HUNT, F. 1991. *Gender and Policy in English Education, 1902-1944*. Chichester : Harvester.

JACOB, S.H. 1982. Piaget and education: Aspects of a theory. Educational forum, 46(2):221-237.

JACOBS, C.D., VAN JAARSVELD, N.H. & VON MOLLENDORF, J.W. 1991. Career guidance for the primary and high school. Cape Town : Unibook.

JETTOO, P. 1997. Life skills training: Empowering young South Africans to create their future. Pretoria.

KEITH, T.Z. & BENSON, M.J. 1992. Effects of manipulatable influences on high school grades across five ethnic groups. *Journal of educational research*, 86(2):85-93.

KELLY, A 1988. "Sex-stereotypes and school science: a three year following-up', *Educational Studies, 14*, 151-63.

KHABELE, E.D. 1995. The relationship between goal orientation and subject choice of a group of Std. 7 pupils. Potchefstroom. (Mini-dissertation, M.Ed., PU for CHE).

KLEIBARD, HERBERT, M. 1986. The struggle for the American curriculum 1893-1958. New York. Routledge.

KOKONG, M.M. 1991. The relationship between reading ability and achievement in English as a second language and other subjects at matric level. Potchefstroom. (Mini-dissertation, M.Ed., PU for CHE.)

LANTZ, ALMA E., and GREGORY P. SMITH. 1981. "Factors Influencing the Choice of Non-required Mathematics Courses." *Journal of Educational Psychology* 73:825-37.

LAYTON, D. 1973. *Science for the people*. London : Allen & Unwin.

LEE, VALERIE E. 1993. "Educational Choice: The Stratifying Effects of Selecting Schools and Courses." *Educational Policy* 7:125-35.

LEE, VALERIE E., and BRYK, ANTHONY S. 1988. "Curriculum Tracking as Mediating the Social Distribution of High School Achievement." *Sociology of Education* 61:78-94.

LEE, VALERIE E., and BRYK, ANTHONY S. 1989a. "Effects of Single-Sex Schools: Response to Marsh." *Journal of Educational Psychology* 81:647-92.

LEE, VALERIE E., and BRYK, ANTHONY S. 1989b. "A Multilevel Model of the Social Distribution of High School Achievement." *Sociology of Education* 62:172-92.

LEE, VALERIE E., BURKAM, DAVID T., SMERDON, BECKY A. CHOW-HOY, TODD and GEVERDT, DOUGLAS. 1998. *High School Curriculum Structure: Effects on Coursetaking and Achievement in Mathematics for High School Graduates* (draft research and development report). Washington, DC : National Centre for Education Statistics.

LEE, VALERIE E. and EKSTROM, RUTH B.. 1987. "student Access to Guidance Counselling in High School." *American Educational Research Journal* 24:287-310.

LEES, L.H. 1994. Educational inequality and academic achievement in England and France. *Comparative education review*, 38(1):65-87.

LE ROUX, J., *ed.* 1993. The Black child in crisis. Pretoria : Van Schaik.

LOULIDI, R. 1990. 'Is language learning really a female business?', *Language and Learning Journal,* 1:40-43

LOUW, D.A. 1992. Human development. Pretoria : Haum.

MANN, L. 1969. *Social psychology*. Milton : John Wiley and Sons.

MANTHORPE, C. 1987. 'Reflections on the scientific education of girls', *School Science Review*, 68, 422-31.

MATHEBULA, J.M. 1992. The influence of self-efficacy, attributions and learning strategies on academic achievement in English of standard 7 Vatsonga students. Potchefstroom (Mini-dissertation, M.Ed., PU for CHE.)

MAYER, R.E. & JAJIKA, H. 1991. Mathematical problem solving in Japan and the United States. *Journal of educational psychology*, 83(1):69-72.

McCLELLAND, D.C. 1985. Human motivation. Glenview, Illinois : Scott, Foresman and Company.

