

**SEX AND SCHOOL DIFFERENCES IN SELF CONCEPT AND
ACADEMIC ACHIEVEMENT: A STUDY OF PUPILS FROM
MARGINALISED AND NON-MARGINALISED URBAN
SCHOOLS**

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DECLARATION

This is my original work and no part of the work has been submitted for examination in any other university or institution for examination

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DEDICATION

To my parents, Nyaranga Hellen and Katsale James Maina. Your love, tolerance, support and encouragement enabled me to achieve this level of education.

TABLE OF CONTENTS

Title Page	
Declaration	i
Dedication	ii
Table of Contents	iii
List of Abbreviations	vii
List of Tables	viii
List of Figures	x
List of Appendices	xi
Acknowledgement	xii
Abstract	xiii

CHAPTER ONE

INTRODUCTION

1.0. Background to the Study	1
1.1. Statement of the Problem	3
1.2. Purpose of the Study	5
1.3. Research Questions	5
1.4. Significance of the Study	6
1.5. Assumptions of the Study	7
1.6. Limitations of the Study	7
1.7. Definition of Terms	7

CHAPTER TWO

LITERATURE REVIEW

2.1.0	Perspectives and Definitions of Self concept	11
2.1.1	Self concept Development	13
2.1.2	Rogers Model of the Self Concept	16
2.2.0	Academic Achievement	20
2.3.0	Self concept and Academic Achievement	22
2.3.1	Self concept studies done outside Kenya	23
2.3.2	Self concept studies done in Kenya	27
2.4.0	Rationale of the study	28

CHAPTER THREE

METHODOLOGY

3.1.0	Research Design	30
3.2.0	Sample and Sampling	31
3.3.0	Instrumentation	33
3.3.1	Academic Self concept Measurement	34
3.3.2	Home Background Measurement	38
3.3.3	Academic Achievement Measurement	39
3.4.0	Data Collection	39
3.5.0	Data Analysis	40

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

4.1.0	Sample Description	42
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4.1.1. Mean Academic Achievement	43
4.1.2. Personal and Home Background Information	45
4.2.0. Academic Self concept and Academic Achievement	49
4.2.1. Sex Differences in Self concept and Achievement	51
4.2.2. Sex Differences in Paired-Comparisons of Subject Ability	52
4.2.3. Sex Differences on Academic Ability Ladders	56
4.2.4. Analysis of Variance: Sex x Self concept x Achievement	58
4.3.0. School Differences in Self concept and Achievement	62
4.3.1. School Differences in Paired Comparisons of Subject Ability	63
4.3.2. Analysis of Variance: School x Self concept x Achievement	67
4.3.3. Summary and Results	72

CHAPTER FIVE

DISCUSSION

5.1.0. Summary and Conclusions	77
5.2.0. Implications of the Findings	79
5.3.0. Recommendations and Suggestions for Further Research	84
BIBLIOGRAPHY	89
MAGAZINES AND PAPERS	92

LIST OF ABBREVIATIONS

K.C.P.E.	-	Kenya Certificate of Primary Education
C.P.E.	-	Certificate of Primary Education
ANOVA	-	Analysis of Variance
Eng	-	English
Kisw	-	Kiswahili
Math	-	Mathematics
Ghc&Re	-	Geography, History, Civics & Religious education
Hsc & B.Ed	-	Homescience & Business education
MA&C	-	Music, Art & Craft
Sc&Ag	-	Science & Agriculture.
MS	-	Marginalised Schools
NMS	-	Non-marginalised Schools
GPA	-	Grade Point Average
UNICEF	-	United Nations Childrens Education Fund
BERC	-	Basic Education Resource Centre

11a:	Pupils location on academic ability ladders.	56
11b:	Sex differences in pupil location on academic ability ladders.	57
12a:	ANOVA: Sex X Self concept X Achievement	59
12b:	Summary of ANOVA: Sex X Self concept X Achievement	61
13a:	Proportion of pupils in non-marginalised schools indicating higher ability in each subject(k) compared to each other subject(J)	64
13b:	Normal deviate values for pupils in non-marginalised schools only.	64
14a:	Proportion of pupils in marginalised schools indicating higher ability in each subject (K) compared to each other subject (J).	65
14b:	Normal deviate values for pupils in marginalised schools only.	65
15:	Subject rankings for marginalised, non-marginalised schools and the total sample.	66
16a:	Summary of ANOVA: Individuals school X Self concept X Achievement	67
16b:	ANOVA: School X Self concept X Achievement	68
16c:	Summary of School X Self concept X Achievement ANOVA	71

LIST OF FIGURES

Figure:

Figure 2.1. The hierarchical/concentric model of the selfconcept.

An illustrative example 17

Figure 3.1. The ten-step academic ability ladder 34

Figure 3.2. The seven-step academic ability ladder 36

LIST OF APPENDICES

PAGE

APPENDIX A	Personal and homebackground data	94
APPENDIX B	Ability in school subjects	97
APPENDIX C	List of schools used in the study	101
APPENDIX D	Pertinent personal, parental and sibling information on selected socio-economic indicators	102
APPENDIX E	Normal distribution tables	104
APPENDIX F	Details on sex differences in pupil location at each level of the academic ability ladders.	105

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ABSTRACT

The study investigated sex and school differences in self concept and academic achievement in the following Kenya Certificate of Primary Education (K.C.P.E) subjects: Mathematics, English, Music, art & craft, Kiswahili, Science & Agriculture, Homescience & Business education, Geography, History, Civics & Religious Education. Standard eight pupils from two marginalised and two non-marginalised schools were purposively sampled from Mathare division, Nairobi (N = 330; 177 boys; 153 girls). The main objectives of the study were to investigate:

1. sex differences in self concept
2. Sex differences in academic achievement
3. Differences in self concept of marginalised and non-marginalised school pupils.
4. Differences in academic achievement of pupils in marginalised and marginalised schools.
5. Interaction effects of sex, and self concept on the academic achievement of pupils in the sample.
6. Interaction effects of school type and self concept on the academic achievement of pupils in the sample.

Self reported home background data elicited from pupil questionnaires ascertained the that purposive sampling of schools was adequately done. The ten step academic ability ladders developed and validated by Kilpatrick & Cantril(1960) were modified by the researcher to seven step ladders. A pilot study indicated that the seven step self

concept measure was quite stable over a two week interval with variation in student location in the pretest and posttest having a relatively low (13%) error chance. Ten step ladders have been used successfully in Kenya before by Maritim(1979), and Muasya(1989). A self-developed paired comparison technique generated rankings of ability in the seven subjects. Data obtained on these comparisons enabled the researcher to test directional hypotheses where applicable.

Two way analysis of variance methods were used to analyze data at the $\alpha \leq 0.01$ level of significance. The findings indicated :

- Significant sex differences in self concept for Geography, History & Religious education and the Science & Agriculture Subject areas. Boys had higher self concepts than girls in these subjects.
- Significant sex differences in academic achievement for Homescience & Business Education only. Girls achieved higher scores than boys in this subject.
- Significant interaction effects of sex and self concept on achievement in Homescience & Business education and Ghc&Re. Depending on the achievement area sex and self concept accounted for 14% to 45% of the variance in achievement.
- Significant school differences in self concept for Kiswahili and Ghc&Re. Pupils in Marginalised schools had higher self concepts in Kiswahili and Ghc&Re compared to those from non-marginalised schools.

- Significant school differences in academic achievement for all subjects. Marginalised pupils had lower achievement scores compared to their non-marginalised counterparts.
- Significant interaction effects of school and self concept on achievement in all subjects. Depending on the achievement area, school and self concept accounted for 35% to 62% of the variance in achievement.

It was concluded that sex and school differences in self concept and achievement are subject specific. High self concepts do not necessary correspond to high achievement levels. The school type contributes more to variance in achievement compared to sex of the pupil. The observed school differences suggested that marginalised pupils still need serious attention if their achievement levels are to be raised. Indeed they have high self concept in some subjects even if they perform poorly. The role of specific school related factors in academic achievement needs further investigation. The results can be used to encourage pupils to work harder in specific subjects. Measures can be taken to improve the achievement level of marginalised pupils so that they obtain higher scores in the KCPE national examination.

CHAPTER ONE

INTRODUCTION

1.0. BACKGROUND TO THE STUDY

Primary school enrolment figures indicate that quantitative progress in education has been made since independence. The Government of Kenya has almost achieved gender parity in enrolment. However, serious disparities still exist along gender, regional and socio-economic lines with respect to academic achievement, participation and access to higher levels of education (UNICEF, 1992, 1993; Makau 1994). Decreasing access to secondary school has been noted in some geographical locations such as urban slums, arid and semi-arid regions (UNICEF, 1993; BERC 1994). Regional and gender variations in academic achievement were revealed in a study of standard eight pupils from 50 primary schools in Nairobi, Kiambu and Kajiado. Less than half of the girls passed the 1992 Kenya Certificate of Primary Education (K.C.P.E) examinations while nearly two thirds of the boys passed. Mean gender differences were negligible in the Nairobi sample. However, significant differences were found in Kiambu, with female and male mean average scores ranging from 59 to 88 respectively (Appleton, 1993).

National K.C.P.E. examination results confirm the fact that girls continue to perform rather poorly compared to boys. In 1992, girls had a lower mean average in every subject except English. The highest sex differences were in the Science & Agriculture and Geography, History, Civics & Religious education (Ghc&Re) papers. This is generally what is expected since girls are associated with a relatively better linguistic ability while boys are thought to have the numerical ability (Bali, 1984).

Poor academic performance limits accessibility to secondary schools. Girls are limited further by poor performance in mathematics and science oriented subjects since these are crucial determinants of placement into most well paying careers. These well paying careers include medicine, architecture and engineering.

Children from marginalised urban environments constitute one category of the socially and economically disadvantaged. Socio-economic, cultural and psychological factors overlap under an infinite variety of conditions to affect academic achievement (Fargo, 1994). Personality variables like self concept and achievement motivation influence the way an individual interacts with his social and physical environment. Although the physical effects of living in urban slum areas may be obvious, the more subtle, crushing psychological dimension is often overlooked (Fantini, 1968; Cox, 1983; McLeod and Shanahan, 1993). Most families in slum neighbourhoods for example struggle to satisfy basic food and health needs and to meet the ever increasing costs of maintaining a child in school. The problem is accentuated by the cumulative effects of cost sharing devices which tell more on poor urban households (Fargo, 1994). The deleterious life experiences in slum neighbourhoods may have a bearing on an individual's academic self concept of ability. A lack of social and economic worth may well mean low personal worth and feelings of failure. Role expectations of the significant others, for example parents, peers and teachers have been shown to influence the pupils' academic self concept more so in specific subjects areas (Mussen, 1974; Maritim, 1979).

Although research suggests that pupils from marginalised ecological settings are likely to experience greater psychological distress than those from more privileged areas, the nature of their self concept is not clear. The validity of the seemingly self-evident assumption that they acquire negative self concepts has been questioned in recent years. Contradictory and inconsistent results have been reported. Most studies suggest that children disadvantaged by virtue of living in poor socio-economic settings acquire negative self concepts of ability. In addition, few studies examine specific subject self concepts in relation to achievement. Most of the previous research investigated the relationship between the self concept and aggregate achievement. Few studies have examined the self concept in relation to specific subject achievement.

1.1. STATEMENT OF THE PROBLEM

High Education wastage rates have been noted in Kenya, especially at the primary and the secondary school levels. The decreasing access to secondary school among girls and pupils from marginalised areas such as urban slums can partially be attributed to poor academic achievement at the primary school level (Achola, Shiundu & Orodho(1994); Kamotho, 1994; UNICEF, 1995). National examination results further confirm the fact that regional and gender differences in achievement are still evident more so in specific subject areas. The 1995 and 1996 KCPE results, for example, indicated that girls had higher mean averages than boys in language papers that is English and Kiswahili. These are measures of verbal ability and do not favour placement into most well paying careers such as architectural, medical, engineering and research oriented activities. The spiral effects of poor performance

in certain subjects at the primary school level tend to become evident at tertiary levels of education, placing marginalised pupils at a greater risk of dropping out of the educational system. Pupils can be marginalised by gender, locational or socio-economic status.

Socio-psychological interactions adversely differ across regions and gender. Pupils marginalised by virtue of their gender, social or economic background are likely to exhibit different personality traits compared to those not at risk. Physical and psychological factors interact in a complex way to determine ones academic achievement level. The self concept is one intrinsic personality variable which has been shown to be positively related to academic achievement. As mentioned earlier most studies reveal a positive relationship between the self concept and achievement. However, few self concept studies have focused on socially and economically disadvantaged children. Furthermore, most of these studies reveal inconsistent results. Gender differences more so in specific subject self concept are contradictory and therefore need to be ascertained.

In light of the broader and more diverse 8-4-4- curriculum (8 years primary, 4 years secondary and 4 years university) there was need to investigate the self concept in relation to academic achievement in the seven subject categories. Previous self concept research in Kenya dwelt on the Certificate of Primary Education (C.P.E.) examination which had only three subject categories Mathematics, English, General Paper (Mwaniki, 1973; Maritim, 1979). An understanding of gender and school type differences will explain plausible reasons for poor achievement in each of the seven

subject areas examined in the K.C.P.E. examination. It was predicted that pupil self concepts are school subject specific. Hence the relationship between self concept and achievement would not be necessary positive. Sex and school differences in self concept and achievement still need further investigation.

1.2. PURPOSE OF THE STUDY

Arising from what has been stated above the study investigated school and gender differences in self concept and academic achievement levels of standard eight pupils.

The main objectives were to investigate:

- (i) Sex and school differences in self concept
- (ii) Sex and school differences in academic achievement.
- (iii) Interaction effects of sex and self concept on academic achievement.
- (iv) Interaction effects of school type and self concept on academic achievement.

The study also investigated whether a high self concept was reflected in high academic achievement levels. The research design enabled an investigation of specific subject self concept levels in relation to the academic achievement. It was possible to investigate sex and school differences in self concept and achievement.

1.3. RESEARCH QUESTIONS

The study specifically attempted to answer the following questions:

1. Is there a difference between the academic self concept of pupils in marginalised and non-marginalised schools?

2. Do the academic self concept levels of boys and girls differ in specific subjects?
3. Does the academic achievement of boys and girls differ in specific subjects?
4. Does the academic achievement of marginalised and non-marginalised pupils differ?
5. Are there any significant interaction effects of sex and academic self concept on the academic achievement levels in specific subjects?
6. Are there any significant interaction effects of school type and self concept on the academic achievement levels in specific subjects?

1.4 SIGNIFICANCE OF THE STUDY

It was believed that regional and sex differences exist in the self concept and academic achievement of pupils from different schools and home backgrounds. It was hoped that the findings would enable educators like teachers, parents and education policy makers to come up with appropriate strategies of curbing poor academic achievement. Parents and teachers can be encouraged to inculcate more positive self concepts more so in subjects that reflect low self-perception and corresponding low achievement. Subjects in which pupils have a high self concept but corresponding low achievement needed to be examined.

It was envisaged that educators will appreciate the impact of sex and school type on the academic self concept and achievement levels. Apart from being a springboard for further research, the study highlighted the contribution of pupils self concept and school type to academic achievement.

1.5. ASSUMPTIONS OF THE STUDY

The study investigated the academic self concept as an aspect of the general self concept. The other two aspects of the general self concept, specifically sporting and social were important but these were not examined. The academic school subjects were assumed to be more directly linked to academic achievement. The effects of other factors within the home and school on achievements were assumed to be minimal. In addition appropriate measures were taken to minimize effects of these factors.

1.6. LIMITATIONS OF THE STUDY

In a study of this kind, certain limitations are inevitable. For example in this particular study the categorization of pupils into marginalised and non-marginalised schools utilized selected indicators of socio-economic status. Other factors were assumed to have minimal effects. Although ability ladders were used to measure self concept, they revealed a social desirability and random response effects, caution was taken to minimize these effects before data analysis commenced. Lack of recent literature in the area of study limited the researcher to use relatively old books and journals.

1.7. DEFINITION OF TERMS

General self concept of ability

General self concept ability is the personal evaluation that a pupil makes with regard to herself at a particular moment. It is expressed in the attitude of approval and the extent to which one feels capable, successful and worthy of performing well in a

subject. The general self concept can be differentiated into academic, sporting and social aspects.

