

**A COMPARATIVE ANALYSIS OF ACADEMIC
PERFORMANCE OF BOYS AND GIRLS IN MIXED DAY
SECONDARY SCHOOLS IN KENYA: A CASE OF
KIHUMBU-INI DIVISION OF GATANGA DISTRICT,
MURANG'A COUNTY.**

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the Requirements for the Award of Master of Arts Degree in
Project Planning and Management, University of Nairobi.**

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DECLARATION

This research is my original work and has not been presented for a degree award in any other university.

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DEDICATION

I dedicate this study to my late father, Mr. A. Karimi who summarized to me benefits of education early in my life. He said son ‘education provides salt and sugar.’

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ABBREVIATIONS AND ACRONYMS

- GDET - Gatanga District Evaluation Test
- GOK - Government of Kenya
- KCPE - Kenya Certificate of Primary Education
- KCSE - Kenya Certificate of Secondary Education
- MDGs - Millennium Development Goals

ABSTRACT

This research was done in Kihumbu-ini division of Gatanga district in the mixed day public secondary schools. The objectives of the study were to establish gender gaps in prior achievement, [KCPE], attitudes towards compulsory subjects, family factors, giving of prizes in schools and how these gaps influence the academic performance of boys and girls in the mixed day secondary schools in Kihumbu-ini division. Scores of each subject out of 100 were used to compare performance of boys and girls while an average score in English, Kiswahili and mathematics out of possible score of 300 marks in the Gatanga District evaluation test [GDET] 2011 results was used as an overall measure of academic performance. KCPE 2008 results score out of possible 500 marks was used as the prior achievement score. A sample of 128 girls and 126 boys were drawn from 6 schools using simple random method out a total population of 424 students. The research utilized self administered questionnaires. Document analysis schedule was used for collecting data about students' prior achievement and academic performance at form 3[GDET 2011 score]. Statistic program for social science (SPSS) was used for calculating means, standard deviation, cross tabulations and independent T-test required for research data analysis. Significance level was determined at $p \leq 0.05$. The findings indicated that boys had higher score than girls in the prior achievement test [KCPE] and that the girls had greatly advanced almost closing the gap at form 3 level of secondary school cycle. However, girls scored higher than boys in English and Kiswahili. In mathematics the girls performed significantly poorer than boys reversing the gains in the languages when the subjects were combined. There were differences between boys and girls in attitudes, family support and academics prizes awarded, but these differences were not significant. This research suggests further investigation on how to improve performance of mathematics for both boys and girls as it was found to be very low[12% for girls and 16% for boys] and that mathematics be optional when determining the final grade for examinations that determine placement in colleges and universities as well as further advancement in career.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

There is no one single country in the world that has attained gender equality (Kawalleh and Zaga 2009). Countries commit themselves to see full development of both girls and boys for accelerated national development but also as a right to its entire citizen. Gender issues and views relating to academic performance has evolved over time. In the early 60s in developed countries like UK the emphasis in education was to train and equip boys and girls with skills, attitudes and knowledge for their social roles in life. Gender was understood to be almost equal to sex, and stereotypes were never challenged but upheld by education policies.

In efforts to speed up development, countries adopt policies that emphasize science mathematics and technical subjects. Prioritization of science and technology within the educational and development policies of a country may act to exclude female students unless additional actions are taken to promote women's participation in these fields. (Huggins and Ranedell 2007)

In developed countries the concern has shifted from girls to the underperforming boys. In a study in Jordan, female students were found to outperform males despite the stereotypic view that men are better performers than women (Kawalleh and Zaga 2009). In Australia Wayne, Martino and Mills (2001) observe that there was a balanced check on boys and

girls after a period that emphasized girls' issues leading to boys' isolation. In the United States of America there is worry over underperforming boys as reported in Washington Post by head of scouts association Willie, national director of government relations for Boy Scouts of America, who said that the state of male achievement was dire and in crisis. "I am convinced today that we have a national crisis, a national security issue, a state-of-emergency issue and a nation at risk. If anybody cannot understand that, as we talk about investments and the return on those investments - which are our boys - then it is very clear we are going in the wrong direction."

The examination system changes from summative evaluation to emphasis on course work were blamed for favouring girls that is around the time GCSEs replaced O-levels in United Kingdom. Academic performance of boys and girls is influenced by many factors like anxiety, attitudes, culture, type of school, self efficacy beliefs, self esteem and others as studied by Twoli (1986), Elimu Yetu (2003), Bailur (2006), Indoshi, Were & Yalo (2010). And through these factors gender differences manifest. It cannot be concluded with finality that boys will always outdo girls' performance but awareness and response to prevailing situations must be a continuous process so that prevailing challenges are addressed.

Though gender differences in academic performance are observed it's difficult to point out causal factors. Teachers' perception of femininity and masculinity is crucial as it leads to different responses and stimulation of boys and girls many times without being aware of it. Younger, Warrington and Williams (1999) records that gender interactions in

classroom are different, with girls having more academic interactions with teachers while boys dominated in student to student relationships. And more importantly, that when teachers thought that they treated both genders equally, students' group discussions revealed that girls dominated the teacher student interactions.

Storo and Campbell (1994) argues that boys and girls are more similar than different and treatment need not to be varied as each gender is capable to attaining full potential in an ordinary conducive environment. They argue that gender is a poor predictor of many aspects like intelligence, skills acquisition and performance. These observations are contrary to observations that the gender that has power and status performed better than the opposite gender. This argument is supported by observations in patriarchal societies where boys were doing much better than girls, while in matriarchal societies, Kutnick (1997) women and girls were found to be more responsible and performing better than boys.

The boys and girls also have to negotiate their developmental challenges like gender identity successfully in order to maintain a high level of academic performance. The changes in the physical, psychosocial and emotional dimensions can make boys and girls overly anxious especially in fitting the gender jacket defined by the society. The presence of opposite gender cannot be ignored in this study as all day schools in the district are mixed gender. Boys are particularly eager to be in charge in patriarchal societies. Commonwealth Nations secretariat (2002) observes that there is manipulation of gendered space by boys both inside and outside classrooms and that this constrained

girls' participation in lessons while boys themselves are distracted by the need to confirm their masculinity through performance of disrupting the lesson and teachers' attention seeking behaviour. This would adversely affect the performance of both boys and girls.

Millennium development goals(MDGs) adopted by the United Nations in 2000 brought gender equality into focus as stated in MDG 3(GOK 2005). The progress towards the goal of gender equality has been measured through parameters of access, retention, and school completion rates. This is the basic level of achieving gender equality. After girls and boys are in school, it is important to address the inequality in the families, gender stereotypes, school teaching and learning process to ensure equal opportunities to excel is accorded to boys as well as girls. Academic performance has been used as an indicator towards achievement of gender equality.

Many nations have emphasized study of sciences and mathematics by girls which is hoped will enable the girls and women to take powerful positions in the society. English, Kiswahili and mathematics are compulsory in pursuance of goals of national unity and international integration. English is the official language in Kenya while Kiswahili is the national language. Mathematics is hailed to develop logic and problem solving and is considered necessary for technological development.

Ominde Commission, 1964, claimed that mathematics provides knowledge that would support people to become logical in thought and rational in decision making. Waheed and Mohamed (2011) propose that knowledge of mathematics is an essential tool in our

society and that it can be used in our daily life to overcome the difficulties faced. Mathematics has been considered as one of the most important core subject in a school curriculum and is compulsory in secondary schools and primary schools in Kenya. The students respond with anxiety at the imagination of failure in the subject. English, Kiswahili and mathematics are core subjects in secondary school curriculum. The way the subjects are performed by the boys and girls is of paramount importance as it may lead to differential score that is disadvantageous to one gender in recruitment to join jobs and institutions for further training.

There is need to address the difference in performance as the underperformance of girls will result to fewer girls joining colleges and universities from the schools. Reduced opportunities to gain powerful employment will lead to poverty and under development of the area. The understanding of causes of and remedy to the academic performance gap will result to better performance in the national examinations giving the division and the district a better position in the county. The academic performance disparity between boys and girls if allowed to continue would lead to imbalances in decision making and power sharing later in life.

1.2 Statement of the Problem

Gender disaggregated data shows a significant difference between boys' and girls' academic performance in mixed day secondary schools in the division. For example in the KCSE 2011 examination, boys in public mixed day schools had a mean of 4.58 while

girls from same schools posted a mean score of 3.56 which is significant at $p < 0.05$. Table 1.1 shows KCSE scorers for boys and girls for schools captured in this study.

Table 1.1: Mixed day secondary schools in Kihumbu-ini Division and KCSE performance

School	2009		2010		2011	
	Boys	Girls	Boys	Girls	Boys	Girls
1 Gathanji	3.500	3.320	3.824	3.800	4.182	3.929
2 Gatiiguru	3.112	3.274	4.321	3.467	4.400	3.520
3 Githambia	4.750	3.000	5.348	3.452	4.920	3.090
4 Gituamba	4.538	3.263	4.088	4.028	4.879	3.914
5 Kiamwathi	4.230	3.312	4.533	3.750	5.125	3.89
6 New Nyaga	3.971	2.730	3.870	2.630	3.890	3.210
Means	4.015	3.145	4.332	3.520	4.566	3.662

Source; Gatanga district KCSE analysis 2009- 2011

For all the three years the difference in performance for boys and girls are significant at $p \leq 0.05$ and consistently the girls performed below boys except for Gatiiguru secondary in KCSE results 2009

There is concern over the existence of the academic performance gap during the secondary cycle learning process which results to limited access to colleges, universities

and in jobs for underperforming girls. It would be prudent if this gap was addressed before it bore fruits at the national examinations which have long lasting impact on the lives of the boys and girls.