McCOMBS, B.L. 1984. Processes on skills underlying continuing intrinsic motivation to learn. Toward a definition of motivational skills training intervention. Educational psychology, 19(4):199-218.

MEECE, J.L. & HOLT, K. 1993. A pattern analysis of students' achievement. *Journal of educational psychology*, 85(4)582-590.

MEECE, J.L., BLUMENFELD, P.C. & HOYLE, R. 1988. Students' goal orientations and cognitive engagement in classroom activities. *Journal of educational psychology*, 80(4):514-523.

MEYER, F.W., MOORE, C. & VILJOEN, H.G. 1993. Personality theories: From Freud to Frankle. Isando : Lexicon Publishers.

MIDGLEY, C., FELDLANFER, H. & ECCLES, J. 1989. Change in teacher efficacy and student self and task related beliefs in mathematics during transition to junior high school. *Journal of educational psychology*, 81(2):247-258.

MORELAND, P. & VERMEULEN, J. 1975. *Aim, Necessity and Organization of Guidance Service at a Secondary School.* Orientation Course for Guidance in Secondary Schools. Pretoria : Transvaal Education Department.

MORELAND, R., MILLER, J. & LAUCKA, F. 1981. Academic achievement and self-evaluations of academic performance. *Journal of educational psychology*, 75(3):335-344.

MQWATHI, S.E. 1993. The relationship between attributions, affect and the achievement in English of standard 8 students in the Sebokeng/Evaton circuits. Potchefstroom. (Mini-dissertation, M.Ed., PU for CHE.)

NEWMAN, R.S. & STEVENSON, H.W. 1990. Childrens' achievement and casual attributions in mathematics and reading. *Journal of experimental education*, 58(3):197-212.

NICHOLLS, J.G. 1984. Conception of ability and achievement motivation. *Research on motivatioin in education.* Vol 1: Student motivation. New York: Academic Press. p. 40-66.

NOLEN, S.B. 1988. *Reasons for studying*: Motivational orientations and study strategies. Cognition and instruction, 5:269-287.

NORWICH, B. 1987. Self-efficacy and Mathematics achievement: A study of their relations. *Journal of educational psychology*, 79(4):384-387.

OAKES, JEAMME, GAMMORAN, A & PAGE, R. 1992. Curriculum Differentiation Opportunities. Outcomes and Meaning". New York. Macmillan.

OAKLEY-SMITH, T., SKUY, M. & WESTAWAY, M. 1988. A comparison of the guidance received and desired by black and white pupils in South Africa. *Internation Journal for the advancement of Counselling*, 11 p. 105-113.

ORMOND,C.L., LUSZCZ, M., MANN, L., and BESWICK, G. 1991. A metacognitive analysis of decision making in adolescence. *Journal of adolescence*, 14, 275-291.

PALAFOX, J.C., PRAWDA, J. & VELEZ, E. 1994. Primary school quality in Mexico. *Comparative education review*, 38(2):167-180.

PARIS, S.G. & WINOGRAD, P. 1990. How metacognition can promote academic learning and instruction. (*In* Jones, B.F. and Idol, L., *eds*. Dimensions of thinking and cognitive instruction. Hillsdale, N.J. : Erlbaum. p. 15-51.

PATTERSON, C.J., KUPERSMIDT, J.B. & VANDEN, N.A. 1990. Income level, gender, ethnicity, and household composition as predictors of children's school-based competence. *Research in child development*, 61:485-494.

PERRY, R.P. & MAGNUSSON, 1989. Causal attributions and perceived performance: Consequences for college students' achievement and perceived control in different instructional conditions. *Journal of educational psychology*, 81(2):164-172.

PERRY, R.P. & PENNER, K.S. 1989. Causal attributions and perceived performance: Consequences for college students' achievement and perceived control in different instructional conditions. *Journal of educational psychology*, 81(2):164-172.

PERRY, R.P. & PENNER, K.S. 1990. Enhancing academic achievement in college students through attributional retraining and instruction. *Journal of educational psychology,* 82(2):262-271.