Academic Self concept of Ability

Academic self concept of ability is the general self concept as applied to academic school subjects only. It was indicated by self evaluation of ability in the following subject categories. Subject abbreviations are given in brackets:-

- (i) English(Eng)
- (ii) Kiswahili (Kisw)
- (iii) Mathematics (Math)
- (iv) Geography,History,Civics & Religious education (Ghc&Re)
- (v) Homescience and Business education (Hsc&Bed)
- (vi) Music,Art and Craft
- (vii) Science and Agriculture (Sc&Ag)

The abbreviations given in brackets are used to identify subjects in the subsequent sections of the thesis. The following levels of the academic self concept were inferred if pupils located themselves on the following steps of the ability ladders:

- High Level-steps 1 and 2
- Medium level-steps 3 and 4
- Low levels-steps 5,6 and 7

Academic Achievement

Academic achievement was measured using the mean and specific subject percentage scores obtained by pupils in the 1995 Nairobi Provincial mock examination. Class records were used as supportive data, although these were not utilized in data analysis.

Kenya Certificate of Primary Education

The Kenya Certificate of Primary Education (K.C.P.E.) is awarded to pupils who successfully complete eight years of primary education. The Certificate of primary Education (CPE) was awarded before the advent of the current 8-4-4 curriculum in Kenya. The numbers 8-4-4 indicate 8 years of primary education, 4 years secondary education and 4 years of university education.

Marginalised School

Marginalised schools (MS) mainly served pupils from low income residential urban slum areas in Nairobi. They were limited to those located within Nairobi urban slum neighbourhoods. Typical slum dwelling are informal settlements which are characterized by congestion, poverty and an inadequate supply of social amenities. The marginalised schools were those located within the informal settlements. They mainly served pupils from within the settlements.

Non-marginalised school

Non-marginalised schools (NMS) mainly served pupils from high income residential areas in Mathare division, Nairobi. Pupils in these schools generally had more

educated parents compared to those from the marginalised schools. These schools were not located in high income residential areas but mainly served pupils from formal well established residential areas.

CHAPTER TWO

LITERATURE REVIEW

This chapter describes the theoretical constructs underlying the notion of the academic self concept as an aspect of the general self concept. It reviews pertinent studies that relate the self concept to academic achievement, sex, school location and pupil home background . A detailed description of each of these aspects is given in the following sections.

2.1.0. PERSPECTIVES AND DEFINITIONS OF SELF CONCEPT

Studies on self concept reveal varied definitions, theoretical orientations and measurement techniques. The theoretical concept of the "self" has a tradition traceable to the work of William James (1842-1893), a philosopher and psychologist. He differentiated the self into two:- "I" (the knower) and "me" (as known to the agent and content of experience). The "me" involves social, spiritual, material and bodily aspects of the self. He viewed the self concept as an entirely conscious phenomena dependent on the recognition received from other people. According to William James the self concept is influenced by factors within the environment, it is not just a inherent factor. This view contradicts the psychoanalytic approaches of Freud and Jung who treated the self as an instinctive and reflective structure (Mead, 1956; Purkey, 1971).

Cooley (1902) invoked the metaphor of a social mirror in his notion of "the looking glass self". He postulated that self vision is reflected to an individual through

symbolic communication with other people. Hence, self concept is determined by one's perception of other peoples reactions towards him. He noted that:

"to the extent that a person is able to take the role of others he can respond to himself from their perspective... in this way the attitudes of the significant people and the group become incorporated into the structure of the self" (p.9).

In his definition of the self, Jerslid (1971) also emphasized the role of the social milieu in the process of self concept development. He defined the self as:-

"...a persons total environment. It is a distinctive centre of experience and significance. The self constitutes a person's inner world consisting of other people and things" (p.8)

Purkey (1971) described the self concept as a complex and dynamic system of beliefs which an individual holds true about himself each belief with a corresponding value.

Symbolic interaction theories on self concept development also appreciate the role of the social comparison process in self-perception (Wells & Marwell,1976; Kinch, 1963; Reitz & Mutran, 1980). According to Mead (1956) social experiences provide significant others who act as symbols that influence self concept development. Thus the self is an abstraction that we develop about our attributes, capacities and social activities. Mead's self develops in a social setting. It entails the system of concepts that we employ in attempting to define ourselves (Coopersmith, 1967). Zanden(1987) defined self concept as:-

"the individual as known to the individual in a socially determined frame of reference"(p.19)

Ecological settings for social experience are reflected in self-related cognitions so that the self concept exists as part of the physical and social settings (Hormuth, 1990).

Social settings provide role models which may be incorporated into one's self concept. Settings also provide role models with definitions of social or gender role expectations (Zanden, 1987). These social definitions influence self schemes (Hormuth,1990). Schemes are habitual patterns of thought that influence how we process information about ourselves and others. According to the schematic processing cognitive model, schemes can alter memory retrieval so that the self concept is reconstructed to suit societal expectations. Information processing models suggest the existence of gender biased schemes (Leahy, 1985). Although controversial the role of gender schemes in self concept development continues to be of interest.

The self concept has been given more explicit and dynamic meaning through various descriptions which are frequently interchanged. This is evident in self prefixes such as self:- actualization, esteem, image, realization, regard and fulfilment. Other self referent terms include superiority striving and reflected self appraisals. More specifically Sullivan talks of reflected self appraisals, Alder describes it as a life span or life style while Maslow refers calls it self actualization. Horney's description of moving towards, against or away from other people also has elements that described self concept formation (Hamachek ,1975).

2.1.1 SELF CONCEPT DEVELOPMENT

Developmental perspectives indicate a general tendency of the self to become more complex and differentiated as a child grows older (Mussen, Conger & Kagan, 1974; Coleman & Hendry, 1989). In early childhood self-descriptions are egocentric being

concerned with physical appearance, personal possessions and close family members. Descriptions become more abstract and sophisticated as the child grows older. They even become more complex and subtle as children approach early adolescence (Ruble, Higgins & Hartrup, 1980). Seven to fifteen year old mainly focus their self descriptions on abstract personality traits, interests, hobbies and beliefs (Rogers, 1982; Zanden, 1987; Lippa, 1990).

Cognitive and structural models of the general self concept also propose that the self-evaluation process undergoes modification between early and late childhood. Self concept development is marked by increasing differentiation, articulation and hierarchization. As a child grows older there is an increasing tendency to view certain qualities of the self concept as central and more important than others. (Leahy, 1985). Hence the study assumed that school subjects that are considered more central and important would tend to be emphasized in self concept by being given a higher rating.

Various social and cultural factors can be associated with self concept development during adolescence. According to Coleman & Hendry (1989)

"The way in which young people understand and perceive themselves, their own agency and personality and their various social situations have a powerful effect on their subsequent reactions to various events... the essential dilemma for the individual adolescent in wishing to be fully integrated and accepted in society is between playing appropriate roles and 'self-hood'" (p. 45).

The individual may choose and select alternative social and environmental contexts in which to provide appropriate levels of subject ability. Social interaction with parents, teachers and fellow youth provide role models and social agents which are functions

of selfhood, perceived competence and social identity. The transitional nature of the adolescence period and in particular the sex role changes experienced is likely to be associated with some modification of self concept. Therefore socio-cultural factors may influence a pupils feelings of ability in a particular school subject. Sex role specifications may influence a pupils feelings of ability in particular school subjects. Engel (1972) demonstrated that a negative self concept is related to other aspects of personality difficulty. He drew attention to the necessity of considering other variables which may be associated with self concept development. A subsequent classic study by Rosenberg, (1979) represented one important aspect in this respect. Using a random sample of five thousand (17 and 18 year old) pupils selected from schools in New York, he demonstrated that the low self concept characteristic of 30% of youths in the sample was associated with poor school performance, anxiety and depression. Pupils with higher self concept felt that parents took an interest in their educational affairs.

Family background and the cultural context play a part in determining some aspects of self concept. Sex role identity represents the degree to which the individual believes he/she has matched prescribed sex roles. The term "sex role" refers to a set of standards or prescriptions which prescribe appropriate masculine and feminine behaviour in a particular social setting. Social standards of sex appropriate behaviour make people learn through subtle influences how to perceive their ability (Douvan, 1979). Hence sources for self concept development rest primarily on reflected appraisals and social comparisons. To discern levels of worth, young people compare

their competencies to those of peers, parents and other people within the home or school.

Many self theories cast the self concept into a hierarchy of four dimensions (Coopersmith, 1967; Epstein, 1973; Harter, 1983). These can be summarized as follows:-

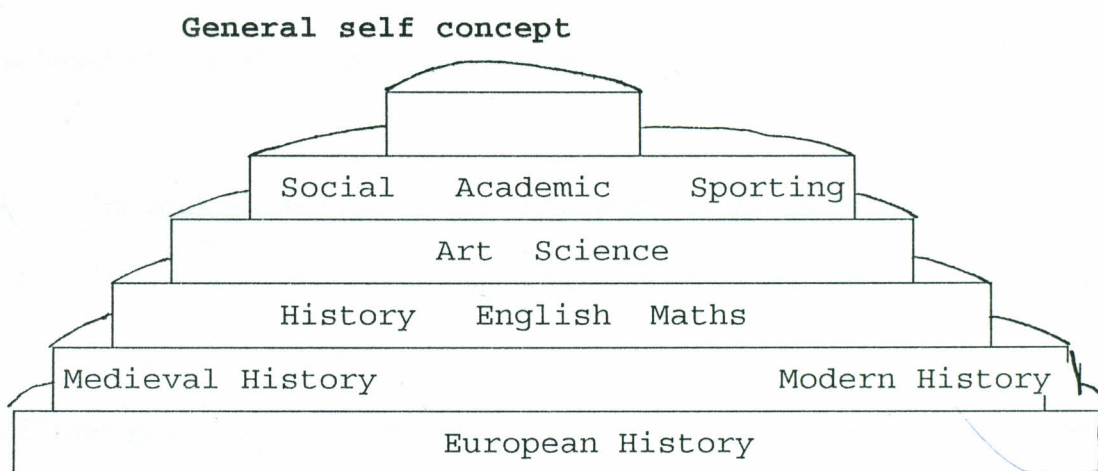
- (i) Competence or success in meeting achievement demands.
- (ii) Social acceptance, attention, worthiness and the positive reinforcement received from significant others.
- (iii) Control or feelings of internal responsibility for outcomes.
- (iv) Virtue or adherence to moral and ethical standards.

In addition, the theories suggests that each of the four dimensions of general self concept can be divided into situation specific categories. Harter (1983) further implored that the salience of an activity to an individual determines the degree to which success or failure affects the self concept. If a pupil does not value a subject like History as being important in determining his success as a doctor he will not give it a high self concept rating. He may value science related subjects like Chemistry, Biology and Mathematics. These valued subjects are likely to be given a higher self concept rating.

2.1.2. ROGERS' MODEL OF THE SELF CONCEPT

Rogers (1982) combined features of hierarchical and concentric structures of the general self concept to come up with a concise hierarchical/concentric structure.

Hierarchical models have the general self concept at the apex of the hierarchy. The general self concept become more specific as we progress to lower levels of the hierarchy. Concentric models of the self concept stress the salience and valency of particular aspects of the self concept. The most important subjects to pupils are centrally placed. Those considered to be less important are at the periphery. Figure 2.1 gives an illustrative example.



Key Hist -History

Figure 2.1: The hierarchical/concentric model of the self concept: An illustrative example.

Source: (Rogers (1982). A social psychology of schooling, London: Routledge & Kegan Paul (p. 147).

The model above owes considerable debt to the works of Kelly, Epstein, L'Ecuyer, and Shavelson as discussed by Leahy,(1985). This model was based on American children, Kenyan pupils may place the subjects differently. For example English may not be given a central location by most Kenyan children.

Kelly organized the self concept into core personal constructs which maintain identity and existence, and peripheral constructs which can be altered without serious modification of the core structure. Epstein views the self concept as a first order super ordinate category with subordinate second order postulates. The second order postulates are competence, moral self approval, power and love. Higher order postulates become increasingly important to the maintenance of an individual's self concept. According to Shavelson (1976), the general self concept is at the apex of the hierarchy. It has two broad components:

- (i) The academic self concept further divided into specific school subjects.
- (ii) The non-academic self concept which can be divided into social, emotional and physical aspects.

L'Ecuyer gives a more differentiated picture of the five constituents of the self concept. Each self structure has two substructures and several lower order categories. The five constituents are:-

- (i) Material self
 - somatic:- physical traits
 - Possessive:- objects and persons
- (ii) Personal self
 - self image:- aspirations, interests, emotions capacities and aptitudes.
 - self identity:- role, status, ideology and abstract identity.
- (iii) Adaptive self
 - self esteem:- competence and personal worth.
 - self activity:- autonomy, ambivalence, dependency and actualization

(iv) Social self:

- preoccupations social activities and
- reference to other sexes.

(v) Self-oneself:-

- refers to others and the other peoples opinions of the individuals' self.

This reveals the dimensions rather than an organization of self concept into a clear hierarchical system. It is interesting that he views competence and self esteem as lower order constructs while several other models view them as first or second order postulates.

In hierarchical models, the general self concept exists at the top, with increasingly differentiated and specialized elements emerging at lower levels. Concentric models are primarily concerned with the differing significance that particular aspects of the total self concept have for the individual.

The pinnacle in the illustrated example in figure 2.1 represents the superordinate general self concept differentiated into academic, social and sporting aspects at a lower level. More specialized, subordinate elements emerge at lower levels each with an associated value and valence. In this example, the academic self concept is more central being of greater significance compared to the peripheral social and sporting aspects of the general self concept. According to fig. 2.1., school subjects, and even subject sections, can be evaluated either negatively or positively by a pupil.

A pupil who considers art subjects to be more important than science based subjects is likely to emphasize the value of arts in his self concept by giving them a higher self concept level rating. The sciences may be rated lower since they may be seen to be of less value. From the model it is apparent that pupils can estimate their academic self concept levels in specific school subjects. In fact, it is impossible to divorce the three aspects of the general self concept. Hence the academic self concept could be influenced by social and sporting aspects present within the school or home environment. In this study only the academic self concept was investigated as an aspect of the pupils general self concept.

2.2.0. ACADEMIC ACHIEVEMENT

Various psychological variables have been investigated worldwide in an attempt to come up with reasons for underachievement at all levels of education. The influence of intrinsic personality variables such as the self concept, achievement motivation and attitudes towards learning on achievement has been investigated in various studies. In Kenya high academic achievement is held in high esteem by pupils, parents, educators and the public at large. Examinations are considered to be crucial determinants of future success. They are instrumental in career placement and selection into higher levels of education. Poor performance at the primary school level constitutes one form of wastage in the Kenyan Education system. This wastage may be due to high repetition or dropout rates (Kamotho, 1994).

Notable sex and regional variations in academic achievement have been revealed in various studies. Sex differences are revealed when specific subjects are considered,

with boys generally performing better than girls. For example, Muola (1990) reported non-significant sex differences in the achievement motivation levels of standard eight pupils from rural and urban areas of Machakos districts. Although motivation was higher in the urban sample, the rural sample performed better than them in the mock subtests. The selected home environmental factors had a rather weak relationship with academic performance (ranging from $r = 0.01$ to -0.09). Performance in Science & Agriculture was significantly related to the following home environment factors. Mothers occupation (-0.19), learning facilities at home (-0.16), fathers occupation and fathers education (-0.11). The mothers occupation significantly correlated with: Mathematics (-0.14), Geography, History, Civics and Religious education (-0.14) and aggregate performance (-0.13). The rural/urban differences suggest the role of the type of school attended in the academic achievement of pupils. Specific factors within the home may also have a bearing on a pupils achievement status.

In an earlier study Bali (1984) found that boys performed better than girls in Mathematics and General Paper. The sample consisted of 571 standard seven pupils from 16 primary schools located in four Kenyan regions. According to the results of this study, girls obtained higher scores than boys on tests of Verbal fluency, Arithmetic fundamentals and Rote memory, whereas boys were superior in Spatial ability, Arithmetic reasoning and Problem solving. An Aptitude test revealed that boys performed better than girls on General reasoning and Spatial ability tests. This is generally what is expected due to traditional gender role stereotypes. In general, girls are thought to have better linguistic ability while boys have the numeric ability. The

results also demonstrated that Certificate of Primary Education (CPE) examination scores were significantly correlated with the following variables: school quality (0.33), attitudinal modernity (0.33), family size (-0.24) and rural/urban background (0.20).