Kimani (2005) and Njuguna (2004) conducted research on academic performance in Kikuyu and Gatanga divisions respectively. The two studies used KCSE scores in their research and involved boarding as well as day schools in the divisions. The influence of prior performance and parental involvement were also investigated. Gachukia (1992) first pointed out to the gender performance gap with girls lagging behind boys. This concern was voiced also by Elimu Yetu (2003). The compulsory subjects have been emphasized both in primary and secondary school curriculum. English, Kiswahili and mathematics take 49% of school time leaving the remainder to other subjects. None of the reviewed literature investigated the performance gap at form 3 level and for the compulsory subjects. Therefore, how the subjects contribute to the gender performance gap is the concern of this research.

1.3 Purpose of the Study

This study intended to compare academic performance of boys and girls in compulsory subjects at form 3 in mixed day public secondary schools in Kihumbu-ini division, of Gatanga district of Murang'a County.

1.4 Objectives of the Study

The objectives of this study was to;-

1. Establish differences in boys' and girls' performance in the compulsory subjects in Kihumbu-ini division.

2. Investigate difference in prior performance (KCPE) marks of boys and girls, and academic performance in the mixed day public secondary schools in Kihumbu-ini division.
3. Determine the gender differences in attitudes towards compulsory subjects and in academic performance of boys and girls in mixed day public secondary schools in Kihumbu-ini division.
4. Describe gender differences in family factors and in academic performance of boys and girls in mixed day secondary schools in Kihumbu-ini division.
5. Establish the distribution of prizes awarded for academic performance of boys and girls in the mixed day secondary schools in Kihumbu-ini division.

1.5 Research questions

The following research questions were the objects of this study.

1. How does academic performance of boys' and girls' vary in the compulsory subjects in mixed day secondary schools in Kihumbu-ini division?
2. How different were the prior performance scores of boys and girls in mixed day secondary schools in Kihumbu-ini division?
3. How do attitudes towards compulsory subjects vary among the boys and girls, and in academic performance in mixed day secondary schools in Kihumbu-ini division?
4. How do family factors differ in manifestation among boys and girls in mixed day secondary schools in Kihumbu-ini division and in academic performance?

5. How are prizes distributed among boys and girls in mixed day secondary schools in Kihumbu-ini division differ with academic performance?

The following hypothesis were tested

H1: There is a significant difference between the academic performance of boys and girls in English, Kiswahili and Mathematics in Gatanga district evaluation test 2011

1.7 Significance of the Study

The majority of district public secondary schools are mixed in gender and are day schools. Identification of factors influencing academic performance and how these factors vary among boys and girls can contribute to designing of gendered programs to address the disparity observed in the performance. An improvement in performance in the schools would result to better life of the majority of the Kenyan children who study in these schools.

To educationists, the study will shed light on the how KCPE influences performance of students at secondary school level. The hints gained can be applied to appraise performance in KCSE as well as determine the level value addition attained by various schools.

The outcome of analysis of performance in the compulsory subjects will contribute in the knowledge of and offer a window to view how compulsory subjects are contributing to

gender gap. A remedy could be based the observed contribution of various compulsory subjects which can be altered by policy adjustments.

The study outcome will inform the stakeholders the importance of students' parents' involvement in schools' learning processes thus strengthen the rationale for involving parents fully in the schooling matters of their children.

1.8 Delimitations of the Study

Kihumbu-ini division has 9 secondary schools 6 of these are mixed day schools thus it contains a majority of students with desired characteristics for the study. The focus was on one type of school enabling control of variables that would arise out of single sex schools. The focus is made on compulsory subjects that students have long history of experience having learnt same subjects at the primary level. These compulsory subjects are likely to be given a lot of attention by both the students and teachers and therefore their performance is likely to be well established and highly valued.

The research used students in form four in the year 2012 because they have had longest stay in the school and therefore full of experiences required to address the research objectives.

1.9 Limitations of the Study

Spata (2003) states that respondents sometimes give socially acceptable answers to questionnaires and not the reality. The extent to which respondent may be influenced by presence of opposite gender expectations are difficult to predict and school cultures are different and this may cause differences. Academic performance is influenced by many

factors like physical facilities, leadership, student teacher ratio and others that the researcher has no control of. The limited resources have led the study to concentrate in a division.

1.10 Assumptions of the Study

It is assumed that the Gatanga district evaluation test (GDET) 2011 examination was valid indicator of academic performance and that marks were awarded fairly despite being marked in different schools and by different teachers. The research assumes that every student worked diligently towards achieving the best of the scores in the examination. It is also assumed that the time lapse between time of research and administration of the examination has no significant influence in the data accuracy. A major assumption is that gender differences observed in prior achievement, attitudes towards compulsory subjects, family factors and prizes are responsible for observed gender performance gap in the compulsory subjects.

1.11 Definition of Significant Terms

Academic prizes- tangible items given to students in recognition of their efforts in academic work by the school.

Academic performance- the total marks scored in Kiswahili, English and mathematics in GDET 2011 out of possible 300 marks

Attitudes- refer to the self beliefs, perceptions of ability and judgment towards compulsory subjects.

Compulsory subjects- these are subjects that the student is required to attempt in the national examination for the award of KCSE certificate. They are English, Kiswahili and mathematics.

Family support-encouragement, peaceful home environment, provision of basic needs, provision of time for study and physical requirements like chair, table, means of lighting and place away from noise.

KCPE- a summative evaluation test given after 8 years of study in primary schools. The examination is given by Kenya national examination council which is a national body for tests administration.

Mixed day secondary school- a coeducation school after primary level, where all students commute from home to school and back

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews various studies done related to variables under investigation. It starts with background information on gender and performance, followed by studies on KCPE and its relationship to performance in secondary school. Attitudes towards English, Kiswahili, and mathematics are reviewed. Also the family support through discussions, time for study, family members' bonding at home and how it influences performance are highlighted. Motivation of girls and boys towards academic performance at school level through prize giving is also discussed.

2.2 Gender differences in academic performance

In developed countries the concern has shifted from girls to the underperforming boys. In a study in Jordan female students were found to outperform males despite the stereotypic view that men are better performers than women (Kawalleh and Zaga. (2009). In Australia Wayne, Martino and Mills (2001) observe that there is a balanced check on boys and girls after a period that emphasized girls' issues leading to boys' isolation. The concern for underperforming boys is recorded for United Kingdom and United States of America.

In developing countries like Kenya, Zimbabwe, Uganda and Nigeria, the focus is mainly on girls who continue to perform poorer than boys. The concerns for performance between sexes do change in the society over time. The developed countries are now worried over lower than girls' performance of boys, attributed to girl empowerment

campaign and policies in education encouraging the girls. In developing countries the girl child is marginalized and efforts to improve her self esteem, academic performance and participation in decision making is a major concern that is addressed through various ways in the society , mainly through education platform.

It is clear that attention to boys and girls need to be equal in emphasis otherwise it would lead to a see-saw situation where one gender has it at the expense of the other. In fact in some areas of central province of Kenya the boy child is endangered more than the girl child and measures need to be put in place to address issues like drug abuse and school absenteeism of boys.

KCSE results are used to provide a window for viewing gender differences and also provide basis for rewards and punishments for performing and nonperforming schools respectively. The scenario has led to hot competition between schools and unnecessary demand for revision materials, remedial teaching and extended study periods supervised by schools. In 2008, only 25% of students scored at least a C+ on the KCSE, with girls being less likely than boys to score at least a C+. The performance was weakest in District schools, where only 11% of students scored at least a C+, compared to 43% in Provincial schools and 90% in National schools. The difference in performance across these types of schools partly reflects differences in facilities, teachers and other resources, but it also reflects the different levels of academic preparation of the students admitted to these schools. (Glennerster et al 2011). The studies in performance in science and mathematics have been conducted widely as these subjects are considered of key

importance to economic development of the Kenya. Economic development is believed to heavily rely on science and technology advancement. Twoli (1986) observed that boys differed with girls on attitudes, aspirations and achievement in science and mathematics but did not attribute the differences to any particular factors.

Liu and Wang (2005) found that female students were more likely to seek and receive help from staff. Among the blind in Kenya, girls were found to have higher self esteem and performed better than boys. (Were, Indoshi and Yalo (2010), (Bailur (2006), while Sunnetha and Mayurk (2001) found no significant difference in the performance of second year students in university. Ndirangu, Muola, Kithuka and Nassiuma (2009) found that girls were more anxious than boys but both genders were significantly anxious over mathematics examination. This observation agrees with that of Bhansali and Trivedi (2008) who noted that girls on the whole had more incidences and intensity of anxiety than boys in academic anxiety.

'Elimu yetu' coalition 2003 registered the continued higher performance of boys over girls and that science subjects were poorly performed than art subjects. Kurbanoglu, and Takunyacı. (2012) observed in their study that there were no statistically significant differences between students' gender and scores of attitudes towards mathematics lessons, anxieties towards mathematics lessons and self-efficacy beliefs. But there were statistically significant differences between students' types of school. Students' grades were also found to positively correlate to scores of attitudes towards mathematics lessons, anxieties towards mathematics lessons and self-efficacy beliefs. The difference in gender exists in the way boys and girls respond to different classroom activities and learning experiences.

2.3 Prior (KCPE) performance and Academic Performance in mixed day

Secondary School.

Many times the poor results in the Kenya certificate secondary school education has been blamed on the poor entry behaviour or low marks scored in the Kenya certificate of primary education. The KCPE results leads to placement of low performing students in day secondary schools that are poorly equipped and mostly understaffed (Kimani 2005).

Njuguna (2004) while studying on factors influencing academic performance in Gatanga found that poor entry behaviour, discipline and frequent absenteeism were among the factors that affected performance adversely. And that 27.3 % of the respondents attributed poor performance to low entry behaviour. Thompson and Ungerleider (2004) noted prior achievement, socioeconomic status and parental support as some of factors that had effect on performance. There are other researches indicating that there is weak relation between KCPE and KCSE performance as recorded in (Koech (2008), Wasanga, (1997), and Otieno (2007).