PERRY, R.P., VAN DER STOEP, P.S. & YU, S. 1993. Asking questions in first-grade mathematics classes: Potential influence on mathematical thought. *Journal of educational psychology*, 85(1):33.

PINTRICH, P.R. 1988. A process-oriented view of student's motivation and cognition. (*In* Stark, J.S. and Mets, L.A., *eds*. Improving teaching and learning through research. *New directions for instructional research*. San Francisco : Jossey-Bass. P. 65-79.

PINTRICH, P.R. & DE GROOT, E.V. 1990. Motivation and self-regulated learning components of classroom academic performance. *Journal of educational psychology,* 82(1):33-40.

PINTRICH, P.R. & SCHRAUBEN, B. 1991. Students' motivational beliefs and their cognitive engagement in classroom academic tasks. (*In* Schunk, D.H. and Meece, J.,

eds. Student perceptions in the classroom: Case 1 and consequences. Hillsdale, N.J. : Lea. p. 154-156.

PRICE, G.E. & BORGERS, P. 1977. Evaluation of the sex stereotyping effect, as related to counsellor perception of courses appropriate for high school students. *Journal of Counseling Psychology*, My. 1977, vol 24, p. 240-243.

RANDHAWA, B., BEAMER, J. & LUNDBERG, I. 1993. Role of self-efficacy in structural model of mathematics achievement. *Journal of educational psychology*, 85(1):41-48.

RAYMOND, L. & BENBOW, T. 1986. In McEwen, A., CURY, C.A. & WATSON, J. 1986. Subject preference at A-level in Northern Ireland. *European Journal of Science Education,* 1986, vol. 8, No. 1, p. 39-49.

REKORD. 2003. Vol. 17. No. 15. Application for admission 2003.

ROMBERG, Thomas A. 1992. "Problematic Features of the School Mathematics Curriculum". *Handbook of research on curriuculum*, edited by Jackson, P.W. New York. Macmillan p. 749-788.

SARASON, S.B. 1997. The culture of the school and the problem of change. U.S.A. Allyn and Bacon.

SAS INSTITUTE INC. 1988. SAS/STAT user's guide. 6th ed. Cary, N.C.

SCHMECK, R.R. 1988. An introduction to strategies and styles of learning. (*In* Schmeck, R.R., *ed.* Learning strategies and learning styles. New York : Plenum Press.)

SCHRAIBMAN, I.C. 1990. A study of subject choice determinants in the secondary school, and the implication for these for vocational development. Johannesburg. (Thesis, D.Ed., P:U for CHE).

SCHUNK, D.H. 1985. Self-efficacy and classroom learning. *Psychology in schools*, 22:208-215.

SCHUNK, D.H. 1991. Learning theories: An educational perspective. New York : Maxwell Macmillan.

SCHUSTER, D., FöRSTERLING, F. & WEINER, B. 1989. Perceiving the causes of success and failure. A cross-cultural examination of attributional concepts. *Journal of cross-cultural psychology,* 20(2):191-213.

SCOTT, M. 1991. Goals, attributions and self-efficacy as related to course choice and academic achievement of first-year students. Potchefstroom. (Thesis, D.Ed., PU for CHE.)

SLAVIN, R.E. 1991. *Educational psychology*. Theory into practice. Englewod Cliffs, N.,J. : Prentice Hall.

SORENSEN, C.W. 1994. Success and education in South Korea. *Comparative education review*, 38(1):10-35.

SOUTH AFRICA. Department of Education (DoE) 1995. Towards a language Policy in Education : Discussion Document. Pretoria : Department of Education.

SPENCER, K. & FEATHERMAN, D.L. L1978. Achievement ambitions. *Annual review of Sociology*, 1978, vol. 4, p. 373-420.

STABLE, A. & STABLE, S. 1995. Gender differences in students' approaches to A-level subject choices and perceptions of A-level subjects: A study of first-year A-level students in a tertiary college. *Educational research*, 37(1):39-51.