Based on a sample of 1383 standard eight pupils in 50 primary schools (Nairobi-18, Kiambu-17, Kajiado-15), Appleton (1993) demonstrated sex and regional differences in mock and National KCPE examination results. Negligible but significant sex differences were obtained in urban samples, but rural schools reported larger sex differences. In Kiambu schools, marks ranged from 59 to 88 marks in favour of girls and boys respectively.

These studies suggest sex and school differences in pupil academic achievement. These differences may be more diverse in light of the present Kenyan educational curriculum. The 8-4-4 primary curriculum is more diverse with seven subject categories. Earlier studies relating the self concept to the academic achievement of primary school children have used Certificate of Primary Education scores in only three subject areas namely; Mathematics, English and General Knowledge.

2.3.0. SELF CONCEPT AND ACADEMIC ACHIEVEMENT

Most studies worldwide reveal the persistent positive relationship between the general self concept of ability and academic achievement. Pupils with a positive self concept tend to approach achievement tasks with confidence and high expectations of success and consequently perform well in class (Purkey, 1970; Nash, 1976). The following

section reviews studies that have investigated this relation between self concept and academic achievement.

2.3.1. SELF CONCEPT STUDIES DONE OUTSIDE KENYA

The relative educational disadvantages and difficulties experienced by lower social class children as they pass through school have been highlighted by various large scale studies in Britain and U.S.A. The national survey by the Plowden Committee, for example, produced evidence that parental attitudes towards education and child development were more closely related to reading attainment than circumstances of the home, specifically the fathers occupation, level of education and material provision (Cox, 1983). Other studies support the view that home background factors have a greater influence upon childrens educational achievement than school factors.

Cox (1983) carried out a trace study using a sample of 690, seven to eleven year old in 26 schools selected from three urban areas in England and Wales. Schools were designated as either serving deprived working class or predominantly middle class areas. Marked differences in language and school achievement were found in favour of the working and middle class categories during infant years. He sought to establish whether similar variations in achievement would be revealed among students drawn exclusively from deprived areas. The deprived sample was allocated to control groups and disadvantaged groups based on an interview with parents. The control group achieved significantly higher scores than disadvantaged group on a majority of language tests. According to the test norms the disadvantaged group was relatively backward on some language measures although these differences were not statistically

significant. A follow up study from junior to high school (Cox, 1983) sought to find out if home background affects child development. It also compared personality traits of children as they transferred to secondary school. The results indicated that Spelling, Reading and Mathematical skill scores for the control group were higher than those for the disadvantaged group. This was more pronounced at 11 years than 7 years of age. The self concept measure revealed that the control group had a higher mean self concept score than the disadvantaged group, but this fell short of statistical significance. The findings suggest that the disadvantaged group did not perceive themselves more negatively than their control group peers although they scored non significantly higher on the lie scale.

Watternberg & Clifford (1974) investigated the self concept in relation to the reading achievement of 128 Kindergarten children from two schools serving middle and lower class neighbourhoods. An unfavourable self concept and low achievement was already established in children from both schools. The self concept measure was highly predictive of achievement in second grade than intelligence tests.

Caplin (1969) matched 180 intermediate grade children from three schools on the basis of age, sex, grade attainment, race and socioeconomic status. Fifty items selected from a larger pool of items were used to measure the self concept of ability. Children with high self concepts had higher academic achievement grade ($r = 0.53$). Calsyn & Denny (1977) demonstrated that pupils from families of a higher socio-economic status tend to have higher grade point average, more positive self concepts and higher educational expectations. Using 556 males and females the self

concept of ability scale ratings of the pupil himself and evaluations by his classmates they observed that girls generally had lower self concepts of ability and plans compared to boys.

Brookover's series of studies demonstrate that a pupils self evaluation of academic ability is highly related to his perception of other peoples evaluation of his academic ability. Brookover & Gottlieb (1964) investigated the relationship between school location, school climate, self concept and selected social structure variables. Using more than 4000 fifth and sixth grade students in the state of Michigan he found that schools serving pupils from higher socio-economic status families had a slightly higher mean self concept of ability rating compared to those serving children from a lower socio-economic status. In a subsequent study, Brookover (1979) sampled 476 fourth and fifth grade students from 68 schools in Michigan urban area and its exclusive rural area. Using the self esteem inventory he analyzed the self concept of ability in specific subjects as well as the general self concept of ability. He obtained correlations between the self concept and achievement tests, report grades and cumulative scores in each subject. Multivariate and discriminant analyses revealed.

- (i) Significant differences for type of school attended and pupils grade level
- (ii) Non significant interactions between sex, race and grade attainment.
- (iii) That all but two of the subject correlations for girls are significantly higher than those for boys.

The differences are attributed to differences in the students perception of other peoples evaluations and expectations of him. In another study of 1000 seventh grade pupils in a middle sized city in U.S.A. Brookover(1981) found a significant positive relationship between the self concept and Grade Point Average (GPA) achievement scores even if intelligence was partialled out ($r = 0.57$).

Lunn (1970) in a larger study on streaming in 28 elementary schools in Britain used the Grade Point Average(GPA) to categorize pupils into above average and below average ability groups. Correlations between scores on the 9 item and non streamed groups of above average ability. Boys of below average ability in streamed schools had more positive self concepts than their non-streamed counterparts. This did not prove true for girls, suggesting that boys had better self concepts than girls of an equal achievement status. Pupils in the higher ability group had a higher self concept than those in lower ability groups. The relationships seemed to be manifested more strongly in ability groups than in total school samples.

Rogers,Smith & Coleman (1978) confirmed the role of the school or class as social comparison groups. He administered the Piers Harris childrens self concept scale to 159 academic underachievers in a metropolitan school system (25% female, 22% black, mean age = 9.5 yrs.). Results were non significant when school mean self concept scores were used but significant when class mean self concept scores were used. He concluded that failure to get a significant relationship may be due to greater concomitant variation of ability when comparisons are made for total samples. The relationship is manifested more strongly in the context of the school or the classroom.

2.3.2. SELF CONCEPT STUDIES DONE IN KENYA

Various studies in Kenya have investigated the relation between self concept and academic achievement. Using a modified form of the self concept inventory Mwaniki (1973) investigated this relation using seventh grade rural and urban pupils from four elementary schools. Intercorrelations on school achievement, socio economic status and self concept differed across schools. In rural schools, academic achievement negatively correlated with socio economic status and self concept. Among the three self concept measures (Mental, social and physical) only physical ability was negatively correlated with achievement. Positive correlations were found between: school subject self concept and Maths achievement, the mean self concept in urban schools and academic achievement. Non-significant positive relationships were found between self concept and the following variables: fathers occupation, fathers education and farm acreage. Rural urban differences are explained in terms of differences in the social background and the environmental settings experienced by the two groups.

Maritim(1979) investigated the academic self concept as evaluated by pupils and teachers in relation to the grade attainment of 432 standard seven Kipsigis pupils in 13 schools. The Self-Anchoring scaling technique with ten step ladders was used to develop the self concept measure while district mock and national Certificate of Primary Education (CPE) scores measured attainment. A pupil questionnaire elicited data on selected home background variables. The results indicated that depending on the achievement area pupil and teacher perception accounted for 26% to 36% of the variance in attainment. Only sex showed a significant relationship with self concept, teacher perception and grade attainment.

In an analysis of the academic self concept in four selected secondary school subjects (Maths, English, Biology and Geography), Muasya (1984) found a significant relationship between self concept and achievement this being school subject specific. Non-significant sex differences in self concept were reported in biology and geography, these being in favour of girls. These findings suggest that self concept levels vary across subjects.

2.4.0. RATIONALE OF THE STUDY

It is apparent from the review that studies on self concept utilize varied theoretical orientations and measurement techniques. These two factors partially contribute to the inconsistency in results on school and sex differences in self concept. The relation between self concept and academic achievement involves mutual reinforcement so that changes in one factor facilitate change in the other (Hamachek, 1971). Definitions of the self reveal its evaluative, affective, dynamic and organizational aspects. It is clear that social comparison groups embedded in socio-cultural settings provide societal roles and expectations which act as pre-requisites in self concept development. Hence relations between self concept and achievement may be manifested more strongly in certain contexts. None of the self concept done studies in Kenya focused on marginalised urban pupils. The current eight year primary school curriculum is more differentiated and representative of secondary school subjects. The previous seven year curriculum was narrower testing only English, Mathematics and General Knowledge. It was considered worthwhile to investigate the self concept in specific primary school subjects in relation to the corresponding subject achievement level. Findings on the role of the socio-economic

status in self concept development are inconsistent. Some studies suggest that pupils from low socio-economic backgrounds have lower self concepts compared to those from higher socio-economic backgrounds (Caplin,1969; Wattenberg,1974; Calsyn,1977;Brookover,1981). Contradictory results have been reported in other studies (Cox, 1983). Lunn (1970) and Maritim (1979) suggest that boys have higher self concepts than girls but Muasya (1984) demonstrated that sex differences are subject specific. The findings of Rogers, Coleman and Smith (1978) prompted the researcher to use whole classes as a sampling base to control for social comparison effects.

The following research hypotheses were generated from the literature reviewed.

1. Marginalised school pupils have lower academic achievement scores in all subjects compared to their non-marginalised counterparts.
2. Marginalised school pupils have lower self concepts in all subjects compared to the non-marginalised school pupils.
3. Girls have lower academic achievement scores than boys in all subjects except English and Kiswahili.
4. Girls have lower self concepts of ability in Mathematics and Science subjects while boys have high self concepts in all subjects.
5. There is a significant interaction effect of sex, and self concept on academic achievement in all subjects.
6. There is a significant interaction effect of school type and self concept on academic achievement in all subjects.

CHAPTER THREE

METHODOLOGY

This chapter describes the research design, sample and sampling techniques. It gives a detailed description of the research instruments and the data collection procedure. Details on data analysis techniques are given alongside postulated hypotheses. The chapter is divided into five main sections which discuss the research design, sampling techniques, the data collection procedure and data analysis.

3.1.0 RESEARCH DESIGN

The main objective of the study was to investigate the relationship between the academic self concept and the academic achievement of standard eight pupils attending two types of schools. Intervening effects of sex and school type in this relationship were of special interest. An ex-post facto research design was used since the independent variables had already occurred and could not be manipulated by the researcher.

The independent variables were self concept, sex and school type. The dependent variable was academic achievement in each of the seven subject categories. Hence sex had two levels; school type two levels; and the academic self concept had three levels. Levels were as follows:

- Sex - girls or boys;
- School type - marginalised or non marginalised
- Self concept - High, medium, low.

The research paradigm below is a general guide. Sex and school type were built into the statistical design to ease data analysis.

Table 1: Research paradigm

		Marginalised		Non-marginalised	
		Girls	Boys	Girls	boys
Academic Selfconcept level	High	Academic Achievement			
	Medium				
	Low				

This design enabled the researcher to block and even nest variables to investigate sex and school differences in self concept and academic achievement. Using different categories of pupils it was possible to investigate sex and school differences in self concept and achievement. The design also enabled an investigation of the interaction effects of sex, self concept and school type on achievement. Using different categories of pupils it was possible to investigate sex and school differences in academic achievement and self concept.

3.2.0. SAMPLE AND SAMPLING

The sampling unit consisted of all public primary schools located within Nairobi. The schools were categorized as marginalised or non-marginalised. Marginalised schools mainly served pupils from relatively lower socio-economic backgrounds. They represented typical urban slum schools located within informal settlements. The non-marginalised school types reflected schools serving pupils from better

residential settings. These non-marginalised schools had pupils with highly educated parents compared to those from non-marginalised schools (see Appendix C). These schools were not necessarily located within more formal or affluent neighbourhoods but mainly served pupils from relatively higher socio-economic status.

Purposive sampling was used to identify the two non-marginalised and two marginalised schools in Mathare division, Nairobi. Mathare division was randomly chosen from the four divisions. The choice of one division was necessary to ensure that uniform mock achievement scores would be available. All standard eight pupils in the selected schools participated in the study. The candidates were better placed to report their self concept in specific subject areas since they were older than pupils in lower classes (Age range 12-16 years). Furthermore being early adolescents they possessed more stable self-perceptions compared to pupils in lower classes. Although the study initially targeted approximately 400 pupils only 330 valid questionnaires were analyzed. Twenty three questionnaires were used for piloting the self concept measure. Questionnaires with incomplete data were excluded as their inclusion would have interfered with the analysis procedure for paired comparisons of ability. Table 2 shows the distribution according to sex and school type.

Table 2: Sampling distribution according to Sex and Schools, N = 330

	Total sample	Male	Female
Non-marginalised	190(57.6%)	101(57.1%)	89(58.2%)
Marginalised	140(42.4%)	76(42.9%)	64(41.8%)
Total	330(100.0%)	177(100.0%)	153(100)

NB: Numbers in brackets show the percentages.

It is evident that of the 330 pupils sampled, there were more males (53.6%) than females (46.4%) indicating a relatively balanced sex representation. The non-marginalised schools had more pupils (57.6%) compared to the marginalised schools (42.4%). However, the unbalanced figures did not influence the research design.

3.3.0 INSTRUMENTATION

A single questionnaire administered at the piloting stage indicated that fatigue and time were limiting factors. After piloting the questionnaire items were distributed into two parts. These were administered separately but on the same day in each school. Part A had items on pertinent home background data and seven academic ability ladders. Part B had a paired comparison of ability item and semi-structured questions on self concept. The Nairobi Provincial mock examination results were used as measures of academic achievement. A detailed description of each instrument is given in the following sections.

3.3.1 ACADEMIC SELF CONCEPT MEASURES

The academic ability ladders and the paired comparison were used to measure the pupils self concept in each of the seven K.C.P.E subjects. The Self-Anchoring scaling technique devised and validated by Kilpatrick and Cantril (1983) was used to develop seven step ability ladders. The authors original version consists of pictorial scales in the form of ten numerically anchored ladders. Each ladder describes a pupils construct to do with being good in a particular school subject. According to the authors it is easy to administer, self-explanatory and can easily be understood by 13-16 year old. It overcomes many shortcomings of self concept measures since the researcher does not impose upon the respondent a description of the self. Its use in various cultures has proven that it contributes significant information about an individuals self concept. In the original ten-step academic ability ladder step number one indicates feelings of very high ability in a subject, the middle step 2-9 indicate decreasing ability, while step number ten indicates feelings of the lowest ability. Figure 3.1 gives an illustration of the ten step ladder.

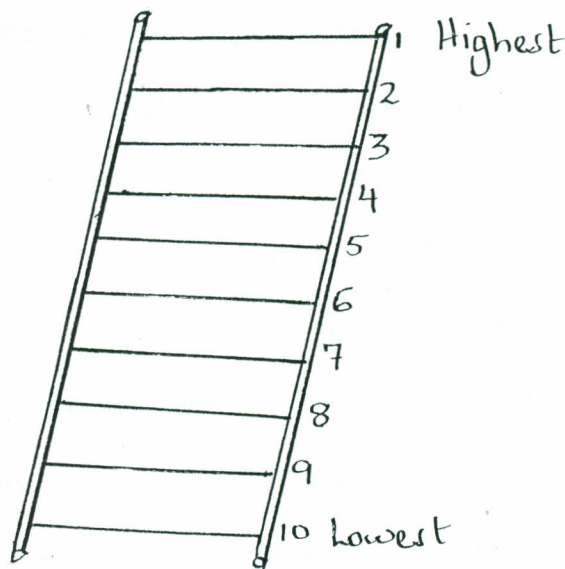


Fig. 3.1: The Ten Step Ability Ladder

Two researchers in Kenya used the original ten step ladder to investigate the self concept in relation to academic achievement (Maritim, 1981; Muasya, 1989). Maritim (1981) sampled standard seven Kipsigis pupils while Muasya's sample consisted of form three secondary school students. Neither the authors nor these researchers report reliability indices for these ten step ladders but they mentioned that the ladders were good measures self concept. Thorough literature review coupled with a pilot study resulted in the choice of a modified seven step ability ladder. It seemed reasonable to improve on what has been used in Kenya before than to adopt a new measure of the self concept.