The concern over K.C.P.E. performance is heightened at least by some of the following reasons. One is the fact that the KCPE score will determine the type of school the student will join namely, national, provincial or districts and each category has its status and performance index. Kenya has three tiers of government secondary schools. The elite government schools, National Schools are the most prestigious secondary schools in the country. In 2004, there were eighteen single sex boarding schools which admitted

approximately 3000 of 3330 the top primary school candidates from across the nation (Lucas and Mbiti 2011). The district schools having low performance are least favoured.

Failure in the KCPE examination has caused suicides of pupils and teachers as they are not able to bear the shame (Kiarie 2012). This is sad and bad reaction to failure resulting to loss of life. However, it can point to strong negative emotions attached to academic performance that could hinder performance both in KCPE and later in secondary school cycle.

There is a gap between prior performance of public and private primary schools (Glennerster et al 2011). For example 2008 KCPE examinations data shows that 77 percent of private primary school candidates qualified for secondary school by scoring over 250 points, while only 45 percent of students in public primary schools qualified. This disparity in the performance between private and public primary schools has led to the overrepresentation of private primary school graduates in the elite National Secondary schools. The situation has continued to the present day forcing the ministry of education to take affirmative measure by allocating a ceiling percentage for admissions into national schools by private and public primary schools.

The other outcome of the examination is psychological. The way pupils and family members respond to KCPE results leads to a lot of stress for low or below expectations performers. This year alone there were a number of suicides done by KCPE candidates when results were announced (Kiarie 2012). The level of self esteem is more likely to be lowered due to labelling and stigma related to failing in the K.C.P.E and admission to *wajinga (fools)* school, as many district schools are labelled, thus further limiting the

students' struggle to achieve better scores academically. The schools are the lowest in the hierarchy.

There is a weak relationship between KCPE and KCSE performance according to some researchers Koech (2008), Wasanga (1997), Otieno (2007). However, these findings have not reduced the pressure placed on secondary schools to perform relatively to their intake KCPE marks. There is need to explore alternative ways to compare different categories of schools on KCSE performance.

2.4 Attitudes in English, Kiswahili and Mathematics and Academic Performance in mixed day Secondary Schools.

An attitude can be defined as a positive or negative evaluation of people, objects, event, activities, ideas, or just about anything in your environment. Attitudes can influence the effect and energy with which people respond to a situation. In a school situation attitudes can be formed regarding particular teachers, school type, subjects, facilities, syllabus and other aspects of students' daily lives.

Waheed and Mohamed (2011) propose that knowledge of mathematics is an essential tool in our society and that it can be used in our daily life to overcome the difficulties faced. Due to this assumption, mathematics has been considered as one of the most important core subject in a school curriculum and student responds with anxiety at the imagination of failure in the subject. More mathematics lessons are likely to be taught in schools and colleges throughout the world than any other subject as observed by Orton, D. Orton, and Frobisher,(2004). The Kenyan situation is not different. The three compulsory subjects

are allocated about 49% of the school curriculum time reflecting the emphasis they are given.

Many schools are experiencing vernacular influence on Kiswahili and English leading to poor mastery of the languages. Maloba (2010) in a study in Rachuonyo district found that students have negative attitudes towards learning of Kiswahili which influenced their performance and that boys tended to have a slightly more negative attitude towards learning Kiswahili than girls.

Kanyi (2008) in his study found that there was significant influence of attitude on academic performance in Kiswahili ($r = .33, \alpha < 0.05$). A weak significant negative correlation was also found between mother tongue and academic performance in Kiswahili while gender difference on academic performance in Kiswahili was not significant ($t=0.014, \alpha < 0.05, df = 178$).

Wilson-Relyea, (1997) quoted in Johnson (2009) claims that one of the stumbling blocks present in attempting to increase the number of females entering technically oriented professions requiring a strong mathematics background is convincing elementary and middle school students on the value of a technical profession before they begin to “opt out” of the mathematics. This seems to suggest that performance issues should be addressed early in school life through education on the importance of the subject.

Farooq and Shah (2008) asserts that attitude towards mathematics plays a crucial role in the teaching and learning processes of mathematics and that these affects students' achievement in mathematics. The teaching methods, the support structure of the school,

the family and students' attitude towards school affect the attitudes towards mathematics. Thus attitudes have wider sources than can be scoped in a limited study.

Yara (2009) in a study showed that the students' attitudes towards mathematics were positive and that many of them believed that mathematics is a worthwhile and necessary subject which can help them in their future career. Teaching service like other personalised, services involve interactions that inevitably lead to a working or non productive relationship. Teachers' attitudes can easily influence the students. The unfortunate thing is that when teachers' think they are neutral the students perceive them differently as biased. Younger, Warrington, and Williams (1999) puts it that most teachers believe that they give equal treatment to girls and boys, particularly in support of their learning, but focus group interviews with students and classroom observation suggest that this is rarely achieved in most schools, boys appear to dominate certain classroom interactions, while girls participate more in teacher-student interactions which support learning.

2.5 Family Support Activities and Academic Performance in mixed day

Secondary Schools

Families are charged with nurturing the first and very important stage of life of every child. The survival of the child lies wholly on the close members of the family. The child's basic needs must be satisfied to enable growth to higher level of achievement.

At family level research by Holloway and Hess (1985) found that though there were no significant difference in performance of mathematics between boys and girls, mothers of girls tended to attribute failure to lack of ability unlike mother of boys who attributed

failure to lack of effort. Mothers being very important to their children can influence without knowing it, the girls view towards mathematics and may develop learnt helplessness towards the subject, while the boys are likely to be encouraged to work harder.

In mixed day secondary schools the students interact on daily basis with their family members. The way the families are satisfying the student's basic needs can strongly influence the capacity to cope with academic rigor and impact on the overall performance and interest in schooling. There has to be security in the home, with warmth and love. When a family is dysfunctional, it makes it difficult for that child to move up to the next level of social needs because fear is often present. The attitudes and role modelling offered at family level can have lifelong influence on the child. As the child evolves into a teenager, he or she will most likely become more socially active in peer groups. Generally, whatever gets reinforced, supported, or accepted by the peer groups will often determine which type of group the adolescent will affiliate him or herself with.

There are many ways that family background does influence academic performance. Studies have found relationships between academic performance and economic status, parent level of formal education and family social relationships. The authors Christenson and Sheridan (2001) concluded that "families are essential, not just desirable" to the educational success of their children. They proposed that schools need to get parents involved effectively for improvement in performance and that parents should be recognized as primary agents as far as academic performance is concerned. There are various ways that parents support education activities of their children. Some of these are

paying fees promptly to stop absenteeism, visit school to monitor progress, inspect exercise books for homework and note writing, set goals with the child and work towards their achievement and above all provide basic needs and be available to the child both emotionally and physically. Warm family relationships are essential for meaningful influence on the child.

Mothers of boys attribute success to ability and failure to lack of effort while mothers to girls attribute success to ability and failure to lack of ability. The parents' attitudes can influence self concept of the children. The boys will be advised to try harder while girls will be expected just to accept the scores they get and not relate it to working hard. A study by the Metropolitan Life Insurance Company found that nearly all students (97%) who earned mostly A's and B's on their report cards reported that their parents encouraged them to do well in school. Among students who earned mostly C's, nearly half (49%) said they received little parental encouragement. Children whose families provide supervision and support, and who have aspirations for their children, tend to multiply those children's chances of being successful students.

At family level, some students will provide labour, care for siblings, cook family meals and might be in an abusive relationship with close relatives. Therefore, offering students the best opportunity to succeed in school may require helping not just the student, but also treating the student's entire family. Christenson and Sheridan, (2001) in their book, entitled "Empirical Base for Family Involvement", summarize parenting issues as follows: -

That “family” has replaced “parent” because of the significant adults in the lives of children and that home environmental influences are positive correlates of students’ academic achievement and school performance; the distinction between family status and family process variables is critical as emotional support is not pegged on status but family connectedness and what parents do to support learning has a greater impact than family status, and that the specific actions families take to facilitate their children's educational success, at home can chart a course for intervention and therefore collaboration between home and school is essential. The degree of match between home and school contexts is a contributing factor for students’ school success.

Henderson and Berla (1994) synthesized over sixty studies in USA regarding the effects of family involvement on student achievement. Their work attributed to parental involvement effects that include;-

1. Higher grades and test scores,
2. increased homework completion,
3. Improved school attendance,
4. More positive attitudes,
5. Fewer discipline problems,
6. Increased high school completion rates,
7. Decreased school leaving rates, and
8. Greater participation in postsecondary education.

Epstein (2001) suggests that parents who are informed and involved in their children’s school can positively impact their child’s attitude and performance. Parents’ awareness

and interest in their children's learning and school activities model for their children the importance of school, which may lead to positive behaviours. Importantly, Epstein's research shows that parental involvement can have a positive impact on student's academic work at all grade levels. Parental involvement at home seems to have a more significant impact on children's performance than parental involvement in school activities.

2.6 Prizes and Academic Performance in mixed day public Secondary Schools.

Some research on gender and tendency to compete indicate that girls might be losing in mixed gender schools. Gneezy and Rustichini (2002) in their attempt to explain the gender gap in math's scores, pointed to the role of competition between the genders. The effects in mixed sex settings range from women failing to perform well in competitions to women shying away from environment in which they have to compete (Nienderle and Vesterlund, 2007).