STAMP, P. 1979. Girls and Mathematics: parental variables. *British Journal of Educational Psychology,* 1979, vol. 49, p. 39-50.

STIPEK, D.J. & DANIELS, H.D. 1991. Explaining within-semester changes in student effort in junior high school courses. *Journal of educational psychology*, 83(2):201-211.

SUPPORT SERVICES 1992. *Repor tof the Nepi (National Educational policy investigation) research group*. Oxford University Press. Cape Town.

SWANEPOEL, D.B. 1975. *The child who makes himself conspicuous*. In orientation course for guidance in Secondary Schools. Pretoria : TED: 1975.

TAYLOR, M.T. & HAWKINS, G.J. 1978. Pupils' expectations and subject choice. *Educational Research*, Feb., 1978, vol. 30, p. 15-22.

USEEM, ELIZABETH L. 1991. "Student Selection into Courses Sequences in Mathematics: The Impact of Parental Involvement and School Policies." *Journal of Research on Adolescence* 1:231-250.

VALLI, L. & AGOSTINELLI, A. 1993. Teaching before and after professional preparation: The story of a high school mathematics teacher. *Journal of educational psychology*, 44(2):107-117.

VAN DER STOEP, F. and LOUW, W.J. 1992. Didactics. J.L. van Schaik (Pty) Ltd. Pretoria.

VAN OVERWALLE, F. 1989. Structure of freshmens' causal attributions for exam performance. *Journal of educational psychology*, 81(3):400-407.

VILJOEN, T.A. 1970. *UNISA: Education courses II & III*, General tutorial letters.

WARRICK, P.D. & NAGLIERI, J.A. 1993. Gender differences in planning, attention, simultaneous, and successive (pass) cognitive processes. *Journal of educational psychology*, 85(4):693-701.

WATTS, A. 1980. Careers guidance and Apartheid. International *Journal for the Advancement of Counselling*, 1980, vol. 3, no. 27, p. 1-27.

WEINER, B. 1984. Principles for a theory of student motivation and their application within an attributional framework. (*In* Ames, R.E. and Ames, C., *eds.* 1984. *Research on motivation in education*. Vol. 1: Student motivation. New York : Academic Press. P. 15-38.)

WEINER, B. 1986. An attributional theory of motivation and emotion. New York : Springer-Verlag.

WEINER, B. 1988. Attribution theory and attributional therapy: Some theoretical observations and suggestions. *British journal of clinical psychology*, 27:99-104.

WEINREIGH-HASTE, H. and NEWTON, P. 1983. "A profile of the intending women engineer.' In *Women and Engineering*, EOC Research Bulletin No. 7, pp. 42-62.

WHITEHEAD, J. M. 1994. 'Academically successful schoolgirls: a case of sex-role transcendence', *Research Papers in Education*, 9, 53-80.

WHITE PAPER. NOTICE NO. 196. 1995. GOVERNMENT PRINTERS. PRETORIA.

WOOD, C.J. SCHAU, C. & FIEDER, M.L. 1990. Attribution, motivation and self-perceptions: a comparative study of elementary, middle and high school students. (Paper presented in April 1990 at the annual meeting of the American Educational Research Association, Boston). Unpublished.

WOOD, R.E. & LOCKE, E.A. 1987. The relation of self-efficacy and grade goals to academic performance. *Educational and psychological measurement*, 47:1013-1014.

WOODS, P. 1977. How teachers decide pupils' subject choices. *Cambridge Journal of Education,* March, 1977.

WOOLFOLK, A.E. 1993. *Educational Psychology* (5th ed.), Boston : Allyn & Bacon.

WOOLFOLK, A.E. 1995. *Educational Psychology* (6th ed.), Boston : Allyn & Bacon.

YOUNG, D. 1995. The role and status of the first language in education in a multilingual society. In Hengh, K., Siegruhn, A. & Plüddermann, P. (Eds.), 1995. Multilingual education of South Africa. Project for the study of alternative education in South Africa. The National Language Project. Isando : Heinemann Publishers (Pty) Ltd : 63-70.