Wells (1976) reports that the reliability of a measurement scale tends to increase as the number of steps is increased from two. He recommends a minimum of five steps. Nunnally (1971) suggests that fewer steps allow for a greater discrimination of ability without reducing an instruments validity. Most psychometricians normally recommend a minimum of five steps in a scale, adding that the gain in reliability becomes minimal beyond seven steps. In Nunnally's view steps should be greater than or equal to five for higher validity while too many steps may confuse the respondent. For instance, a respondent may be unsure of whether to locate himself on the seventh or eighth step of the ten step ladder given above. Pilot studies on 5,6,7,8 step sizes proved the seven step ladder to be most the stable and reliable. After piloting the seven steps were subjected to further analysis using a sample of twenty three pupils from one standard eight class. A pretest and posttest was administered over a two week interval to determine the test-retest reliability of the ability ladders. Fig. 3.2 gives an illustration of the seven step ladder.

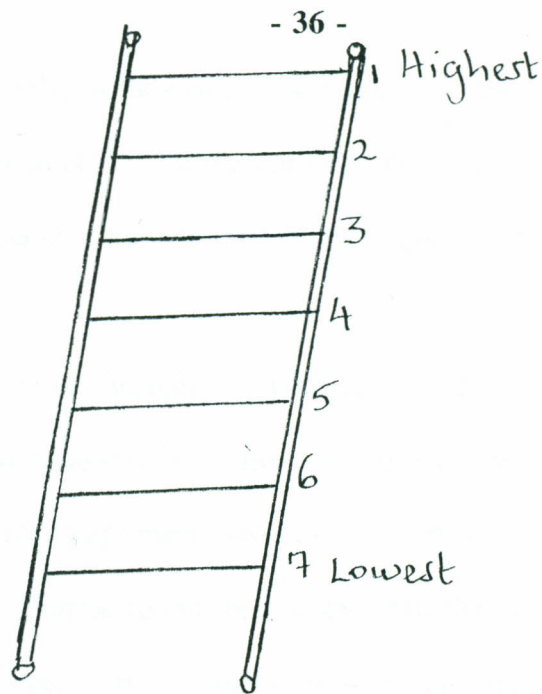


Fig. 3.2: The Seven Step ability ladder

The top most rung of the ladder (step 1) indicated that the pupil felt he was at the very best on a subject while the bottom most rung (step 7) indicated feelings of being very weak on a particular construct. The middle steps 2 to 6 indicate decreasing ability. Any differences in a pupils indication of ability during the pretest and post test was treated as an error. Pupils were given the seven ladders on two occasions. Table 3 gives the pretest and post-test results for a sample of 23 pupils. During piloting the following criteria was used to categorise pupils into the high, medium and low self concept categories :-

- High - Steps 1 and 2
- Medium - Steps 3,4, and 5
- Low - Steps 6 and 7

The high medium and low self concept categories were adjusted as shown below during data analysis to minimise evident social desirability and random response. The

following criteria was used when analyzing the questionnaires obtained from the study:

- High - Steps 1 and 2
 Medium - Steps 3 and 4
 Low - Steps 5,6 and 7

Table 3: Pre- and post test results on academic ability ladders for a two week interval N= 23

Student NO.	Ghc&Re		Maths		Ma&c		Eng		Sc&Ag		Kisw		Hsc&BEd	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
01	L	L	H	H	H	H	M	M	L	L	M	M	L	L
02	M	M	H	H	H	H	H*	M	M	M	H	H	H*	M
03	H	H	H	H	H	H	H	H	M	M	H	H	H	H
04	H*	M	H	H	H*	M	H	H	H*	M	H	H	H	H
05	M*	H	M	M	M	M	M	M	M	M	M	M	M	M
06	M	M	H	H	H*	M	H	H	M	M	H	H	M	M
07	H	H	L	L	M	M	H	H	M	M	H	H	H	H
08	M	M	H	H	M*	H	M	M	L	L	M	M	M	M
09	H	H	H	H	H	H	H	H	H	H	H	H	H	H
10	M	M	M	M	H	H	H	H	M	M	H	H	H	H
11	M*	H	H	H	H	H	L	L	M	M	H	H	M*	L
12	M	M	H*	M	M	M	M*	H	M	M	M*	H	M	M
13	M	M	M	M	M	M	M	M	M	M	H	H	M	M
14	M	M	M	M	H	H	M*	H	M	M	H	H	M	M
15	M	M	L	L	L	L	M	M	M	M	L*	M	M	M
16	M	M	M	M	M	M	H	H	H*	M	M	M	M	M
17	M	M	M	M	M	M	H	H	H*	M	H	H	H*	M
18	L	L	M*	H	H	H	H	H	H	H	H	H	H	H
19	L	L	M	M	M	M	M	M	M	M	M	M	H*	M
20	M	M	M	M	H	H	H	H	M	M	H	H	H	H
21	M	M	M	M	M	M	M	M	M	M	H*	M	M	M
22	M	M	M	M	M	M	H	H	M	M	M	M	M	M
23	M	M	M	M	M	M	M	M	M	M	M	M	M	M

- * : Difference in location on pretest and posttest
 M : Medium self concept
 H : High self concept
 L : Low self concept
 Pre : Pre-test results
 Post : Post-test results

$$\% \text{ error} = 21 / (23 \times 7) \times 100 = 13\%$$

The instrument seemed quite stable with a 13% error chance in location on the two tests. It is interesting to note that all these were borderline errors. For example in

Ghc&Re student number 4 indicated a high ability on the pretest and medium ability on the post-test. In no case did a student indicate a 'high' on one test and low on the other test. The ladders were also objective enough to ease data analysis.

The paired comparison technique was developed by the researcher since a combination of two measures was envisaged to give more valid results on the self concept. The paired comparison question required pupils to compare subjects in a pair and then draw a circle round the one they felt they had better ability in from a given pair. The seven subject categories were English, Kiswahili, Mathematics, Ghc&Re, Homescience& Business education, Music, Art&Craft and Science&Agriculture. Each subject(K) was paired with every other subject (J) in the list. The letters K and J are used in the thesis for convenience in subject comparison. The resultant twenty one pairs were arranged in a random fashion (see Appendix B). This indirect technique minimised random response and social desirability effects that were evident in the academic ability ladders at the piloting phase. However, the results on paired comparisons were not used in the analysis of variance. Semi-structured questions on self concept provided additional information for secondary analysis. (See Appendix B).

3.3.2. HOME BACKGROUND DATA

Pertinent home background data was necessary to ascertain whether the purposive sampling of schools was adequately done. This section elicited information on selected socio-economic indicators. These socio-economic indicators included the pupils personal data, parental and sibling education levels and parental occupations.

Material factors such as the quality of housing, residential locations, mode of travel, availability of social amenities and family structure were also investigated. (See in Appendix A).

3.3.3. ACADEMIC ACHIEVEMENT MEASURE

The Kenya Certificate of Primary Education (K.C.P.E) divisional mock examination scores (%) in each subject were used to measure the pupils academic achievement. The mock examination is prepared by a panel of teachers from schools located within the division. The examination is similar to the national K.C.P.E. examination. Mock examinations are assumed to be predictive of performance in the national K.C.P.E. examination. The pupils past class performance records were also used as supportive data. The national K.C.P.E. subject scores were not available when the data was being collected since the examination is done at the end of the year.

3.4.0. DATA COLLECTION

A single questionnaire was pretested to determine the reliability, validity and suitable time duration. The stability of the academic ability ladders tested over a two week interval revealed that it was quite reliable. The two adjusted forms were administered over a one week period in the four schools to ensure uniformity. Questionnaires were given to all standard eight pupils in the selected schools. Academic achievement scores were obtained from the head teachers and class teachers. This Data was collected with the aid of a research assistant who was trained to clarify the instructions to the students in a uniform fashion. Pupils were given clear instructions on how to locate themselves on the ability ladders. Parts A and B of the pupil

questionnaires were administered on the same day in each school. This was self-reported written data given by the pupils.

3.5.0. DATA ANALYSIS

The statistical package for social sciences (SPSS) computer program generated descriptive and quantitative data analyzed at the $\alpha \leq 0.01$ level of significance. Two tailed tests of hypotheses were used. This means that results had a 1% or less error chance with a 99% confidence interval. Descriptive analysis entailed a computation of:

- means and standard deviations to indicate how widely spread values were from the mean. A large standard deviation indicates a less homogenous sample.
- skewness and kurtosis indices in order to compare the distribution of a variable to that of the standard normal distribution. Positive skewness indicates a bunching of scores the lower end while negative skewness indices indicate that scores are bunched on the higher side. Kurtosis indices give the peakedness of a curve.
- correlation coefficients (R^2) gave the amount of contribution that each independent variable (sex or school) gives to the dependent variable (achievement).
- F-tests were used to test the statistical significance of the postulated null hypotheses. Simple frequencies and percentages enabled an investigation of comparisons on the responses of various groups to each question.

The analysis of variance (ANOVA) technique separates variations into independent components. These group components are analyzed in order to test certain hypothesis. ANOVA tests the hypothesis that means of several groups in a

population are equal. In the two way ANOVA each observation was classified according to two criteria. In this case academic achievement was classified according to self concept, sex and school type. It is possible to examine the two independent variables independently and to examine possible interaction effects using Fishers F-statistic. The F-statistic assumes that random samples are from normal distributions and that groups are relatively homogeneous. All ANOVA results were based only on academic ability ladders as a measure of self concept. These ladders enabled a test of significance for any sex and school differences. It was possible to conclude whether boys or girls were favoured by an observed subject difference using directional tests of hypothesis achievement score and the paired comparisons technique.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

In this chapter self reported data from pupil questionnaires is described in light of the specific research hypothesis. An overview of the statistical techniques and a detailed interpretation of the findings is also presented. It is divided into the following sections:- Sample statistics such as sample size, proportion of boys and girls, proportion of marginalised and non marginalised school pupils. The Mean achievement scores for each school subject, girls and boys are given. Differences between marginalised and non- marginalised schools on selected personal and home background variable. Sex differences in self concept based on the paired comparisons and academic ability ladders. It gives Sex differences in academic achievement; School differences in self concept based on paired comparison and academic ability ladders and School differences in academic achievement

4.1.0. SAMPLE DESCRIPTION

Of the 330 standard eight pupils sampled 177 (53.6%) were male while 153(46.4%) were female. The non-marginalised schools had more pupils (57.6%) compared to the marginalised schools which had 42.4%. (See Appendix C) Since previous research suggests a social comparison process in self concept development whole classes were used as a sampling base. However, three physically or mentally retarded pupils' questionnaires were not analyzed. They were excluded because various studies indicate significant differences between the self concept of physically and/or mentally retarded pupils compared to normal pupils. The researcher felt that

making comparisons between three handicapped pupils and a very large number of normal pupils would not give valid results.

4.1.1. MEAN ACADEMIC ACHIEVEMENT

Table 4a below gives the academic achievement statistics (mean and standard deviation) in the total sample for each subject area.

Table 4a: Academic Achievement Statistics for the Total Sample N = 330

Subject	Mean(%)	Standard Deviation
Eng	52.93	16.87
Kisw	57.85	12.87
Math	45.01	19.87
GHC&RE	53.58	14.32
Hsc&BEEd	48.49	13.08
MAC	59.06	15.87
Sc&Ag	49.07	14.64

The lowest mean achievement score and the largest standard deviation was recorded in Mathematics. However, the means standard deviations were comparable in the other subjects. The scores were most widely spread in Mathematics. This was a reflection of what is expected of pupils performance in Mathematics.

Findings on sex differences in academic achievement are given in Table 4b.

Table 4b: Sex Differences in Academic Achievement N = 330 (177 boys; 153 girls)

Subject	Mean subject percentage score for		
	Total sample	Girls	Boys
Eng	52.9	54.3	51.7
Kisw	57.8	58.8	57.0
Math	45.0	45.3	44.7
GHC/RE	53.6	52.7	54.3
Hsc/B.Ed	48.5	47.9	48.9
MAC	59.1	60.3	58.0
Sc/Ag	48.5	47.9	50.1

Mean academic achievement scores of girls did not differ much compared to those of boys. Infact, scores for girls, boys and the total sample seemed to compare well. Girls had higher achievement scores in English and Kiswahili compared to boys. Boys had higher scores than girls in Science/Agriculture, Homescience/Business Education and Ghc/Re. The statistical significance of this findings is given in a later sections.

Further analysis on mean school achievement revealed notable differences between the four primary schools. Differences between schools when classified as marginalised or non-marginalised were even more diverse. Table 4c gives details on school differences in academic achievement for each of the seven subjects.

Table 4c: School differences in academic achievement

Subject	Total Sample	Mean for each school types (%)				NMS N=190	MS N=140
		I	II	III	IV		
Eng	52.9	57.4	67.4	37.2	41.2	62.4	32.9
Kisw	57.8	60.6	63.5	51.7	52.2	62.1	52.0
Math	45.0	49.3	59.2	28.0	34.7	54.3	31.4
GHC/RE	53.6	53.5	66.3	42.8	45.6	60.0	44.2
Hsc/BEd	48.5	53.2	56.3	36.0	42.4	54.8	39.2
MAC	59.1	61.5	70.6	41.5	54.6	66.1	48.1
Sc/Ag	48.5	54.4	58.2	37.4	40.3	56.3	38.9

MS - Marginalised School; NMS - Non-Marginalised School

Pupils from non-marginalised schools had higher mean achievement scores in all subjects when compared to pupils in marginalised schools. The achievement differences between marginalised and non-marginalised schools were large for English (NMS = 62.4%; MS = 32.9%) and Mathematics (NMS = 54.3%; MS = 31.4%). The significance of these academic achievement differences is discussed in later sections.

4.1.2. PERSONAL AND HOME BACKGROUND INFORMATION

Data on pupil, sibling and parental related variables were deemed necessary to investigate the adequacy of the purposive sampling schools as marginalised Schools (MS) or Non-marginalised Schools (NMS). However, no attempt was made to analyze the pupil background information in relation to the self concept or achievement. The information was only used to ascertain the adequacy of purposively sampling of marginalised and non-marginalised schools. For details on responses to selected socio economic indicators see Appendix D.

Table 5 gives a summary of responses to the selected socio economic status indicators.

The last column indicates the proportion of pupils in each school type who gave a particular response. For example, 73.9% of pupils in the sample were between 13.6 and 15.5 years old. Of these, more (48%) were from non-marginalised schools while fewer (25.9%) were from marginalised schools. Hence, marginalised school pupils were generally much older than their non-marginalised school counterparts. In fact all the pupils aged above 16.5 years (3.9%) were from non-marginalised schools.