Women in the Caribbean were found to be competitive and outperform men mainly because their training was geared towards responsibility and leadership in the society (Kutnick 1997). While investigating responses to competitive situations 75% of the men guessed they were the best in the group as compared to 43% women. Men were more over confident than women in competitive situations and this could contribute to less anxiety in examination situation.

Price (2008) examined men and women who were equally confident and found that there was no gender difference in competitive entry. Other studies done in Kenya at school for

the blind found that boys had lower self esteem than girls and this affected adversely their participation in learning situations (Were CM, Indoshi F.C, and Yalo J.A 2010). The evidence points towards socialization process for boys and girls in the consolidation of necessary attitudes especially in the competition between genders.

Some people perceive extrinsic rewards to be valuable and if attainable, are motivating factor towards attainment of set goals. These extrinsic rewards "help to define which behaviours are valued. Rewards motivate particular kinds of performance and ultimately play a key role in determining how satisfied individual students are drawn to learning experiences. Giving of prizes has been hailed as useful in getting students to do tasks that they are lowly motivated to do (Assor, Kaplan and Roth 2002). However, it is hoped that repeated attempts to do the tasks would develop the habit and be internalized.

Majority of teachers (Christiana, 2009) agree that a perfect student is someone who always shows high interest in activities and subject, performs well, is highly motivated, and is interested in taking challenging tasks. When educators want to maintain student performance and instil interest, they implement reward based extrinsic motivation. This kind of motivation includes usage of rewards such as gifts, payments as a way to keep students interested in subjects and motivate them. Christiana (2009) in a study showed that 88% accepted and 12% disagreed that students' work harder academically in schools which organize prize/award days.

At school level boys and girls are exposed to internal examinations whose results are used in appraising students as well as teachers. Due to the way tests are administered and

rewards are allocated in academic competition, where the winner takes it all, there is reason to suspect that females are failing to realize their full potential and be recognized by the society due desire to maintain social position allocated to girls in the society. The provision for a gender sensitive framework for awards would set aside prizes for girls in a non competitive manner with boys.

2.7 Theoretical Framework

Motivational System theory (MST) by Martin Ford 1992 focuses on the individual as the unit of analysis. The theory considers the individual in the biological, social, and environmental contexts that are crucial to development and sustenance of drive [motivation] towards action. Ford suggested how various factors interact to elicit behaviour, in our case academic performance is the desired behaviour. He asserted that achievement and competence are the results of a motivated, skilful, and biologically capable person interacting with a responsive environment.

Ford, (1992) proposal can be presented in an equation form of a statement.

$$\textit{Achievement} = \frac{\textit{(Motivation x Skill)}}{\textit{Biological Structure}} \times \textit{Responsive Environment}$$

Biological Structure

Source: Campbell, 2007

The theory places emphasis on interaction of various constructs to generate drive and subsequent results. The constructs are broadly defined enough to accommodate variety of conditions. For example biological component is placed in a position (denominator) to suggest that large measure would hinder achievement, however good health promotes achievement.

Achievement is measured by the average score in the compulsory subjects in this research. The biological structure is embedded in the assumption that a healthy mind and ability to perform academically is equally endowed in the boys and girls. Thus the ability is taken to be constant in this research. The environment includes the school set up and family home situations that influence the performance. The students experience their family situations daily and have to cope with family stresses of life to the extent that energy to attend to academic rigor is diminished. The girl child being more involved in daily chores and is attached to the unsubordinated mother is likely to bear more weight of family emotional load than the boy child.

The skill level in our case is represented by years of study and acquisition of knowledge which cumulatively determines current performance. Motivation is the drive to act or energy directed towards a certain activity, in our case performance in compulsory subjects. Motivation can be extrinsic as well as intrinsic. Extrinsic motivation involves awards (awarding) of prizes and addresses the inner desires of the student. The value of the award is given by the person receiving it. The awards given to students in occasions like prize giving days may fail to capture the spirit of boys and girls if the prizes are not gender sensitive or greatly valued by the students. It is important to find out the value attached to the prizes as this will have a direct influence on energy invested towards academic achievement.

2.8 Conceptual Framework

The performance in KCPE brings about self evaluation towards ability to pass well or fail in the subjects especially the compulsory subjects which are done in the secondary schools. The experience can set off a feeling of inadequacy which when confirmed can be hard to alter especially when it is negative. The sense of failure or success in the compulsory subjects as experienced at primary school level can ignite same feelings at secondary level leading to perception of helplessness.

The family setting will involve interaction with older persons who experienced the compulsory subjects and their opinion about the subjects can influence the desire to excel in the subjects. The family can verbalize their expectations and express confidence in the student to achieve leading to higher motivation towards the academic achievement. The useful discussions and encouragement received from significant members of the family can influence efforts and academic performance.

Student in a day school experience with other family members the daily hassles that each goes through. Depending on the home situation the student daily energy is high or is low for academic rigor. For best performance student with emotional burdens from family relationships need counselling and debriefing before he she can settle for school work. Students who experience positive relationships with family members and are provided for, in terms of basic needs are likely to perform higher than those who lack support. The provision of prizes for winners is likely to start competition for the coveted rewards. Reaction to competitive situation is different for boys and girls. A school that recognizes need to reward separately the gender are likely to motivate all students towards academic achievement.

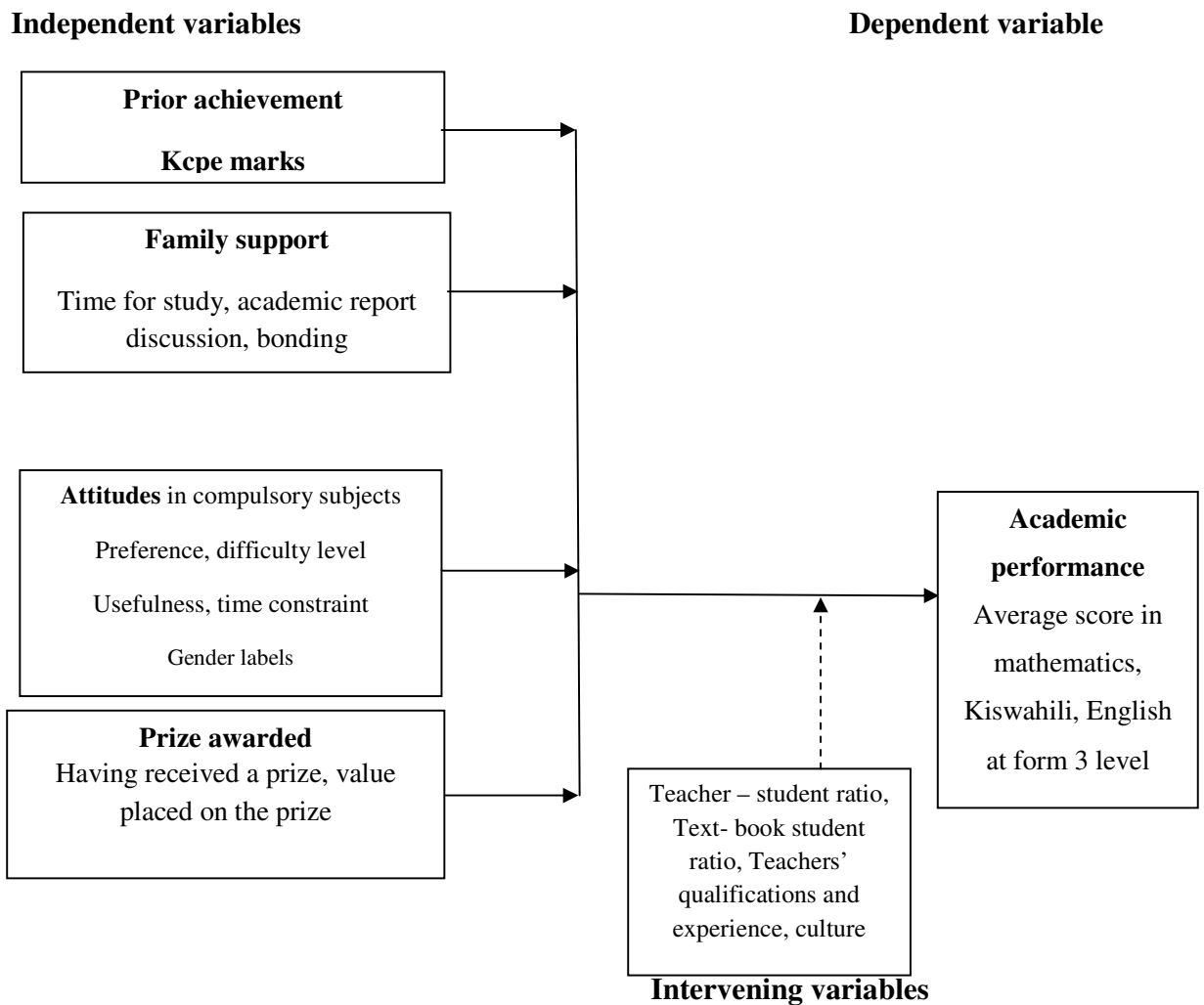


Figure 1: Conceptual framework

2.9 Summary of Reviewed Literature

Academic performance raises a lot of interest among the stakeholders mainly because its considered to be an indicator of gender equity in education. The studies reviewed showed weak relationship between KCPE and academic performance at KCSE. However, none of the studies were investigating relationship of KCPE and performance at form 3 level of secondary school cycle. This researcher therefore has a gap to address.

Families were found to have a profound influence in academic performance but the mechanism through which they influence is not clearly established. However, family daily contact and warmth of the relationship was singled out as having powerful influence. This research has a place to explore students' self assessment on relationship/bonding in the family; time available for study is likely to be closely related to amount of work done at home and academic consultations at family level.