Table 5: Differences between marginalised and non marginalised schools in Responses to Selected Socio-Economic Indicators

	Socio Economic status Variables	% of the total		
		NMS (N = 190)	MS(N= 140)	Total (N = 330)
a	Pupils age in years			
	Under 11.5	0.6	0.6	1.2
	11.6-13.5	6.3	1.7	7.9
	13.6-15.5	48.0	25.9	73.9
	15.6- 16.5	1.5	10.0	11.5
	Over 16.5	0.0	3.9	3.9
	No Response	1.5	0.0	1.5
	Total	57.9	42.1	100.0
b	Pupil lives with			
	Both Mother & Father	46.1	20.3	66.4
	Father only	3.7	3.6	7.3
	Mother only	6.0	13.6	19.6
	Relative	2.1	3.9	6.0
	Any other person	0.0	0.6	0.6
	No response	0.0	0.0	0.0
	Total	57.9	42.1	100.00
c	Who pays for education			
	Both Mother & Father	35.2	10.9	46.1
	Father only	3.5	12.8	17.3
	Mother only	16.1	9.7	28.8
	Sibling	1.8	2.1	3.9
	Relative	0.3	0.9	1.2
	Any other (Sponsored)	0.0	2.7	2.7
	Total	57.9	42.1	100.0

	SES Variables	NMS	MS	Total
d	Mothers level of Education			
	None	2.4	3.6	6.0
	Primary	4.2	19.1	23.3
	Secondary	32.0	18.1	50.1
	University	17.2	0.4	17.6
	Not applicable	0.6	0.9	1.5
	No response	1.5	0.0	1.5
	Total	57.9	42.1	100.0
e	Fathers level of Education			
	None	1.5	4.0	5.5
	Primary	1.5	14.0	15.5
	Secondary	21.2	16.7	37.9
	University	31.8	2.4	34.2
	Not applicable	0.3	4.5	4.8
	No response	1.5	0.6	2.1
	Total	57.9	42.1	100.0
f	Any brother(s) working			
	Yes	21.3	17.8	39.1
	No	36.6	24.3	60.9
	Total	57.9	42.1	100.0
g	Any Sister(s) working?			
	yes	18.2	17.5	35.7
	No	39.7	24.6	64.3
	Total	57.9	42.1	100.0
h	Alternative income sources			
	Yes	27.6	10.3	37.9
	No	30.3	31.8	62.1
	Total	57.9	42.1	100.0
i	Pupils educational aspiration level			
	Primary	1.2	0.3	1.5
	Train after primary	0.0	2.7	2.7
	Secondary	2.4	10.7	13.1
	Train after secondary	7.0	4.8	11.8
	University	47.0	23.0	70.0
	Any other	0.3	0.6	8.0
	Total	57.9	42.1	100.0

It is evident from Table 5 that distinct differences exist between characteristics of pupils from marginalised and non-marginalised schools. As mentioned earlier most pupils in the sample (73.9%) were aged between 13.5 and 15.5 years of age. A larger proportion of older pupils were from marginalised schools. Although 66.4%

of the pupils indicated that they lived with both parents less than half of these (20.4%) were from marginalised schools. More of the mother headed households were from marginalised schools (13.6%) compared to (6%) of the households in non-marginalised schools headed by mothers. Furthermore the education of pupils from marginalised schools is supported more by a single parent, relatives or sponsors. Among the 46.1% of pupils whose education is supported by both parents only 11% come from marginalised schools. It is worth noting that there were more mother headed households (19.6%) than father headed households (7.3%) in the total sample. Parental and sibling levels of education, and occupations were expected to vary across the two school categories.

Fathers were generally more educated than mothers for example 17.6% of mothers and 34.2% of fathers had attained university education. However a majority of the mothers (50.1%) and fathers (37.9%) had attained secondary level education or training after secondary school. Very few (0.4%) of these mothers with university education level were from marginalised schools. Most mothers of pupils in marginalised schools had attained primary (19.1%) and secondary (18.1%) education. This contrasted with the higher educational levels of non-marginalised school mothers with a majority of them having attained secondary (32%) and university (17.2%) levels of education. A similar trend was revealed by levels of father education. A majority of fathers of pupils in marginalised schools had attained primary (14%) and secondary (16.7%) education. Higher educational levels had been attained by fathers of pupils in non marginalised schools. Most of them had attained secondary (21.2%) and university (31.8%) levels education.

There was no evidence of differences between schools with respect to the number of siblings working. Only 39.1% of the pupils in the sample had siblings who were working. Only 37.9% of the pupils in the sample indicated that their families had alternative income sources. These sources included rental houses, farms and business premises. More pupils indicate alternative income sources were from non-marginalised schools.

The findings indicated distinct differences between pupils from marginalised and non-marginalised schools on selected socio-economic indicators. This confirmed that purposive sampling was done adequately giving a representative sample of marginalised and non-marginalised school pupils. The marginalised urban slum schools served relatively poor and disadvantaged pupils who pupils generally had less educated parents and little if any alternative income sources. The non-marginalised schools served pupils from comparatively better socio-economic background as indicated by parental levels of education for example.

4.2.0. ACADEMIC SELF CONCEPT AND ACADEMIC ACHIEVEMENT

The main objective of the study was to investigate sex and school differences in the academic self concept and academic achievement of pupils in the seven subjects tested in the Kenya Certificate of Primary Education (K.C.P.E.) Examination. Frequencies, percentages and analysis of variance methods were used to analyze data. As expected the seven step ability ladders revealed a social desirability effect evidenced by an avoidance of lower steps and the negative skewness in all subjects. Kurtosis indices were positive for all subjects except Mathematics. This means that

distribution curves were more peaked than the normal distribution curve for all subjects self concepts apart from Mathematics. This was expected since the higher spread of mathematics scores could have been reflected by the greater variance in self concept levels. Self concepts in other subjects were concentrated at the medium level areas. Table 6 below gives the details on pupil location on each step of the ability ladders.

Table 6: Percentage of pupils locating themselves on each step of the academic ability ladders, N = 330

Subject	Self Concept Level Step No									Skewness Sign	Kurtosis Sign
	1	2	3	4	5	6	7	NR	Total		
Eng	15.5	35.8	29.4	9.7	5.8	2.1	1.5	0.3	100	-	+
Kisw	21.1	37.9	21.2	10.3	4.2	2.7	1.2	0.3	100	-	+
Math	10.3	20.6	22.7	19.7	15.5	8.2	2.7	0.3	100	-	-
Ghc&re	4.8	19.1	30.9	27.6	11.5	3.9	1.8	0.3	100	-	+
Hsc&BEEd	7.6	26.4	27.9	23.3	8.8	4.8	0.9	0.6	100	-	+
MAC	8.2	25.8	30.9	21.5	7.9	3.6	1.8	0.3	100	-	+
Sc&Ag	8.8	27.6	27.9	20.6	9.7	3.9	1.2	0.3	100	-	+

NR : No response

The relationship between the academic self concept and achievement was analyzed along with sex and school type as intervening variables. The findings are discussed under the following themes:

- i) sex differences in self concept using paired comparison and ability ladders.
- ii) sex differences in Academic achievement and self concept using Analysis of variance (ANOVA).
- iii) the interaction effects of sex and self concept on academic achievement.

A combination of ability ladders and the more indirect paired comparison of ability methods were envisaged to give more reliable results on pupils self concept

4.2.1. SEX DIFFERENCES IN SELF CONCEPT AND ACHIEVEMENT

The academic self concept was studied in relation to the academic achievement in each school subjects. The researcher sought to investigate if high self concept corresponds to high subject achievement. The results were based on ability ladders and the paired comparison techniques of measuring the self concept. The two way analysis of variance results were based on data obtained from the academic ability ladders only. The ladders were chosen since they were more objective and were easier to analyze. Paired comparisons were supportive especially in directional tests of hypotheses. For example, it was possible to conclude whether boys achieved higher scores than girls in a particular subject.

4.2.2. SEX DIFFERENCES IN PAIRED COMPARISONS OF SUBJECT ABILITY

The paired comparison method required pupils to compare each subject (K) with every other subject(J). From the seven subject categories, each subject (K) was paired with every other subject (J) resulting in twenty one pairs. These pairs were arranged in a random fashion (See Appendix B). Tables 7a and 7b give the findings obtained from the total sample. Three incomplete questionnaires were excluded from the analysis (N = 327). Table 7a indicates the proportion of pupils who had a higher ability in each subject (K) compared to each other subject (J) and vice versa. The letters J and K are used for ease in subject comparisons.

Table 7a: Proportions of pupils in total sample indicating higher ability in each subject (K) compared to each other subject (J) N = 327.

Subject (J)

	Eng	Kisw	Math	GHC&RE	HSc.&Bed	MAC	Sc&/A g.
Eng	-	.443	.367	.327	.306	.336	.370
Kisw	.557	-	.453	.410	.315	.367	.505
Math	.633	.547	-	.453	.505	.453	.554
GHC/RE	.673	.590	.547	-	.465	.474	.609
Hsc./BEd.	.694	.685	.495	.535	-	.468	.624
MAC	.664	.633	.547	.526	.532	-	.645
Sc./Ag.	.630	.495	.446	.391	.376	.355	-

The leading diagonal in Table 7a is blank since it compares a subject with it-self giving zero values. For example a comparison of Kiswahili to Kiswahili gives a zero value. It is worthwhile to note that comparisons across a pair give a total value of one. For example in Table 7a above the proportion of pupils in the total sample who preferred Kiswahili (J) to English (K) was 0.443 while the proportion who preferred

English (K) to Kiswahili (J) was 0.557, giving a total of $0.443 + 0.557 = 1.00$. Therefore it was possible to generate the values below the leading diagonal from those above the leading diagonal.

Standard normal distribution tables were used to convert the proportions in Table 7a into the normal deviate values give in Table 7b. See Appendix E for normal distribution tables

Table 7b: Normal deviate values for the total sample N=327

	Eng	Kisw	Math	GHC&RE	Hsc.&BE	MAC	Sc./Ag.
Eng	-	-.14	.34	-.45	-.51	-.42	-.33
Kisw	.14	-	-.12	-.23	-.48	-.34	.01
Math	.34	.12	-	-.12	.01	-.12	.04
GHC&RE	.45	.23	.12	-	-.09	-.07	.28
Hsc.&BE	.51	.48	-.01	.09	-	-.08	.32
MAC	.42	.34	.12	.07	.08	-	.37
Sc.&Ag.	.33	-.01	-.14	-.28	-.32	-.37	-
Sum(s)	2.19	1.02	-0.370	-0.920	-1.310	-1.40	0.790
Subject Rank	1	2	4	5	6	7	3

The normal deviate values were summed to obtain column totals. This gave a sum which was used as a weighting for each subject. Subjects were then ranked from 1 (highest ability) to 7 (lowest ability). The findings indicated that pupils had feelings of highest ability in English (rank 1) and the lowest ability in Music, Art and Craft (rank 7). The average scale values for Kiswahili (0.146) and Science/Agriculture (.113) show an almost equal ranking. The paired comparison technique was preferred to the common method of asking pupils to give a subject preference listing. Paired

comparisons are indirect and therefore reduce respondent biases and social desirability effects.

Results in Tables 8a and 8b, were based on a separate analysis for boys and girls from the total sample. One female and two male incomplete questionnaires were excluded from this analysis since they had incomplete information in paired comparison.

Table 8a: Proportion of girls indicating higher ability in each subject (K) compared to each other subject (J), N = 152

		Subject (J)						
	Eng	Kisw	Math	GHC&RE	Hsc.&BE d.	MAC	Sc.&Ag.	
Eng	-	.382	.322	.230	.289	.309	.303	
Kisw	.618	-	.454	.309	.362	.375	.447	
Maths	.678	.546	-	.434	.566	.520	.500	
GHC&RE	.770	.691	.566	-	.546	.539	.599	
Hsc.&BE d.	.711	.638	.434	.454	-	.441	.559	
MAC	.691	.625	.480	.461	.559	-	.599	
Sc.&Ag.	.697	.553	.500	.401	.441	.401	-	

Table 8b: Normal deviate values for girls only. N= 152

	Eng	Kisw	Math	GHC&RE	Hsc.&BE d.	MAC	Sc.&Ag.
Eng	-	-.30	-.46	-.74	-.56	-.50	-.52
Kisw	.30	-	-.12	-.50	-.35	-.32	-.13
Maths	.46	.12	-	-.17	.17	.05	.00
GHC&RE	.74	.50	.17	-	.12	.10	.25
Hsc.&BE d.	.56	.35	-.17	-.12	-	-.15	.15
MAC	.50	.32	-.05	-.10	.15	-	.25
Sc.&Ag.	.52	.13	.00	-.25	-.15	-.25	-
Sum(s)	3.08	1.120	-.630	-1.880	-.620	-1.070	.000
Rank	1	2	5	7	4	6	3

Table 9a: Proportion of boys indicating higher ability in each subject (K) compared to each other subject (J), N= 175

Subject J

	Eng	Kisw	Math	GHC&RE	Hsc.&BE d.	MAC	Sc.&Ag
Eng	-	.497	.406	.406	.320	.360	.429
Kisw	.503	-	.451	.497	.274	.360	.554
Math	.594	.549	-	.469	.451	.394	.600
GHC&RE	.594	.503	.531	-	.388	.417	.617
Hsc.&BE d.	.680	.726	.549	.612	-	.491	.680
MAC	.640	.640	.606	.583	.509	-	.686
Sc.&Ag.	.571	.446	.400	.383	.320	.314	-

Table 9b: Normal deviate values for Boys only, N= 175

	Eng	Kisw	Math	GHC&R E	Hsc&BE d.	MAC	Sc.&Ag
Eng	-	-.01	-.24	-.24	-.47	-.36	-.18
Kisw	.01	-	-.12	-.01	-.60	-.36	.14
Maths	.24	.12	-	-.08	-.12	-.27	.25
GHC&RE	.24	.01	.08	-	-.28	-.21	.30
Hsc.&BE d.	.47	.60	.12	.28	-	-.02	.47
MAC	.36	.36	.27	.21	.02	-	.49
Sc.&Ag.	.18	-.14	-.25	-.30	-.47	-.49	-
Sum(s)	1.500	0.940	-0.140	-.14	-1.92	-1.171	1.47
Subject Rank	1	3	4	4	7	6	3

Table 10 gives a summary of subject rankings of girls and boys compared to the rankings obtained from the total sample.

Table 10: Subject Ranking for Girls, Boys and Total Sample

Subject	Total Sample	Girls	Boys
Eng	1	1	1
Kisw	2	2	4
Math	4	5	4/5
GHC&RE	5	7	4/5
Hsc.&BE d.	6	4	7
MAC	7	6	6
Sc.&Ag.	3	3	2

English was ranked first by all pupils no sex differences were observed. Notable sex differences were found in the following subjects:

Girls ranked GHC & Re lower (Rank 7) compared to boys who ranked it fourth. The boys gave Homescience & Business Education a low rank(7) compared to girls who ranked it fourth.

4.2.3. SEX DIFFERENCES ON ACADEMIC ABILITY LADDERS

The seven step numerically anchored ability ladder was categorized into high, medium and low self-concept levels. These categories shifted the negative skewness and Kurtosis indices evident when individual steps were used to positive values. (See appendix F). This was done to ensure that social desirability and random response effects were minimal making instrument more stable. Table 11a shows the percentage of pupils locating themselves at each self concept level (high, medium or low) based in the total sample. Table 11b gives the percentage of girls and boys locating themselves at each step of the ladder.

Table 11a: Pupils location on academic ability ladders, N= 330

Self-concept level	Eng	Kisw	Math	GHC&R E	Hsc.&B Ed.	MAC	Sc&Ag.
High	51.5	60.6	31.2	24.5	33.3	33.9	36.1
Medium	38.8	31.2	42.7	60.0	52.1	52.1	48.8
Low	9.4	7.9	25.8	15.2	13.9	13.6	14.8
NR	0.3	0.3	0.3	0.3	0.6	0.3	0.3
Total	100	100	100	100	100	100	100
Skewness Sign	+	+	+	+	+	+	+
Kurtosis Sign	+	+	+	+	+	+	+

NR: No response + - positive

The table gives the percentage of pupils locating themselves at each self-concept level for the seven subject categories. The statistical significance of the observed differences is discussed in a later section. Sex differences in pupil location on the ability ladders are given in Table 11b.

Table 11b: Sex differences in pupil location on academic ability ladders.

N= 330 (Girls = 153; Boys = 177)

	Eng	Kisw	Math	GHC&RE	HSc&BEEd.	MAC	Sc&Ag.
High							
Girl	51	49	42	31	49	43	33
Boys	49	51	58	69	51	57	67
Medium							
Girls	39	42	42	47	41	50	51
Boys	61	58	58	53	59	50	49
Low							
Girls	52	46	59	68	59	40	63
Boys	48	54	41	32	41	60	37

NB: Total in each cell add up to 100%

It is evident from Table 11b that GHC&RE was favoured more by boys than girls. Girls had lower self-perceptions of ability Music, Art & Craft compared to boys. Information Table 11b above did not reveal much, hence two way analysis of variance was adopted to test the significance of these group differences. Using the AVONA method differences between boys and girls were examined.

significance of interactions between sex and self concept on achievement were also examined.

4.2.4. ANALYSIS OF VARIANCE: SEX x SELF CONCEPT x ACHIEVEMENT

A sex by self concept by academic achievement two way analysis of variance (ANOVA) was performed to test the following specific null hypothesis at $\alpha \leq 0.01$. Every hypothesis was tested for the seven subject categories namely: English, Mathematics, Science&Agriculture, Music, Art & Craft, Kiswahili, Homescience & Business Education, Geography, History, Civics & Religious Education.

H₁: There is no significant difference between the academic achievement of boys and girls in each subject.

H₂: There is no significant difference between the academic self concept levels of girls and boys in each subject.

H₃: There is no significant interaction effect of sex and the academic self concept on the academic achievement of boys and girls.

The 2x3 ANOVA (sex-two levels; self concept-three levels) investigated the main effect of self concept on achievement ,the main effect of sex on achievement and the interaction effect of sex and self concept on achievement.

Table 12a gives the detailed ANOVA results for each subject.

Table 12a: ANOVA: Sex x Self concept x Achievement

GHC&CRE					
	Sum of Squares	Degree of Freedom	Mean Square	f	Significance
Main effect of self concept	3.8	2	1.917	8.353	.000
sex	15.1	54	.279	1.257	.159
Explained	19.4	56	.345	1.507	.018
Residual	62.4	272	.229		
Total	81.8	328	.249		
R ² = .237					

Maths					
	Sum of Squares	Degree of Freedom	Mean Square	f	Significance
Main effects self concept	2.2	2	1.100	4.627	.011
Main effect sex	12.4	42	.296	1.246	.153
Explained	14.3	44	.324	1.364	.072
Residual	62.5	284	.238		
Total	81.8	328	.249		
R ² = .174					

Ma&c					
	Sum of Squares	Degree of Freedom	Mean Square	f	Significance
Main effects self concept	0.4	2	.217	.867	.421
sex	10.5	43	.245	.980	.512
Explained	11.1	45	.246	.985	.504
Residual	70.7	283	.250		
Total	81.8	328	.249		
R ² = 0.14					

Kiswahili					
	Sum of Squares	Degree of Freedom	Mean Square	f	Significance
Main effects					
self concept	0.3	2	.147	.844	.564
sex	12.0	55	.218	.852	.759
Explained	12.3	57	.216	.844	.877
Residual	69.5	271	.256		
Total	81.8	328	.249		
R ² = .151					

English					
	Sum of Squares	Degree of Freedom	Mean Square	f	Significance
Main effect					
self concept	0.4	2	.201	.849	.429
sex	17.3	58	.299	1.264	.113
Explained	18.3	60	.304	1.287	.095
Residual	62.2	263	.237		
Total	80.5	323	.249		
R ² = .227					

Science & Agriculture					
	Sum of Squares	Degree of Freedom	Mean Square	f	Significance
Main effect					
self concept	3.1	2	1.554	6.538	.002
Main effect sex	9.6	39	.247	1.041	.410
Explained	13.6	41	.331	1.394	.064
Residual	68.2	287	.238		
Total	81.8	328	.249		
R ² = .166					

Homescience&Business Education					
	Sum of Squares	Degree of Freedom	Mean Square	f	Significance
Main effect					
self concept	1.9	2	.968	.701	.497
sex	322.1	37	8.705	6.303	.000
Explained	323.1	39	8.286	6.000	.000
Residual	397.7	288	1.381		
Total	720.9	327	2.204		
R ² = .448					

Table 12b summarizes the individual effects of the self concept on achievement, the effect of pupils sex on achievement and the interaction effect of sex and self concept on achievement.

Table 12b: Summary of ANOVA: Sex X Self concept X Achievement, N = 330 (Boys = 177; Girls = 153)

Subject	Main effect of		Interaction Effect	
	Self concept	sex	Self concept and Sex	R ²
Eng	ns	ns	ns	.23
Kisw	ns	ns	ns	.15
Math	*(.011)	ns	ns	.17
GHC&RE	*(.000)	ns	*(.018)	.24
Hsc&BE	ns	*(.000)	*(.000)	.45
MAC	ns	ns	ns	.14
Sc&Ag.	*(.002)	ns	ns	.16

- * Significant at $\alpha \leq 0.01$
- ns Not significant at $\alpha \leq 0.01$
- R. Multiple correlation coefficient

The effect of self concept on achievement was significant in Geography, History & Cre, Maths and Science & Agriculture only. There was a significant sex difference in academic achievement for Homescience & Business Education only. The interaction effect of sex and self concept on academic achievement was significant for GHC&RE and

Homescience/Business Education only. This finding was significant at $\alpha = 0.018$ for GHC & RE. Depending on the subject area self concept and sex accounted for 14% to 45% of the variance in achievement as indicated by the multiple correlation coefficient squares (R^2). The two variables, sex and self concept contributed to 45% of the variance in Homescience & Business Education achievement this being the highest. It is worthwhile to note that pupils sex significantly affected achievement in Homescience & business education only. However sex differences in English and Maths were significant at $\alpha = .113$ and 0.153 level respectively. The interaction effect of sex and self concept in Mathematics was significant at $\alpha = 0.072$ which was lower than the $\alpha = 0.01$ level of acceptance.

4.3.0. SCHOOL DIFFERENCES IN SELF CONCEPT AND ACHIEVEMENT

The relationship between the self concept and academic achievement was investigated with respect to the total sample. Comparisons were made between marginalised and non-marginalised school. The results were based on data obtained from the ability ladders and paired comparisons of subject ability. Analysis of variance (ANOVA) results are based only on ability ladders as a measure of self concept. Within School variances were not included as this was beyond the scope of the study.

A 2x3 ANOVA; school by self concept by academic achievement was performed test hypotheses at the $\alpha \leq 0.01$ level of significance. This means that school had two

levels; (marginalised versus non-marginalised) while the self concept had three levels (high, medium and low). The null specific hypotheses tested were as given below.

- H₄: There is no significant difference between the academic achievement of pupils from marginalised and non-marginalised schools.
- H₅: There is no significant difference between the academic self concepts of pupils from marginalised and non-marginalised schools.
- H₆: There is no significant interaction effect of school type academic self concept on the academic achievement of pupils.

These hypotheses were tested for the seven subject categories.

4.3.1. SCHOOL DIFFERENCES IN PAIRED COMPARISON OF SUBJECT ABILITY

Data was subjected to the mode of analysis described in section 4.2.2. Findings based on non-marginalised school pupils are given in Table 13a and Table 13b.

Table 13a: Proportion of pupils in non-marginalised schools indicating higher ability in each subject (K) compared to each other subject (J) N = 190

Subject (J)

Subject(J)

	Eng	Kisw	Math	GHC&RE	Hsc&B.Ed	MAC	S&A
Eng	-	.373	.389	.288	.252	.256	.325
Kiswa	.627	-	.530	.398	.382	.312	.450
Maths	.611	.470	-	.368	.473	.418	.499
GHC&RE	.712	.602	.632	-	.475	.488	.654
Hsc&BEd	.748	.618	.527	.525	-	.464	.639
MAC	.744	.688	.582	.512	.536	-	.639
Sc&Ag	.675	.550	.501	.346	.361	.361	-

Table 13b: Normal deviate values for pupils in non-marginalised schools only, N = 140

	Eng	Kisw	Maths	GHC&RE	Hsc&B Ed	MAC	Sc&Ag
Eng	-	-.32	-.28	-.56	-.67	-.66	-.45
Kisw	.32	-	.08	-.26	-.30	-.49	-.14
Math	.28	-.08	-	-.34	-.07	-.21	.00
GHC&RE	.56	.26	.34	-	-.06	-.03	.40
Hsc&B.Ed	.67	.30	.07	.06	-	-.09	.34
MAC	.66	.49	.21	.03	.09	-	.35
Sc&Ag	.45	.14	.00	-.40	-.34	-.35	-
Sum(s)	2.94	0.79	0.42	-1.47	-1.35	1.83	0.5
Subject Rank	1	2	4	6	5	7	3

Table 13b above indicates that pupils in non-marginalised schools ranked English first as indicated by the higher scale value (2.94). GHC&Re and Homescience&Business Education had an almost equal ranking (GHC&Re - Rank 6; Hsc/BEEd - Rank 5). These

two subjects had almost equal scale values (Ghc&re 1.47) and (Hsc&BE d - 1.35). A similar analysis was done using marginalised school pupils only. Table 14a gives the proportion of marginalised pupils who preferred each subject (J) in a pair compared to the other subject (K). Table 14b gives the corresponding normal deviate values based on the proportions in Table 14a.

Table 14a: Proportion of pupils in marginal schools indicating higher ability in each subject (K) compared to every other subject (J). N=140

	Eng	Kisw	Math	GHC&RE	Hsc&B.E d	MAC	Sc&Ag
Eng	-	.540	.322	.362	.357	.570	.439
Kisw	.460	-	.347	.406	.203	.432	.477
Math	.678	.653	-	.590	.572	.498	.610
GHC&Re	.638	.594	.410	-	.434	.438	.542
Hsc.&BE	.643	.797	.428	.566	-	.491	.612
dMAC	.430	.568	.502	.562	.509	-	.641
Sc&Ag	.561	.523	.390	.458	.388	.359	-

NB: Letter J and K are used for convenience when comparing two subjects in a pair.

Table 14b: Normal deviate values for pupils in marginal schools only N=140

	Eng	Kisw	Math	GHC/RE	Hsc/BE d	MAC	Sc/Ag
Eng	-	.10	-.46	-.35	-.37	.18	-.15
Kisw	-.10	-	-.39	-.24	-.83	-.17	-.06
Math	.46	.39	-	.23	.08	-.01	.28
GHC/RE	.35	.24	-.23	-	-.17	-.15	.10
Hsc/B.Ed	.37	.83	-.08	.17	-	-.02	.28
MAC	-.18	.17	-.01	.15	.02	-	.36
Sc/Ag	.15	.06	-.28	.10	-.28	-.36	-
Sum(s)	1.05	1.79	-1.45	0.06	-1.55	-0.53	0.81
Subject Rank	2	1	6	4	7	5	3

NB: Letter J and K are used for convenience when comparing two subjects in a pair.

Rankings in Table 14b indicate that Kiswahili was ranked first while Homescience & Business Education was ranked last by marginalised pupils. Although mathematics was ranked fourth by non-marginalised school pupils it was ranked sixth by pupils in marginalised schools. Table 15 summarizes the ranking across the total sample, marginalised schools and non-marginalised schools.

Table 15: Subject Rankings for Marginalised, Non-marginalised Schools and the total Sample

Subject	Total sample	Non-marginalised Schools	Marginalised Schools
Eng	1	1	2
Kisw	2	2	1
Math	4	4	6
Ghc&re	5	6	4
Hsc&B.ed	6	5	7
Mac	7	7	5
Sc&Ag	3	3	3

The subject rankings were quite stable across marginalised schools, non marginalised schools and the total sample. The paired comparison techniques did not discriminate between pupils in the two types of schools. The languages English and Kiswahili were ranked high while Music, Art and craft was ranked least. Marginalised pupils ranked maths sixth while non-marginalised pupils ranked it fourth.

4.3.2. ANALYSIS OF VARIANCE: SCHOOL x SELF CONCEPT x ACHIEVEMENT

Two way analysis of variance (ANOVA) results confirmed that school type had a significant effect on achievement in all subject areas (irrespective of whether individual school or the marginalised versus non-marginalised school categories were used).

Table 16a gives a summary of results based on individual school analysis. However the more pertinent marginalised versus non-marginalised school categorization results are described in later sections.

Table 16a: Summary of ANOVA: Individual School X Self-concept X Achievement N = 330

Subject	Main effect of Self concept	Main effect of School	Interaction effect of School and self concept	R ²
Eng	ns	* .000	* .000	.50
Kisw	* .004	* .000	* .000	.31
Math	ns	* .000	* .000	.28
GHC&RE	* .002	* .000	* .000	.31
Hsc&BEEd	ns	* .000	* .000	.35
MAC	ns	* .010	* .016	.20
Sc&Ag	* .014	* .000	* .000	.36

NB: This analysis was based on individual schools.

Individual school findings revealed significant self concept differences in Kiswahili, GHC&RE and Science & Agriculture. School differences in academic achievement were significant for all subjects except Music, Art and Craft. However this result for Music, Art and Craft was significant at $\alpha \leq 0.016$. Based on individual school analysis

School and self concept accounted for 20% to 50% of the observed variance in achievement . Two way analysis of variance was used to investigate the significance of observed differences in pupil location on academic ability ladders. The paired comparisons results were used in testing directional hypotheses. Hence no statistical tests were done to find out the direction of a group difference. For example, it was possible to conclude whether boys performed significantly better than girls in mathematics. The two way ANOVA investigated the main effect of school on achievement, main effect of self concept on achievement and the interaction effect on school type and self-concept on achievement.

Table 16b gives details on the analysis of variance using the marginal versus non-marginal school categorization.

Table 16b Two Way ANOVA: School x Self Concept x Achievement, N = 330 (190 NMS, 140 MS)

Ghc&re					
	Sum of Squares	Degree of Freedom	Mean Square	f	Significance
Main effect					
Self concept	24.5	2	12.25	8.94	.000
School	337.1	54	6.24	4.56	.000
Explained	349.1	56	6.24	4.56	.000
Residual	372.8	272			
Total	722.5	328			
$R^2 = 0.484$					

Mac					
	Sum of Squares	Degree of Freedom	Mean Square	f	significance
Main effect					
Self concept	5.5	2	2.75	1.67	.191
School	249.2	43	5.79	3.51	.000
Explained	255.0	45	5.67	3.43	.000
Residual	467.5	283	1.65		
Total	722.5	328	2.20		
R2 = 0.353					

Science & Agriculture					
	Sum of Squares	Degree of Freedom	Mean Square	f	Significance
Main effect					
Self concept	11.9	2	5.96	4.22	.160
School	314.3	39	8.06	5.71	.000
Explained	317.1	41	7.74	5.48	.000
Residual	405.3	287	1.41		
Total	722.5	328	2.20		
R ² = 0.439					

Homescience & Business Education					
	Sum of Squares	Degree of freedom	Mean Square	f	Significance
Main effect					
Self concept	1.9	2	0.97	0.70	.497
School	322.1	37	8.71	6.30	.000
Explained	323.1	39	8.29	6.00	.000
Residual	397.7	288	1.38		
Total	720.9	327	2.20		
R ² = 0.448					

Maths					
	Sum of Squares	Degree of Freedom	Mean Square	f	Significance
Main effect					
Self concept	13.0	2	6.48	4.42	.013
School	255.9	42	6.09	4.15	.000
Explained	305.7	44	6.95	4.73	.000
Residual	416.8	284	1.47		
Total	722.5	328	2.20		
$R^2 = 0.423$					

English					
	Sum of Squares	Degree of Freedom	Mean Square	f	Significance
Main effect					
Self concept	0.5	2	0.27	0.26	.771
School	416.3	58	7.18	6.96	.000
Explained	441.6	60	7.36	7.13	.000
Residual	271.4	263	1.03		
Total	713.0	323	2.21		
$R^2 = 0.619$					

Kiswahili					
	Sum of Squares	Degree of Freedom	Mean Square	f	Significance
Main effect					
Self concept	30.7	2	15.36	9.47	.000
School	257.4	55	4.68	2.89	.000
Explained	283.2	57	4.97	3.06	.000
Residual	439.3	271	1.62		
Total	722.5	328	2.20		
$R^2 = 0.139$					

Table 16c gives a summary of the analysis of variance. It indicates significance or lack of significance at the $\alpha \leq 0.01$ level of significance.

Table 16c: Summary of School (MS/NMS) x Self concept x Achievement ANOVA.
N = 330 (190 NMS; 140 MS)

Subject	Main effect of			
	Self concept	School	School and Self concept	R ²
Eng	* .000	* .000	* .000	0.62
Kisw	* .000	* .000	* .000	0.39
Math	ns	* .000	* .000	0.42
Ghc&re	* .000	* .000	* .000	0.48
Hsc&BE	ns	* .000	* .000	0.45
Mac	ns	* .000	* .000	0.35
Sc&Ag	ns	* .000	* .000	0.44

NB: This summary is based on the marginalised versus non-marginalised categories.

* Significant at the level indicated with $\alpha \leq 0.01$

R is the Multiple correlation coefficient

Analysis based on school type (Marginalised versus Non-marginalised) revealed significant differences between the achievement of pupils from marginalised and non-marginalised schools with respect to all subjects. The interaction effect of school and self concept on achievement was also significant for all subjects. There was no significant difference between the self concept levels of pupils from the two school types in Music, Art & Craft, Home Science & Business Education, Mathematics and Science & Agriculture. However, the main effect of self concept was significant for Maths at $\alpha \leq 0.013$ and for Science & Agriculture at $\alpha \leq 0.016$. It is reasonable to deduce significant self concept differences in all subjects except Music, Art, Craft and Home Science & Business Education. Depending on the subject area school type and self concept accounted for 35% to 62% of the variance in academic achievement.