Both intrinsic and extrinsic motivations were found to be effective in energizing for performance. The context in which the motivation was done was found to be important. In mixed gender competition, boys' competitiveness increased but girls shied away when paired with boys. This study narrowed motivation to extrinsic form organized at school level. It intended to establish the difference in prize awards that existed among boys and girls and how this influenced academic performance.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This section deals with research design, target population, sampling and sampling techniques. Research instruments, data collection and data analysis methods, validity and reliability of research instruments and ethical issues are also discussed.

3.2 Research Design

A descriptive survey design was chosen for this research. Survey research according to Mugenda and Mugenda (1999) involves collection of data to determine the facts as they are about variables under the study. This research involved an investigation on prior performance, attitudes, family support, prize awards and how they vary with academic performance of boys and girls in mixed day secondary schools in kihumbu-ini. Thus the study was interested in finding out the state of performance in regard to gender. Therefore, descriptive survey design was found suitable for this study.

3.3 Target Population

There are 6 mixed day secondary schools in Kihumbu-ini division of Gatanga district containing a population of 207 boys and 217 girls, in the 2012 form four classes composing a target population of 424 students. All students who are currently in Form IV in the District and had attempted GDET 2011 examination form the legible population.

3.4 Sample and Sampling Procedure

A sample is a sub-set of the total population that is used to give the general views of the target population (Spata,2003).The sample size must be a representative of the population on which the researcher would wish to generalize the research findings. Using Morgan table (Appendix VII) for sample size determination for Educational and Psychological tests, when population size is 207 boys, a sample size of 132 for boys is adequate. For population of 217 girls, a sample of 136 girls is enough. Thus the research used a sample size of $132+136 = 268$ students. Sampling refers to the process of selecting a representative sample from the population. A simple random sampling was done to come up with 132 boys and 136 girls from the schools. The number of participants per gender per school was determined in proportion to the school heterogeneous population (Table 3.1). To get boy's sample from a school, the boys, population was divided by 207 and multiplied by 132. For girls' sample per school, the girl's population in the school was divided by 217 and then multiplied by 136.

Table 3.1 Apportioning of student Research Participants to Schools

	School	Boys	Sampled	Girls	sampled
1	Githambia	33	21	32	22
2	Gatiiguru	26	17	33	20
3	Gituamba	40	26	44	27
4	New Nyaga	59	37	49	31
5	Gathanji	22	14	28	18
6	Kiamwathi	27	17	29	18
	Totals	207	132	217	136

Source; DEO Gatanga (2012)

Of the required number from a school, each of the boys or girls was numbered, forming sampling frame. A computer generated random numbers were then used to select the required number of respondents.

The researcher visited the schools and with the help of the schools principals identified the research participants from school registers. The numbered list of participants was used to match excel program of a computer that generated the numbers of the participants as required as per table 3.1.

3.5 Research Instruments

Research instruments are used to collect data accurate enough to be useful in addressing the research questions. This research utilized questionnaires and document analysis.

A questionnaire composed of a list of questions which the respondents are requested to answer in writing. The questionnaire used in this research contained open ended and closed questions formulated using simple and clear language. The questionnaire had four sections each relating to various variables under investigation. Section A was asking demographic information and prior achievement. Section two was about the family and section C about attitudes towards compulsory subjects. The last section had questions relating to prize awards in schools. The questionnaires were self administered and the researcher with help of research assistants delivered the questionnaires to the respondents and collected them as was agreed on by the researcher and administration.

Record analysis schedule was used to gather relevant data needed in the research such as prior performance (KCPE) scores and GDET scores. The admission registers, class

registers and mark books were checked to identify the qualifying students. Copies of KCPE results slips which were duly confirmed and signed by the respective primary head teachers of primary schools were used. Original mark books as recorded by subject teachers were relied on for data on performance in English, Kiswahili, and mathematics. A sample of the schedule used is found in appendix V.

3.6 Piloting of Research Instruments

Piloting is a mini research done in order to experience every aspect of the real research undertaking (Best 1981). Piloting helps in reviewing the research instruments to improve on their reliability and validity. The questionnaires and document analysis guide were piloted in Ndunyu Chege mixed day secondary school which is similar to schools under this research but in a neighbouring Kariara Division. All the 46 students in form four comprising of 25 girls and 21 boys participated in the pilot study. The study helped in improving wording of the questionnaires while some of the questions were removed as they were not productive.

3.7 Validity of the Research Instruments

Validity is the accuracy of the measuring instrument. Validity is the extent to which the instrument measure what it is supposed to measure. Content validity of the questionnaires items were enhanced by scrutiny of the items by peers in the masters' program and research experts.

3.8 Reliability of the Research Instruments

Reliability is the measure of the degree to which a research instrument produces consistent results (Mugenda and Mugenda 1999). Reliability is influenced by random errors. Test- retest method was used to establish the reliability of the questionnaires. The questionnaires were administered to students in Ndunyu Chege secondary school and repeated after one week on the same respondents. The Pearson correlation coefficient for the two test results was $r= 0.78$ for attitudes section. A correlation coefficient of reliability of 0.8 and above implies a high degree of reliability of data (Mugenda and Mugenda 1999). Thus the level of reliability was found to be adequate.

3.9 Data Collection Procedure

Kombo and Tromp (2006) define data collection as gathering of information aimed at proving or refuting some facts. Data collected must be relevant to research questions and therefore must serve the purpose intended. The researcher applied for permission to conduct the research in the specified topic and area from the ministry of research(see copy of permit in Sppendix VII). On obtaining the permission piloting of the instruments was done in Ndunyu Chege secondary school.

The researcher contacted the Gatanga district education office for introduction to the schools identified for the study. The researcher visited the schools for self introduction to the principal and booking of appointments for questionnaire administration. Perusal of class registers was done to choose randomly a sample of required number of boys and girls as per the Table 3.1

On the day agreed upon, the researcher requested assistance of the principals to physically identify the respondents and to whom he explained the purpose of the research and got their consent to participate in the study. The questionnaires were administered and collected after one day or as allowed by the principal of the school.

3.10 Data Analysis Technique

Data analysis refers to the process of examining raw data for purpose of making inferences (Kombo and Tromp 2006). This research focused on gender differences in attitudes, prior achievement, family factors and prizes, and in academic performance. Independent t-tests were done to determine difference in means of various scores gathered from the research. The data was analyzed using statistical program for social sciences (SPSS).

3.11 Ethical Considerations

According to Rukwaru (2007) ethics refer to a set of rules and regulations that guide conduct of a profession. This research was conducted while strictly adhering to university of Nairobi set of guideline for masters' degree in project planning and management. The privacy and confidentiality of the participants, objectivity in data interpretation, honesty in carrying out the research and acknowledging of sources of information were some of the considerations made in this research.

Table 3.2 Operational Definition of Variables

Research question	Variable type and identity	Indicator	Measurement Level	Method Of data collection	Instrument	Analysis to be done
There is a significant difference between boys' and girls' performance in English.	Dependent variable;- performance	Scores in English.	Ratio	Document analysis	Document analysis schedule	Independent samples t-test for girls and boys
There is a significant difference between boys' and girls' performance in Kiswahili	dependent variable;-	Score in Kiswahili	Ratio	Document analysis	Document analysis schedule	Independent samples t-test
There is a significant difference between boys' and girls' performance in mathematics.	Dependent	Scores in mathematics	ratio	Document analysis	Document analysis schedule.	Independent t test
How different were the prior performance scores of boys and girls in mixed day secondary schools in kihumbu-ini division?	Independent KCPE score	Scores in KCPE	ratio	Document analysis	Document analysis schedule	Determination of mean and standard deviations

How do attitudes towards compulsory subjects vary among the boys and girls in mixed day secondary schools in Kihumbu-ini division?	Independent variable;- Attitudes towards compulsory subjects score	Attitude level score from a battery of 19 items on Likert scale	interval	Self administered questionnaire	Questionnaires	Frequencies and percentages
How do family factors differ in manifestation among of boys and girls in mixed day secondary schools in Kihumbu-ini division?	Independent variable;-Family factor	Time for study	interval	Self administered questionnaire	Questionnaires	Frequencies and Percentages
How do family factors differ in manifestation among of boys and girls in mixed day secondary schools in Kihumbu-ini division?	Independent variable;-Family factor	Relationship level	Interval	Self administered questionnaire	Questionnaires	Frequencies and Percentages
How do family factors differ in manifestation among of boys and girls in mixed day secondary schools in Kihumbu-ini division?	Independent variable;-Family factor	Academic discussion episodes	Interval	Self administered questionnaire	Questionnaire	Frequencies and Percentages
How are prizes distributed among boys and girls in mixed day secondary schools in Kihumbu-ini division?	Prizes award	Received a prize in last one year	Nominal	Self administered questionnaire	Questionnaire	Frequency and percentages

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS, INTERPRETATION AND DISCUSSION

4.1 Introduction

This chapter starts with questionnaire return rate and demographic information about the respondents. The next section presents findings based on gender performance gap in the GDET 2011 as an overall score and for individual subjects. Then gender differences are presented regarding prior achievement, family factors attitudes and prizes awarded. In each of the sections, the findings are presented and given a brief interpretation.

4.2 Questionnaire Return Rate

There were 268 questionnaires distributed to the respondents in 6 schools, 136 were given to girls while 132 to boys. Of the 136 questionnaires given to girls, 128 or 94.12% were returned. And 126 out of 132 or 95.45% questionnaires given to boys were returned. Thus an overall questionnaire return rate of 94.78% was realized. The high return rate was attributed to follow up and cooperation given by the school administration. Table 4.1 summarizes the questionnaire returned from various schools and gender.

4.3 Demographic Information

The research focused on academic performance of boys and girls, and how it varies with prior achievement, attitudes, family support and school based prizes. Age and significant family members relating to the research population were also investigated as they were thought to add to the understanding of the populations' situation regarding performance.

4.3.1 Gender of the Respondents.

The schools in the area of research had a population of 424 students in the form 4 class made up of 207 boys and 217 girls. Thus there were more girls than boys resulting to proportionately large number of girls being captured in the research. The observation that more girls were present is in agreement with concern raised over girls' performance. If half of the population is made up of girls then their academic performance should be held with importance equal to that of boys.

Table 4.1: Gender and questionnaires returned per school.

School	Girls	Boys
Githambia	20	22
Gatiiguru	20	15
Gathanji	13	13
Gituamba	27	24
New Nyaga	29	35
Kiamwathi	19	17
Total	128	126

4.3.2 Age of the Respondents

The researcher wanted to find out age of the respondents. The respondents were asked to state in years the last birthday they celebrated. The results are displayed in tables 4.2 On average boys were older than girls with 18.67 years and a standard deviation of 1.27 and 18.16 years and standard deviation of 1.13 respectively[Table 4.2]. The boys are

therefore expected to be more mature in the mental capacity and record higher scores than girls.

Table 4.2: Average age in years for boys and girls

Gender	Mean	Number	Std. Deviation
Girls	18.1641	128	1.1279
Boys	18.6746	126	1.2701
Total	18.4173	254	1.2252

4.4 Relationship between gender in academic performance in compulsory subjects in the Gatanga district evaluation tests 2011

The researcher collected data on performance of English, Kiswahili and mathematics. The researcher wanted to find out how each subject contributed to the gender performance gap. Each subjects' results are presented below.

4.4.1 Performance in English

The research utilized a schedule that captured performance of English by boys and girls. The summary of means is shown in table 4.3.

Table 4.3: Gender and performance in English in GDET

Gender	Total	Mean	Std. Deviation	Std. Error Mean
Girls	128	39.2813	47.6215	4.2092
Boys	126	35.0159	13.2036	1.1763

The results showed that girls performed at 39.28% with a standard deviation of 47.62 while boys managed 35.01% and standard deviation of 13.20.

4.4.1.1 Testing the hypothesis

H1 : there is a significant difference between academic performance of boys and girls in English in mixed day secondary schools in Kihumbu-ini.

Ho: there is no significant difference between academic performance in English of boys and girls in Gatanga district evaluation tests 2011 in mixed day secondary schools in Kihumbu-ini division.

To test the null hypothesis, English performance scores were subjected to an independent t test for comparisons of the means. Results are shown in table 4.6.

Table 4.4: Comparison of means of boys and girls performance in English

Levene's Test for Equality of Variances		t-test for Equality of Means					
	F	Sig.	t	df	Sig.(2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	.546	.461	.969	252	.333	4.2654	4.4002

As observed from the Table, the performance was not significantly different ($t(252) = 0.969, p > .05$.) The statistic supports the null hypothesis and therefore we reject the H1. And conclude that there is no significant difference between academic performance in English of boys and girls in mixed day secondary schools in kihumbu-ini division.

4.4.2 Performance in Kiswahili

Performance in Kiswahili was determined by the score attained in the Gatanga district evaluation examination 2011. The data was collected using document analysis schedule mean scores for boys and girls are shown in the table 4.7

Table 4.5: Gender and performance in Kiswahili out 100 marks.

Gender	Total	Mean	Std. Deviation	Std. Error Mean
Girls	128	44.4922	22.3614	1.9765
Boys	126	40.3492	15.6953	1.3982

The boys performed below the girls in Kiswahili as their mean was 40.32% with a standard deviation of 15.69 while girls had a mean of 44.49% and standard deviation of 22.36. However, the scores for girls were more spread away from the mean than those of boys.

4.4.2.1 Testing Hypothesis

H1: There is a significant difference between academic performance of boys and girls in Kiswahili in mixed day secondary schools in Kihumbu-ini division.

Ho: there is no significant difference between academic performance of boys and girls in Kiswahili in mixed day secondary schools in Kihumbu-ini division.

The null hypothesis was tested by subjecting Kiswahili scores to an independent t test. (Table 4.8).

Table 4.6: Comparing the means scores of girls and boys in Kiswahili

Levene's Test for Equality of Variances	t-test for Equality of Means						
	Sig.	t	df	Sig.(2-tailed)	Mean Difference	Std.Error Difference	
Equal variances assumed	1.111	.293	1.707	252	.089	4.1430	2.4276

When the means are compared using independent t-test the difference between boys' and girls' performance is found not to be significant ($t(252) = 1.707, p > .05$). The statistics support the null hypothesis (H_0); therefore, the null hypothesis is accepted and the hypothesis H_1 is rejected. We conclude that there is no significant difference between academic performance of boys and girls in mixed day secondary schools in kihumbu-ini division.

Performance of languages is influenced greatly by mother tongues which blocks mastery of language skills. The difficulties experienced in English further translate to difficulties in comprehending other subjects which are taught in English. Below 50% scores in English may portray the myriad problems encountered by teachers and students as they interact during teaching and learning process. However, the results are in agreement with other findings that girls perform better than boys in the languages. The findings agree with Kanyi (2008) who found no significant gender differences in the performance of Kiswahili and Maloba (2010) who found that boys did perform poorer than girls in Kiswahili. This study observes that the boys and girls in the mixed schools are in the lowest category of schools after provincial and national schools (Glennester 2011). Thus

it might be un expected for majority of students to score above 50% due to low entry marks at KCPE.

4.4.3 Performance in Mathematics

Data on mathematics scores was compiled from document analysis schedule. The calculated means and standard deviations are displayed in the Table 4.9

Table 4.7: Gender and performance in mathematics in GDET 2011

Gender	Total	Mean	Std. Deviation	Std. Error Mean
Girls	127	12.3307	12.6792	1.1251
Boys	126	16.2619	15.3201	1.3648

The summary of performance of boys and girls in mathematics is presented in table 4.9 above. The mean scores were 12.33% and standard deviation of 12.68 for girls and 16.26% with standard deviation of 15.32 for boys. Thus the boys performed scored higher than girls but had more varied scores than girls.

4.4.3.1 Testing the hypothesis

H1: there is a significant difference between academic performance of boys and girls in mathematics in mixed day secondary schools in Kihumbu-ini division.

Ho: there is no significant difference between academic performance of boys and girls in mathematics in mixed day secondary schools in Kihumbu-ini division.

The scores in mathematics were subjected to an independent t test to test Ho. The results are shown below in Table 4.10

Table 4.8: Comparison of mean scores of boys and girls in mathematics

Levene's Test for Equality of Variances		t-test for Equality of Means					
	F	Sig.	t	df	Sig.(2-tailed)	Mean Difference	Std. Error Difference
Equal variances not assumed	9.660	.002	-2.223	252	.027	-3.9312	1.7688

The results were significant ($t(252) = -2.223, p < .05$). The statistics fail to support the H_0 and is therefore rejected and fail to reject H_1 hypothesis. Thus we conclude that there is a significant difference between academic performance of boys and girls in mathematics in mixed day secondary schools in Kihumbu-ini division.

The performance of both boys and girls in mathematics is very low compared to English and Kiswahili. It reflects that the majority of students gave up in mathematics may at an early stage of schooling. Wilson-Relyea(1997) observes that this could be a major cause of missing technical courses where good performance mathematics is a key requirement for entry. The results agree with other studies that decried poor performance in mathematics and especially for girls (Twoli 1986 and Otieno 2007). The impact of mathematics performance on the overall mean score of the student is discouraging since the subject is compulsory and has to count despite the dismal performance. In KCSE where 7 subjects are required for certification, English, Kiswahili and mathematics are compulsory leaving student with a choice of only four subjects. Thus the outcome of the examination is largely dependent on the compulsory subjects. It is observed that

performance in mathematics is low and significantly different between boys and girls. Thus mathematics ends up giving boys an edge over and above girls.

4.5 Gender and Prior Achievement [KCPE]

The research obtained KCPE score for each respondent from records kept by the schools on admission. The scores were analyzed for mean, standard deviation and the means for boys and girls were compared. Table 4.12 shows the mean score at KCPE of the respondents.

Table 4.9: Gender and prior achievement [KCPE] mean scores

Gender	Total	Mean	Std. Deviation	Std. Error Mean
Girls	128	225.1016	41.1483	3.6370
Boys	126	230.3254	42.6434	3.7990

Boys had a higher score of 230.32 out of possible 500 marks compared to girls who had a score of 225.10 out of 500 marks. The score per subject translates to 45.02% and 46.00% for girls and boys respectively. The scores are below the half way mark of 50% reflecting the low scorers left for the day secondary schools after the best of the performers are selected to join more prestigious provincial and national schools. Due to the nature of KCPE examination which is mainly multiple choice questions, the score of 46% can be attained largely by chance. Thus a score below 50% may translate to rudimentary level of skills for example in English which is crucial to learning and performance of all other

subjects. Thus low performance in KCPE will lead to low expectation in the academic performance.

4.6 Gender and Attitudes in compulsory subjects

The research utilized 19 items on a likert scale to score attitudes of boys and girls towards compulsory subjects. The items were statements relating to the compulsory subjects which the respondents were requested to respond to in a scale of 5 which was used and labelled as follows

1. Strongly disagree,
2. Disagree.
3. Do not agree nor disagree.
4. Agree.
5. Strongly agree.

Scoring of the scale involved allocating numerical values to the responses. For statements 1,2,4,5,7,8,10,11,17 and19; the scores were reversed such that statement number 1[strongly disagree] was given 5 marks, decreasing the value to 1 mark for statement number 5[strongly agree]. This was done to enable consistency such that low scores corresponded to negative attitudes while high scores reflect positive attitudes towards the compulsory subjects.