Assuming that other factors were constant the school type and self concept contribute to 62% of the variance in English achievement this being the highest.

4.3.3 SUMMARY AND RESULTS

The two way analysis of variance (ANOVA) results formed the main basis for the discussion of results. Where applicable data from paired comparisons and achievement statistics enabled the researcher to deduce groups that were favoured by any observed significant differences. Below is a summary in light of the postulated hypotheses and research objectives.

H1: There is significant differences between the academic achievement of girls and boys in each subject.

Sex differences in academic achievement were significant only for Homescience & Business Education. This difference was in favour of girls as evidenced by paired comparisons and achievement statistics. Hence the research hypothesis H_1 was rejected for Homescience & Business Education and it was concluded that:

There is a significant difference between the academic achievement of girls and boys in Homescience/Business Education. Girls achieved higher scores than boys in Homescience/Business Education.

It was postulated that there was no significant difference in the academic self concept of girls and boys in each of the seven subjects. This was tested using the following hypothesis.

H₂: There is no significant difference between the academic self concepts of girls and boys in each subject.

Sex differences in academic self concept were significant for Geography/History/Civics /Religious education and also for Science/ Agriculture. This difference favoured boys and H₂ was rejected for Geography/History/Civic/ Religious Education and Science/Agriculture and it was concluded that:

There is a significant difference between the academic self concept of girls and boys in GHC & RE and Science/Agriculture. Boys had higher self-concepts than girls in GHC & RE and Science/Agriculture.

The interaction effect of sex and self concept on achievement was tested using the hypothesis given below.

H₃: There is no significant interaction effect of sex and self concept on subject academic achievement.

Interactions between pupil sex and self concept were significant for Homescience/Business Education and GHC & RE. Depending on the achievement area, sex and self concept accounted for 14% to 45% of the variance in achievement. This suggested that other factors were operating to a greater degree to determine achievement. Hence H₃ was rejected for Homescience/Business Education and GHC & RE and it was deduced that:-

There is a significant interaction effect of sex and self-concept on achievement in Homescience & Business Education and GHC & RE.

Sex and self concept influence achievement in GHC & RE and Homescience & Business Education significantly.

Although the analysis of variance results based on individual school differences were not pertinent to the research objectives, a brief overview was deemed worthwhile. Significant differences in academic achievement were observed in all subjects among the four schools. Individual school differences in self concept were significant for Kiswahili, GHC&RE and Science/Agriculture. The interaction effects of individual schools and self concept on achievement was significant for all subjects.

These individual school results were interesting compared to the marginalised versus non-marginalised school results. A summary of results based on the marginalised versus non-marginalised categories are given in the light of postulated hypotheses. The hypothesis H_4 investigated achievement differences between marginalised and non-marginalised pupils.

H_4 : There is a significant difference between the academic achievement of pupils from marginalised and non-marginalised schools in each subject.

School differences in achievement were significant for all subjects. Non-marginalised schools had significantly higher scores compared to marginalised schools. Hence, H_4 was rejected for all subjects and it was deduced that:

There is a significant difference between the academic achievement of marginalised and non-marginalised school pupils for all subjects. Marginalised schools had lower achievement scores in all subjects when compared to non-marginalised schools.

The hypothesis H_5 below tested differences between the self concepts of pupils in marginalised and non-marginalised schools.

H_5 : There is no significant difference between the academic self concept levels of pupils from marginalised and non-marginalised schools in each subject.

School differences in self concept were significant for Kiswahili and GHC & RE. Hence H_5 was rejected for Kiswahili and GHC/RE. It was deduced that:

There is a significant difference between the self concept levels of pupils from marginalised and non marginalised schools in Kiswahili and GHC & RE. Marginalised pupils had higher self concept of ability in Kiswahili and GHC & RE when compared to their non-marginalised school counterparts.

It was postulated that there were significant interaction effects of school and self concept on achievement. This was tested using H_6 .

H_6 : There are no significant interaction effect of school and self-concept on academic achievement of pupils in each subject.

Interactions between school and self concept were significant for Homescience/Business Education and GHC&RE only. Depending on the achievement area school and self

concept accounted for 35% to 62% of the variance in achievement. Hence H_6 some it was deduced that:

There is a significant interaction effect of school and self-concept on academic achievement of pupils in all subjects. Infact, the school type attended contributed to upto 62% of the variance in achievement. The highest variance (62%) was recorded in English achievement.

CHAPTER FIVE

DISCUSSION AND CONCLUSION

This chapter summarises the main findings of the study in light of the objectives, review of literature and methodology. It suggests the implications and the results and finally gives some recommendations and suggestions for future research. Specifically highlighted are issues that need to be focused upon with regard to the observed sex and school differences in self concept and or academic achievement.

5.1.0 SUMMARY

The notable disparities that exist along sex and regions with respect to academic achievement, participation and access to higher level of education prompted interest to investigate the intervening role of sex and school type in the relationship between self concept and the academic achievement of standard eight pupils. It was evident from the literature reviewed that sex and school differences in self concept were contradictory and inconsistent especially with respect to specific school subjects. The main objectives of the study were to investigate:

1. Sex differences in academic self concept for each school subject.
2. Sex differences in academic achievement in each subject
3. School differences in academic self concept for each subject
4. School differences in academic achievement for each subject.
5. Possible interaction effects of sex and self concept and on academic achievement.

6. Possible interaction effects of school type and self concept on academic achievement.

The sample consisted of 330 standard eight pupils from four Nairobi primary schools which were purposely selected. The schools were categorised as marginalised or non-marginalised. Two pupil questionnaires elicited self reported data. The academic self concept questionnaire had seven step ability ladders and paired comparisons question. The homebackground questionnaire gave data on selected socio-economic indicators. After piloting the self concept questionnaire was adjusted to improve its reliability and validity. Further improvement was achieved by being cautious during the data collection and analysis phases.

Initial data analysis involved generating means standard deviation, skewness and kurtosis indices. Variables of interest were identified and subjected to the two way analysis of variance. The F-test was done to investigate main effects and interaction effects of sex and school on achievement at the $\alpha = 0.01$ level of significance. Directional tests of hypothesis was also done to determine the direction of observed group differences.

The results indicated distinct differences between pupils and marginalised and non-marginalised schools on selected socio economic indicators. Hence confirming that the purposive sampling was adequately done. The academic achievement of girls and boys differed significantly in Homescience & Business education only this difference being in

favour of girls. Sex differences in academic self concept were significant in GHC&re and Science & Agriculture. Boys had higher self concept in these subjects. The interaction effect of sex and self concept were significant on achievement in GHC &RE and Homescience & Business Education depending on the subject sex and self concept accounted for 14% to 45% of the observed variance in achievement.

The academic achievement of marginalised and non-marginalised school pupils differed significantly in all subjects. Marginalised school pupils obtained lower scores in all subjects. Academic self concept levels of marginalised and non-marginalised pupils differed significantly in Kiswahili and GHC&RE only, this difference being in favour of marginalised pupils. Interaction between school type and self concept were significant for all subjects. Depending on the subject, school type and self concept accounted for 35% to 62% of the variance in achievement. The highest variance (62%) was observed in English achievement.

5.2.0 DISCUSSION AND CONCLUSIONS

The results revealed significant sex differences in academic achievement for Homescience & Business Education only this being in favour of girls. Many studies indicate higher mean achievement scores for boys than girls (Lunn 1970; Muasya 1984). Studies that examined specific subject area generally revealed that girls have higher achievement on languages while boys perform better than girls in Mathematics and General knowledge.

The girls had higher verbal fluency and rote memory. Boys were better in tests of spatial ability, Arithmetic reasoning and problem solving. In this study some of the subject mean scores were higher for boys but these were not statistically significant Maritim(1989) found a significant positive relationship between a pupil. Sex and his attainment Muasya (1984) basing his fundings on secondary school students observed sex differences in biology and geography in favour of girls. However these differences were not statistically significant. Sex differences in achievement were observed in this study supporting many previous related studies, but the trend with regard to specific subjects seems to be changing. It was notable that girls did not obtain significantly lower scores than boys in Maths and Science and Agriculture. The higher achievement by girls in Homescience and Business Education was not surprising. Although Home science & Business mean sex scores difference was small (Girls 47.9; Boys 48.9) it was significant . Many studies indicate a positive relationship between self concept and mean achievement. (Purkey 1970; Nash 1976; Wattenberg 1974, Calsyn 1990) .Few studies have examined self concept in specific subjects. In this study boys had a significantly higher self concept level than girls in Ghc & re and this higher self concept corresponded to higher achievement in Science and Agriculture. Muasya (1984) found non significant sex difference in self concept in biology and geography only this being in favour of girls. Although his sample consisted of secondary students he demonstrated that the self concept may vary across subjects. Hence caution needs to be taken when investigating the selfconcept in relation to mean achievement to avoid overgeneralization.

The lower achievement of marginalised schools in all subjects was not surprising. This finding was consistent with many other studies which shows that pupils from poor (school or home) backgrounds perform poorly compared to those from higher socio-economic status (Cox 1983; Brookover, 1981; Mwaniki, 1973).

The marginalised pupils had higher self concepts than their non-marginalised counterparts in Kiswahili and GHC&RE. Infact marginalised schools recorded their highest mean achievement score in Kiswahili (62%). Although marginalised pupils had lower achievement level than non-marginalised in these two subjects they indicated a more positive self concept. Hence the relationship between self-concept and achievement was not positive for all subjects. Kapiyo (1982) demonstrated significant difference in the academic achievement of standard seven rural pupil in low, medium and higher cost schools. This difference favoured high cost schools. In his study sex differences in Mathematics achievement favoured boys while sex differences in English language proficiency favoured girls.

No study was identified that has investigated interaction effects of sex, school type on academic achievement. The significant interaction effect of sex and self concept to affect achievement in HSC&BED and GHC&RE needs further investigation. More interesting was the fact that interaction between school type and self concept contribute to higher variance in achievement (35-62%) compared to sex & selfconcept (14-45%). Studies incorporating sex and school type as variable in self concept and achievement studies

may reveal interesting results. Is the school type is more crucial than sex in determining a pupil achievement?

Sex difference in Hsc/Bed achievement could be due to socially defined sex-role stereotypes. Sex stereotypes encourage girls to engage in domestic chores such as cookery and needlework. Boys on the other hand may be discouraged from working hard in Hsc/B ED. According to symbolic interaction theorist like Mead (1956) and Kinch (1963) significant others within the environment influence self concept development. Parents, teachers and even peer may encourage or discourage a pupil to work hard in a subject through subtle or very pronounced ways. The boys may end up viewing Hsc&B.ED. as a woman entity. This higher achievement by girls in Hsc&Bed was not reflected in higher selfconcepts. Sex differences in selfconcept for Hsc&Bed were not statistically significant suggesting that boys feel equally capable of performing well in Hsc&Bed but probably choose to ignore it. The finding that boys had higher self concepts than girls in Science & Agriculture at primary school level may explain why boys achieve higher scores in science related subject at secondary and tertiary level of education. The lower selfconcepts of girls in science and Agriculture at primary level may be carried on to higher levels of education leading to poor achievement.

Marginalised pupils had lower academic achievement scores compared to non-marginalised school pupils. This was not surprising as several studies indicate high achievement among pupils from high cost schools or higher socio-economic status - {Brookover,1964;Calsyn,1997;Brookover,1981;Cox,1983;Kapiyo 1982; Arasa,1995}.

Pupils from informal urban settlements are socially and economically disadvantaged. This may have a negative impact on their achievement status when compared to their non-marginalised counterparts who attend better schools. The observed distinct differences on selected socio-economic indicators confirmed this further. Marginalised pupils were generally older (upto 17 years old). This may come along with many personality changes which affect achievement (Mussenetal,1974). More of the mothers headed households were found amongst marginalised pupils. Several studies suggests better personality development among pupils reared by both parents but this needs to be confirmed. Some marginalised pupils education was sponsored by donors and /or guardians confirming their lower financial ability. The lower levels of parental education among marginalised pupils could mean that their parents/guardians had low paying jobs. Parental levels of education and their occupation have a bearing on the pupils achievement. Level of education influence communication patterns and even parental involvement in the pupils school work [Calsyn,1977; cox, 1983; Kapiyo,1982; Arasa,1995]

The lower achievement scores among marginalised pupils in all subjects was not reflected by lower self concept in all subjects. Marginalised pupils had significantly higher self concepts in Kiswahili and Ghc&Re compared to non- marginalised pupils. Hence although non-marginalised pupils had lower achievement scores in Kiswahili and Ghc&Re they had feelings of higher ability in the two subjects. These feeling of higher ability may be curtailed by factors within the home or school which do not enable them to achieve

highly. The finding supports the views of Muola (1990) that higher self concepts does not necessarily corresponds to higher achievement. McLeod & Shanahan (1993) challenged the assumption that low socioeconomic status pupils have low self concept; a view which was partially confirmed in this study with respect to school subjects.

Interaction between sex and concept affected achievement in HSC & Bed only, while interaction between school types and self concept affected achievement in all subjects. This suggests that the school type is a more crucial variable in determining achievement compared to pupils sex.

5.3.0 RECOMMENDATIONS AND SUGGESTIONS FOR FURTHER RESEARCH.

The study demonstrated that the relationship between self concept and academic achievement is not always positive. A pupil's sex and the school type attended have an intervening effect more so when analysis is based on specific subjects self concepts or academic achievement scores. An aggregate achievement score in relation to the general self concept may be misleading. Gender and school disparities still exists in academic achievement and self concept with respect to some school subjects. The disadvantaged position of pupils from informal urban settlements was indicated by their lower achievement scores and responses on selected homebackground variables. More pertinent was the significant interaction effects of school and self concept achievement in all subjects.

The lower self concept girls had in Sciences & Agriculture when compared to boys if carried on higher levels of education may explain why girls performance at secondary and tertiary levels is lower. The social and cultural milieu in which girls are reared encourage them to work hard in Hsc & Bed a subject in which they displayed higher achievement. Marginalised pupils had high self concepts in Kiswahili but this was not reflected in higher achievement scores compared to the non-marginalised pupils. Although Kiswahili is common language in urban slums most of the pupils speak "sheng". This is a blend of Kiswahili, English and vernacular grammar and vocabulary. The marginalised pupils may indeed have high self concept of ability in Kiswahili but individuals tend to write what they speak. Hence they may not be able to express themselves well especially when writing Kiswahili "insha". This may explain why they achieve lower marks despite their higher self concepts of ability in Kiswahili.

Psychometric implications from the study and literature review indicated that self concept measurement techniques can confound the results. The paired comparisons and academic ability ladders did not compare exactly, however reasonable consistency was achieved with the two measures complementing each other well. The use of the two measures can enable the researcher to obtain more reliable and valid results. The self concept measure was boosted further by cautiously collecting data, piloting and adjusting self reported data before data analysis commenced. This ensured greater confidence in the findings.

that they transfer grammatical and dictation rules of "sheng" over to Kiswahili and even to English.

4. Psychometricians need come up with a single yet reliable measure of self concept to enable comparisons of findings with those of other researchers.
5. A consideration of interaction effects of various factors on achievement should be studied apart from just investigating main effects of the factors.

The following specific areas could be of interest in future related studies:-

1. An Investigation of the influence of specific factors within the home or school on self concept of pupils. Factorial designs can enable sex and school type to be inco-oporated as variables in addition to studying possible interaction effects between the factors.
2. Comparisons between subject self concept levels of urban versus rural slum pupils of equal academic achievement levels. Sex differences within urban and within rural slums may reveals interesting trends.
3. Other factors other than pupils sex and school type should be investigated in a bid to explain for more variance in pupils achievement for example the role of examination procedural testing and teaching approaches in rural versus urban based schools can be studied. Comparisons between girls and boys can be incorporated in such a study.
4. Frequently used self concept measurement techniques such as the self esteem Inventory and the Self Anchoring technique need to be subjected to vigorous tests

of reliability and validity. Adjustments on these instruments can be made to suit the Kenyan population. More specifically the Self Anchoring technique can be investigated in a large sample to determine its test-retest reliability.