The scores were grouped into five categories as follows

Category

- | | |
|----------------------|-------|
| 1. Strongly disagree | 19-34 |
| 2. disagree | 35-49 |

- 3. do not agree nor disagree 50-64
- 4. agree 65-79
- 5. Strongly agree 80-95

The responses per category are presented in the table 4.17.

Table 4.10: Gender and attitudes towards compulsory subjects by categories

Category	Score range	Boys	%	Girls	%
Strongly disagree	19-34	Nil	0	Nil	0
Disagree	35-49	1	0.79	6	4.69
Do not disagree nor agree	50-64	46	36.50	40	31.25
Positive	65-79	73	57.36	77	60.16
Strongly positive	80-95	6	4.76	5	3.90
Totals		126	100.00	128	100.00

The table shows that more girls than boys disagreed strongly towards compulsory subjects as only one boy [0.79%] was in this category against 6 girls or 4.69%. More boys than girls were not strongly opinionated as it was [46]36.5% for boys against [40]31.25% for girls this number could be causing half hearted efforts towards academic performance in the compulsory subjects. It is notable that both boys and girls had positive attitudes towards the subjects with boys [62.12%] having a lower percent than girls [64.06%].

It is expected that those who are in agree and strongly agree categories would post high scores in the performance. The total number of students who are not decided or sure about their attitudes towards the compulsory subjects must be reduced by winning them for the subjects in order to improve performance. May be some counselling and guidance would help in consolidating positive attitudes towards the compulsory subjects.

4.7 Family Support and Performance

There are various ways a family can support the student like prompt payment of fees, attendance of school meetings. This research focused on family interactions and time used for study at home.

4.7.1 Study Time at Home

The research asked the respondents to indicate the average number of hours he or she spent on study at home in a week. The responses were grouped into 5 categories as follows: 0-7, 8-14, 15-21, 22-28, and 29 and above, hours in a week. Responses in this section comprised 122 girls and 117 boys thus a total of 239 cases were analysed and results shown in table 4.15

Table 4.11: Gender and hours of study at home

Hours per week	Girls	%	Boys	%
0-7	14	11.47	15	12.82
8-14	39	31.97	39	33.33
15-21	37	30.33	40	34.19
22-28	32	26.23	22	18.80
Over 28			1	0.85
	122	100.00	117	100.00

It was observed that more girls [26.23%] than boys [19.65] spend more than 22 hours in a week for study at home. There is expectation that more hours of study would result to high scores. It is therefore expected that girls have a better chance to study at home and perform better than girls. As observed above [table 4.6 and 4.9], the girls are doing better than boys in Kiswahili and English, the girls' study could be biased towards the two subjects resulting to higher scores.

4.7.2 Gender and Level of relationship/bonding

The research asked respondents to rate at a scale of 3 the way each perceived his or her relationship with members of the family over a period of last one year. The responses were in order of increasing intensity,- bad, good, and very good. Those who perceived positive relationship are expected to be loyal, obedient and working hard towards academic performance in order to give back on the family concern on academic performance. Table 4.16 shows how the boys and girls perceived their relationship with family members. More girls (4.69%) than boys (3.17%) perceived relationship as poor. Poor relationship would affect adversely the performance of the students as they are not well supported emotionally to handle hassles of life. Majority of the students (boys- 96.8% and girls- 95.3%) reported relationship level that was good or very good. The students are therefore in working relationships and most likely free of intense stress.

Table 4.12: Gender and perceived level of bonding with family members

Bonding	Girls		Boys	
	frequency	%	frequency	%
Poor	6	4.69	4	3.17
Well	55	42.97	56	44.44
Very well	67	52.34	66	52.38
	128	100.00	126	100.00

4.7.3 Gender and discussion on academic goals

The respondents were asked to report on the frequency they discussed academic performance with their family members. Respondents were asked how often they discussed academic reports with family member. The responses were in four categories;-

1. never
2. Rare
3. Often
4. Very often

The results are shown in table 4.16.

Table 4.13: Gender and academic discussion

Academic Discussion episodes	Girls		Boys	
	frequency	%	frequency	%
Never	6	4.69	3	2.40
Rarely	48	37.50	30	24.00
Often	43	33.59	60	48.00
Very often	31	24.22	32	25.60
Total	128	100.00	125	100.00

More girls [42.19%] than boys [26.40%] never or rarely discussed their academic report with a member of the family. There were more boys [73.60%] than girls [57.81%] who reported in often and very often categories. These results bring out the efforts by family members in maintaining the students focus on academic as well as monitoring of performance. It is expected that students whose parents show interest in the students' academic performance, results to students being more focused and determined to reach the agreed on level of achievement. The frequency of academic report discussion seems to be a major contributor to lower than boys performance of girls observed in KCPE, KCSE and GDET.

4.8 Prize Giving and Academic Performance

The respondents were asked whether prizes made them put more effort in the compulsory subjects. Two girls and four boys did not respond to the question, thus only 126 girls' and 122 boys' results were analysed. The results are shown in the table 4.18.

Table 4.14: Gender and influence of prizes

Influenced by prize	Girls		Boys	
	frequency	%	frequency	%
Agree	96	76.20	97	79.51
Disagree	30	23.80	25	20.49
Total	126	100.00	122	100.00

This research found that [96]76.20 % girls and [97]79.51% boys could be influenced by prizes promised and given in schools. It is expected that increasing number of students receiving prizes would lead to improved performance through competition for the prizes. May be a variety of prizes would capture more interest among the students leading to more interest in improving the performance in the compulsory subjects.

4.8.1 Gender and Distribution of Prizes

The prizes motivate the student to work towards the grades that attract rewards. The researcher wanted to know how the prizes awarded in the last one year in compulsory subject category were distributed.

Table 4.15: Gender and distribution of prizes

	Girls		Boys	
	frequency	%	Frequency	%
Received	32	26.89	36	30.25
Did not receive	87	73.11	83	69.75
Total	119	100.00	119	100.00

The number of respondents who had received a prize in the compulsory subjects was only [32] 26.89% for girls and [36]30.25% for boys as seen in Table 4.19. There were fewer girls than boys who received prizes. Based on prizes we would expect boys continue to do better than girls. However, (Assor et al. 2002) argues that the extrinsic motivation will last and be more valuable if it leads to desirable experience leading to exercise of an inner drive. If this argument is true among the respondents then, only a third would be motivated to perform better in the academics.

When prizes to be awarded are known from the beginning of the year, they lead to student self assessment on ability to attain the desired score for the prize. If the student feels that he or she can make it, it leads to strategies towards the prize. However, if the student feels incapable, the prizes which are usually for the top students, do not elicit any drive towards the prize. The majority of students [87.7%] are ready to work hard towards academic prizes. This agrees with Christiana (2009) in a study showed that 88% accepted and 12% disagreed that students work harder academically in schools which organize

price/award days. Considering the impact of gender competition in mixed secondary schools, it prudent to separate the prizes to be awarded based on performance and gender to enable competition among the boys and girls. The awarded categories should be increased to increase chances for being awarded for each gender to capture a large number of students.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the key findings, concludes the research and makes recommendations based on the findings for application and further research.

5.2 Summary of Findings

GDET was used to measure performance at form 3 level in the secondary school cycle. The result showed that in English and Kiswahili the girls performed better than boys. The research found no significant difference between boys' and girls' performance at form 3 level in the two compulsory subjects. However, in mathematics alone the boys outperformed girls to the extent that the average scores for the three subjects reflected that boys were better than girls.

The scores for girls and boys are below 50% mark for KCPE. There is a great possibility that the students with such low entry marks have greater challenges in secondary schools instruction as the communication is done in English which they could not have attained functional level. Low achievement in KCPE could communicate false incapacity to the students resulting to low academic self efficacy leading feelings of helplessness. KCPE scores cannot be ignored as over 71 or 56% boys still thought that KCPE influenced their academic performance at form 3 level.

Both boys and girls did not display disparity in the attitudes level. They were found to be weak but positive. There could be a level passivity that curtails establishment of strong attitudes towards academic performance. The students seem not to own the learning process and could be behaving like learning is something that a teacher does to them rather than something they go through and experience. The large number of boys and girls who were in neutral category are not really neutral but unconcerned and lacking focus. If there are ways of capturing this group to be more focused and interested to excel in the compulsory subjects, it would shift the performance positively thus raising the number of students passing in the subjects. Counselling services could be a point to start at schools but parents were found to impart beliefs and attitudes towards the subjects by the way they attributed success or failure. Mothers to girls attributed failure in mathematics to lack of ability while mothers to boys thought failure were due to lack of efforts.

The family factors investigated in this research showed that boys and girls studied at home. The majority studied for an average of 21 hours in a week. However, more boys studied for longer hours than girls. Girls' work at home mainly involves in food preparation for the family could spread well into the night leaving little energy for studies. The frequency of discussions on academic reports is in favour of girls than boys.

The involvement of parents at home on enquiry on academic matters makes the students remain focused on performance oriented issues leading to improved performance.

Involvement of parents in the education of their children in collaboration with teachers would give better results than if only one of the stakeholders was doing it on their own.

A large number of the respondents reported that they were influenced by prizes. This fact can be used as a base to plan for motivation through award of prizes. This study provides a rationale for continued presence of prize giving days in schools.

5.3 Conclusions of the Study

This research aimed at investigating gender performance gap. Performance was measured using Gatanga district evaluation test done by all students in the district at the end of the year 2011. The research established that mathematics performance is low for boys and girls but mathematics performance alone was responsible for lower than boys' performance of girls as the performance in English and Kiswahili were not significantly different.

The research found that girls had lower than boys' performance in the entry examination reflected by KCPE performance. The boys and girls attributed their performance to the entry marks attained at the KCPE. Thus there was a performance gap between boys and girls at the primary level of education. Addressing the disparity at this level would be the beginning to eliminating the gap at secondary level. However, it is safe to conclude that gender performance gap continues to exist through secondary school and is manifested in KCSE whose results indicate a significant difference between boys' and girls' score (Table 1.1)

Of the family factors investigated, discussion of academic reports was found to reflect parental bias towards the boys who were talked to more often than girls. The relationship levels and time available for study at home were very similar for both girls and boys. Thus discussions on academics seem to be closely related to performance, this area need further research.

This research established presence of a group of boys and girls who were not strongly decisive towards academic performance according to the attitudes scale used (Table 4.17). Since attitudes are important in determining performance (Kanyi 2008, Farooq and Shah 2008) success will be realized through working on the groups attitudes towards academic performance. This study has supported the studies reviewed above on the need to address attitudes towards academic performance.

This study is in agreement with (Christiana 2009 and Assor et al 2002) on the potential power of prizes to influence academic performance. However, ways of establishing lasting effects of the prizes leading permanent behavioural change in habits and character need to be investigated further.

5.4 Recommendations

Recommendation one, it's important to anticipate KCPE influence and debrief the students on the effects of KCPE they join form one and proceeded to form 2 and so on. The counsellor teachers need to have an induction program for the students focused on this goal.

Recommendation two, there is need to work up the attitudes in order to release energy required for commitment and hard work in academic performance. There is need to use more of student centred teaching methods to create ownership

Recommendation three, the prizes need to be spread to capture more students as majority could be influenced by a prize that is perceived to be attainable. Gender differentiation should be made when awarding prizes to avoid cross gender competition.

Recommendation four, the schools need to strengthen counselling department to tackle attitudes formed in the primary level of education since the compulsory subjects were part of their basic curriculum.

5.4.1 Further Research

More research is needed to establish how prior achievement, attitudes, family factors correlate with academic performance to enable estimation of each factors' contribution towards academic performance.

There is need to research on the impact of continued policy of making mathematics compulsory and look for ways to amend the situation whereby the subject continues to disadvantage girls.

There is need to explore factors that influence girls and boys around and during national examination time resulting to a widened gap in performance as opposed during the course performance.

The families are important to child's improved academic performance. There is need to explore through research ways in which parenting styles can improve performance of boys and girls

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APPENDICES

APPENDIX I

INTRODUCTORY LETTER TO SCHOOL PRINCIPAL

Peter M. Baru
P.O. Box 1669-01000
Thika
The Principal
_____ Secondary school.

Dear Sir/Madam,

**RE: RESEARCH IN ACADEMIC PERFORMANCE IN KIHUMBU-INI
DIVISION PARTICIPATION**

I am a student in the University of Nairobi pursuing a masters degree in project planning and management. I have identified your school to participate in a study that aims to analyze performance of boys and girls in mixed day secondary schools in Kihumbu-ini. The research will assist in understanding of poor performance in the national examinations and offer facts useful in the decision making on improvement of results.

The study will involve you, teachers in English, mathematics and Kiswahili in the candidate class and selected students in form four. Separate questionnaires for teachers, students and the principal will be administered. A limited access to students' performance in the Gatanga district evaluations tests 2011 is hereby requested.

The necessary permission has be sought from the ministry of education. The information collected will be used for academic purpose and for the research. I look forward to your cooperation.

Thank you

Peter Baru

APPENDIX II
LETTER TO RESPONDENTS

Dear student,

RE: PARTICIPATION IN RESEARCH IN ACADEMIC PERFORMANCE

My name is Peter Baru and I am a student in the University of Nairobi doing research in the academic performance of boys and girls in mixed day secondary schools in Kihumbuini division. You have been selected as one of the respondents who can give useful information on school based experiences as a learner having stayed in school for about four years now.

The information that you will give will be used to improve performance of students in the division. You are requested to answer all questions honestly and to the best of your knowledge. Information given will be treated with confidentiality.

Thank you

Peter Baru

APPENDIX III

QUESTIONNAIRE FOR STUDENTS

Dear respondent,

You have been identified to participate in a research about form fours and experience of their schooling. The results will be helpful in improving the standards of education. Please answer all questions truthfully and to the best of your knowledge. Remember you are the one who experienced it, tell it as it is.

Section A: KCPE and performance in the GDET

Please tick the appropriate response

1. Gender? Male Female
2. KCPE marks? _____
3. Do you think that your performance in KCPE influence academic performance? **Yes** **no**

Section B. Family support and academic performance

1. Whom do you stay with after school on daily basis?
 - a. Lives with both parents
 - b. Lives with one parent
 - c. Grandparents
 - d. Others(Specify) _____
2. indicate number of hours studied in a week?
 - a Less than 7
 - b 7-14
 - c 15-21
 - d 23-28
 - e Over 29
3. How do you relate to your family? 1. Bad 2. good 3. Very good
4. How often do you discuss academic report with your family member?
 - a, Never
 - b. Rarely
 - c. Often
 - d. Very often

Section C; Attitudes and academic performance

The following questions are a series of statements about your personal attitudes and traits. Read each statement and decide to what extent it describes you. **There is no right or wrong answers.** You will probably agree with some of the statements and disagree with others. Please indicate your own personal feelings about each statement below by marking with a tick against the letter that best describes your situation. **Please be very truthful and describe yourself as you really are, not as you would like to be.**

Attributes / Trait Statement	Level of Experience				
	A Disagree Strongly	B Disagree Moderately	C Neither Agree not Disagree	D Agree Moderately	E Agree Strongly
1) Mathematics is for girls					
2) English is for girls.					
3) I enjoy studying mathematics					
4) Kiswahili is for boys					
5) Mathematics is too difficult					
6) Time allocated to English should be increased					
7) English should not be compulsory!					
8) English is too difficult					
9) Mathematics is very useful after form four examinations.					
10) I gave up trying to pass in mathematics					
11) Kiswahili is too difficult					
12) Time allocated to mathematics should be increased					
13) I enjoy studying mathematics					
14) Time allocated to should Kiswahili be increased.					
15) English is very useful after form four examinations.					
16) I enjoy studying Kiswahili					
17) Mathematics should not be compulsory					
18) Kiswahili is very useful after form four examinations..					
19) I gave up trying to pass in English					

Section D .Academic prizes and academic performance

1. In last one year did you receive a prize at school for performance in compulsory subjects? 1. Yes 2.No.

2. Do prizes make you put more effort in the compulsory subjects? Yes No

Thank you very much!

APPENDIX IV

DOCUMENT ANALYSIS SCHEDULE

Respondent code/school code			
Item	What to check	Source of the data	Entry made
1	KCPE marks	Admission register	
2	GDET 2011 score in English	Mark book	
3	GDET 2011 score in Kiswahili	Mark book	
4	GDET 2011 score in mathematics	Mark book	
5	Total score in compulsory subjects	Calculated total score	
6	Confirmation of attendance	Class registers	

APPENDIX V

MORGAN TABLE FOR SAMPLES DETERMINATION KREJCIE AND

MORGAN SAMPLE SIZE TABLE:

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	246
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	351
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	181	1200	291	6000	361
45	40	180	118	400	196	1300	297	7000	364
50	44	190	123	420	201	1400	302	8000	367
55	48	200	127	440	205	1500	306	9000	368
60	52	210	132	460	210	1600	310	10000	373
65	56	220	136	480	214	1700	313	15000	375
70	59	230	140	500	217	1800	317	20000	377
75	63	240	144	550	225	1900	320	30000	379
80	66	250	148	600	234	2000	322	40000	380
85	70	260	152	650	242	2200	327	50000	381
90	73	270	155	700	248	2400	331	75000	382
95	76	270	159	750	256	2600	335	100000	384

Note: "N" is population size "S" is sample size. Krejcie, R. V. and Morgan, D. W.,

(1970). "Determining Sample Size for Research Activities", Educational and

Psychological Measurement.

APPENDIX VI

LETTER OF TRANSMITTAL

REPUBLIC OF KENYA



NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY

Telephone: 254-020-2213471,2241349
254-020-310571,2213123, 2219420
Fax: 254-020-318245,318249
when replying please quote
secretary@ncst.go.ke

P.O. Box 30623-00100
NAIROBI-KENYA
Website: www.ncst.go.ke

Our Ref: NCST/RCD/14/012/1196

3rd Date: September 2012

Peter Muriuki Baru
University of Nairobi
P.O.Box 30197-00100
Nairobi.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on "*A comparative analysis of academic performance of boys and girls in mixed day secondary schools in Kenya: A case of Kihumbu-ini Division of Gatanga District, Murang'a County, Kenya*," I am pleased to inform you that you have been authorized to undertake research in **Gatanga District** for a period ending **30th October, 2012**.

You are advised to report to the **District Commissioner and the District Education Officer, Gatanga District** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

A handwritten signature in blue ink, appearing to read 'M. K. Rugutt'.

DR. M. K. RUGUTT, PhD, HSC.
DEPUTY COUNCIL SECRETARY

Copy to:

The District Commissioner
The District Education Officer
Gatanga District.

"The National Council for Science and Technology is Committed to the Promotion of Science and Technology for National Development".

APPENDIX VII

RESEARCH PERMIT

PAGE 2

PAGE 3

Research Permit No. NCS/RC/14/012/1196

Date of issue 3rd September, 2012

Fee received KSH. 1,000

THIS IS TO CERTIFY THAT:

Prof./Dr./Mr./Mrs./Miss/Institution
Peter Muriuki Barua
 of (Address) **University of Nairobi**
P.O.Box 30497-00100, Nairobi
 has been permitted to conduct research in

Location
Gatanga District
Central Province

on the topic **A comparative analysis of academic performance of boys and girls in mixed day secondary schools in Kenya: A case of Kihumbuini Division of Gatanga District, Murang'a County Kenya.**

Applicant's Signature

National Council for Science & Technology
 Secretary

for a period ending **30 October 2012**