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APPENDIX A:

PERSONAL AND HOME BACKGROUND DATA

INSTRUCTIONS

This is not an examination. Most of the questions require you to choose one answer that fits you best from a number of given alternatives by putting a tick [✓]. Some questions require you to write in the space(s) provided. Attempt ALL questions and be as HONEST as possible. Do not rely on your friend for answers since we all have different feelings.

PART A:

PERSONAL AND HOME BACKGROUND DATA

1. NAME (OPTIONAL).....
STUDENT CODE NO:
SCHOOL CODE NO:.....
CLASS/STREAM:.....
DATE OF BIRTH:.....

2. SEX:
Male
Female

3. Age in years:
Under 11½.....
11½ - 13½ years
13½ to 15½.....
15½ to 16½
Over 16½.....

4. Who do you live (stay) with most of the time?
Mother & father
Father only
Mother only.....
Relative
Specify who.....
Any others person, guardian friend, etc.

5. Name the Estate or village where you live?
Residential estate
Village

6. How far is your home from school? (Give an estimated distance in meters or kilometersKm. orM.

7. What means of transport do you use to and from school most of the time?
Walk
- Bicycle
- Private(family) Car
- Bus/Matatu
- Any other.....Specify.....
8. From the following list of items tick the one(s) available in your home.
Radio
- Electricity for light
- TV/Video
- Daily Newspapers.....
- Reading table/chair
- More than 2 bedrooms
9. How frequently do the people you stay with buy newspapers.
Very often
- Rarely
- Never
10. Who pays for your education (fees)?
Both mother and father
- Father only
- Mother only
- Elder brother.....
- Elder sister.....
- Relative.....Specify.....
- Sponsor.....
11. What level of education would you like to attain
Primary
- Training after primary
- Secondary
- Train after secondary
- University
- Any other (specify)
12. Is your mother alive?
Yes.....
- No.....
- (a) Apart from housework what is your mothers occupation (Job).....
- (b) What is the highest level of education your mother got?
None.....
- Primary
- Training after primary

- No.....
- Primary
- Training after primary
- Secondary
- Train after secondary
- University
- Any other (specify)

- (a) What is your fathers occupation (Job)?
.....
- (b) What is the highest level of education your father got?
None
- Primary
- Training after primary Specify
- Secondary
- Training after secondary Specify
- University.....
- 14. Do you have elder brothers and sisters?
Yes.....
No.....
- (a) How many brothers are working.....
What are their jobs?.....
- (b) How many sisters are working?.....
What are their jobs?.....
- 15. Does your family have other sources of money apart from parental jobs?
Yes.....
No.....
If yes, specify the sources.....
.....

APPENDIX B

ABILITY IN SCHOOL SUBJECTS

PART B:

STUDENT CODE NO:.....

SCHOOL CODE NO:.....

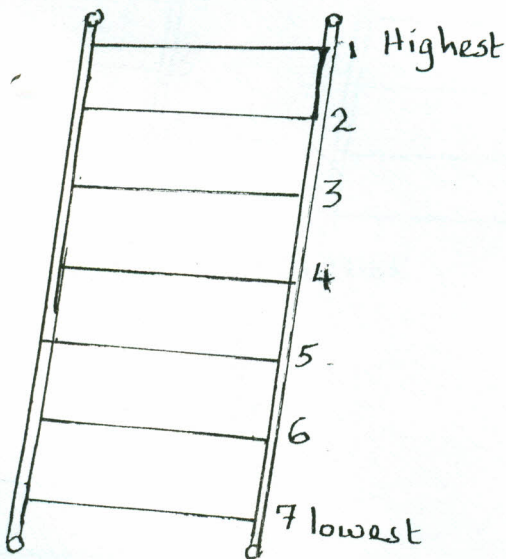
Ability Ladders:

Instructions:

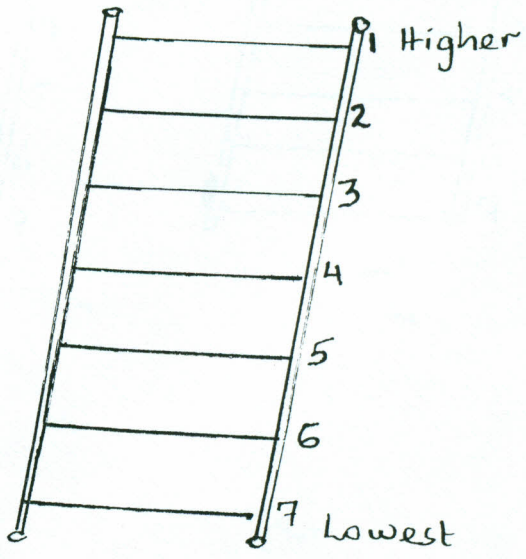
A. In various school subjects tested in the K.C.P.E. examination there are pupils who feel that they have the best ability or even the worst ability in specific subjects. Others feel that they have moderate ability. Locate yourself on the ability ladder by putting an "X" on the ladder which best estimates your ability in each subject(s). Step 1 indicates feelings of highest ability, the middle steps(2-6) indicate decreasing moderate ability while step 7 indicates the lowest ability. An example is given below.

Example: Kwanzu feels that she has high ability in Kiswahili, although not the very best. She neither has very high nor very low ability in English. She may **CHOOSE** to cross "X" the ladders as follows:

Kiswahili

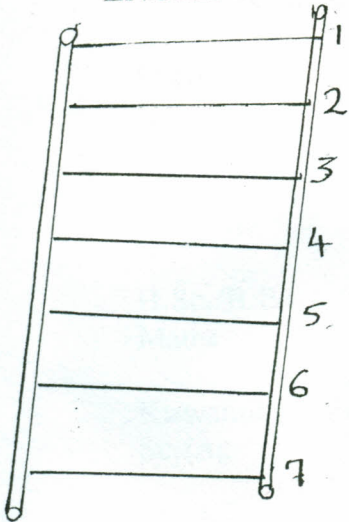


English

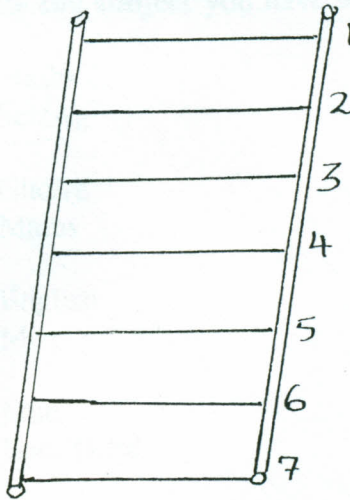


NOW LOCATE YOURSELF ON THE ABILITY LADDERS GIVEN BELOW:

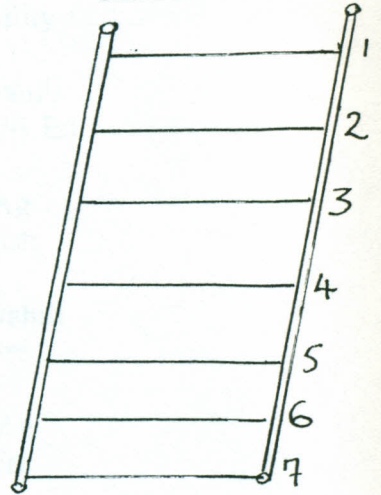
ENGLISH



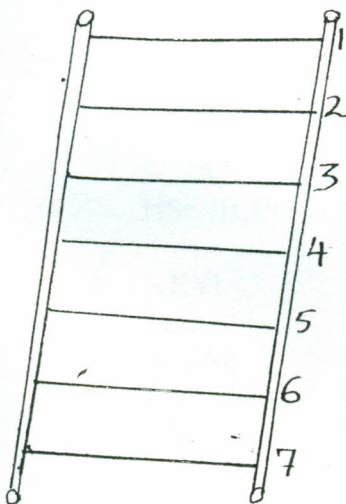
KISWAHILI



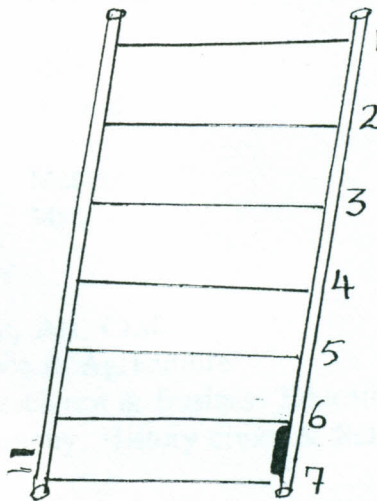
MATHEMATICS



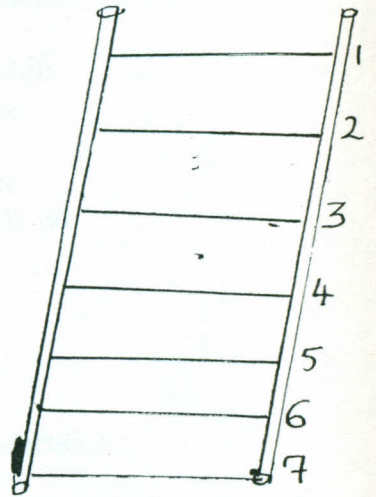
GHC/RE



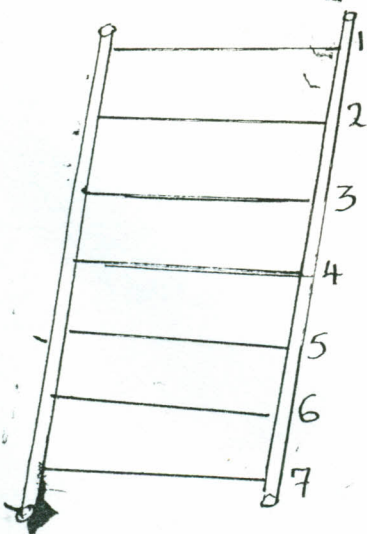
HOMESCIENCE/B. EDUCATION



MUSIC/CRAFT



SCIENCE/AGRICULTURE



B. Paired Comparison of Subject Ability

Instructions:

(i) Below are pairs of K.C.P.E. subjects. Look at one pair at a time for each pair of subjects **circle the subject** you have better ability in.

English Ghc/re	Maths Sc./Ag	Kiswahili Hsc./B.Ed.
Mac Kiswahili	Ghc/re Maths	Sc./Ag English
H.Sc./B.Ed. Maths	English Mac	Kiswahili Ghc/re
Kiswahili Sc./Ag	Mac Hsc./B.Ed.	Sc./Ag Ghc/re
Ghc/re Mac	Maths Kiswahili	English Hsc./B.Ed.
English Maths	Mac Sc./Ag	Kiswahili English
Sc./Ag HSc./B.Ed.	Maths Mac	Ghc/re Hsc./B.Ed.

KEY:

Mac	Music, Art, Craft
Sc./Ag	Science & Agriculture
Hsc./B.Ed.	Homescience & Business Education
Ghc/re	Geography, History civics & Religious Education

(ii) Do you feel that you have high ability in some subject(s) even if you perform POORLY in them?

Yes.....

No.....

If your answer above is yes, name two of the subjects you perform **POORLY** in and suggest possible reasons for your poor performance in that particular subject.

Subject

Reasons (1).....
.....

(2).....
.....

Subject

Reasons (1).....
.....

(2).....
.....

ENSURE THAT YOU HAVE ANSWERED ALL QUESTIONS

THANK YOU

APPENDIX C

LIST OF SCHOOLS USED IN THE STUDY

Kenyatta University Primary School - I

Muthaiga Primary School - II

Kiboro Primary School - III

Mathare 4A Primary School - IV

Non-marginal schools (NMS) - I and II

Marginal Schools (MS) - III and IV

APPENDIX D

PERTINENT PERSONAL PARENTAL AND SIBLING INFORMATION
SELECTED SOCIO-ECONOMIC INDICATORS

Variable		% of Pupils in each school				% of the Total sample
		I	II	II	IV	
A	Age of pupil in years					
	Under 11.5	-	0.6	-	0.6	1.2
	11.6 to 13.5	3.3	3.0	0.3	1.3	7.9
	13.6 to 15.5	22.8	25.2	11.5	14.4	73.9
	15.6 to 16.5	1.3	0.3	3.9	6.1	11.5
	Over 16.5	-	-	1.6	2.4	3.9
	No response	0.3	1.2	-	-	1.5
	Total	27.6	30.0	17.3	24.8	100.0
B	Lives with					
	Mother & Father	19.1	27.0	7.3	13.0	66.4
	Father only	2.5	1.2	0.9	2.7	7.3
	Mother only	4.8	1.2	6.4	7.3	19.7
	Relative	1.2	0.9	2.4	1.5	6.1
	Any other	-	-	0.3	0.3	0.6
	Total	27.6	30.3	17.3	24.8	100.0
C	Who pays for pupils education?					
	Mother & Father	15.8	19.4	4.5	6.4	46.1
	Father only	1.8	2.7	6.1	6.7	17.3
	Mother only	8.5	7.6	3.6	9.1	28.8
	Sibling	1.5	0.3	1.2	0.9	3.9
	Relative	-	0.3	0.3	0.6	1.2
	Sponsor	-	-	1.5	1.2	2.7
	Total	27.6	30.0	17.3	24.8	100.0
D	Mother Level of Education					
	None	1.8	0.6	1.8	1.8	6.0
	Primary	3.3	0.9	9.7	9.4	23.3
	Secondary	16.3	15.7	5.1	13.0	50.1
	University	4.7	12.6	-	0.3	17.6
	Not applicable	0.6	-	0.6	0.3	1.5
	No response	0.9	0.6	-	-	1.5
	Total	27.6	30.3	17.3	24.8	100.0

APPENDIX D

		I	II	III	IV	%
E	Fathers Level of Education					
	None	0.9	0.6	2.2	1.8	6.0
	Primary	0.9	0.6	5.8	8.2	23.3
	Secondary	11.2	10.0	4.8	11.9	50.0
	University	13.3	18.5	1.2	1.2	17.6
	Not applicable	0.3	-	3.0	1.5	1.5
	No response	0.9	0.6	0.3	0.3	1.5
	Total	27.6	30.3	17.3	24.8	100.0
F	Any brothers working					
	Yes	13.4	7.9	8.5	9.3	39.1
	No	14.2	22.4	8.8	15.5	60.9
	Total	27.6	30.3	17.3	24.8	100.0
G	Any sisters working					
	Yes	12.2	6.0	9.4	8.1	35.7
	No	15.4	24.3	7.9	16.7	64.3
	Total	27.6	30.3	17.3	24.8	100.0
H	Alternative Income Sources					
	Yes	11.2	16.4	3.9	6.4	37.9
	No	16.4	13.9	13.4	18.4	62.1
	Total	27.6	30.3	17.3	24.8	100.0
i	Pupils educational Aspirations					
	Primary	0.6	0.6	-	0.3	1.5
	Train after primary	-	-	2.1	0.6	2.7
	Secondary	1.2	1.2	5.2	5.5	13.1
	Train after secondary	5.2	1.8	1.5	3.3	11.8
	University	20.6	26.4	8.5	14.5	70.0
	Any other	-	0.3	-	0.6	0.9
	Total	27.6	30.3	17.3	24.8	100.0

APPENDIX F

DETAILS ON SEX DIFFERENCES IN PUPIL LOCATION AT EACH LEVEL OF THE ACADEMIC ABILITY LADDER

G1: Girls location on the academic ability ladders N=155

Subject	Self concept level(% of Pupils)				
	High	Medium	Low	NR	Total
Eng	56.2	32.7	10.5	0.7	100
Kisw	63.4	28.1	7.8	0.7	100
Maths	28.1	38.6	32.7	0.7	100
Ghc/re	16.3	60.8	22.2	0.7	100
Hsc./BEd.	35.3	46.4	17.6	0.7	100
Mac	31.4	56.2	11.8	0.7	100
Sc./Ag	25.5	53.6	20.3	0.7	100

NR: No responses

G2: Boys location on the academic ability ladders N = 177

Subject	Self concept level (% of Pupils)				
	High	Medium	Low	NR	Total
Eng	47.5	44.1	8.5	-	100
Kisw	58.2	33.9	7.9	-	100
Maths	33.9	46.3	19.8	-	100
Ghc/re	31.6	59.3	9.0	-	100
Hsc/BEd.	31.6	57.1	10.7	0.7	100
Mac	36.3	48.6	15.3	-	100
Sc/Ag	45.2	44.6	10.2	-	100

NR: No response