GIRLS' PERFORMANCE IN MATHEMATICS AND PRIMARY SCIENCE IN KCPE EXAMINATIONS IN SELECTED PRIMARY SCHOOLS IN NYAMIRA NORTH DISTRICT KENYA

A Thesis
Presented to the College of
Higher Degrees and Research
Kampala International University
Kampala, Uganda

In Partial Fulfillment of the Requirements for the Degree of Masters of Education in Early Childhood and Primary Education

By:
Ongera Kennedy Oruko
MEE/15801/111/DF
August, 2012
DECLARATION A

"This Thesis is my original work and has not been presented for a Degree or any other academic award in any University or Institution of learning".

ONGERA KENNEDY ORUKO

Name and Signature of Candidate

12.08.2012

Date
DECLARATION B

"I confirm that the work reported in this thesis was carried out by the candidate under my supervision".

[Signature]
Name and Signature of supervisor

[Date]
Date
DEDICATION

I dedicate this research to my parents, my dear wife Linet Oruko, my children Brain Oruko, Bonface Oruko and Susan Oruko. I also dedicate it to the Headteacher Maagonga Primary school Mr. Joseph Gichora and the entire teaching staff of Maagonga primary school. I also dedicate this work to my friends Joash Mengo Ndege, Enock Mabuka Ombogo, Maxwel Osiemo Keraita and Samuel Indigiti Mogoi.
ACKNOWLEDGEMENT

All my praise and glorification goes for great and honored father in heaven, with his mercy and kind love to me, who enabled me to successfully complete this work of research.

First and foremost, I thank my supervisor Dr. (Mrs.) Ijeoma Anumaka Blessing, Dr. Kayundu Vincent and the entire Kampala International University Management particularly the college of Higher Degree and Research (CHOR) for their excellent work which contributed to my successful completion of research.

My appreciation also goes to my mother Prissira Kemunto, my dear beloved wife Linet Okenyuri, my children Brain, Bonface and Susan and my brothers and Sisters for their spiritual and moral support offered to me during the difficult and hard times of my studies. May the love of God be up them.

I also extend my sincere thanks to Maagonga Primary School both staff members and pupils for their moral support during the study. Finally I acknowledge Nalongo Faridah Nassimbwa for her good work for type – setting and printing my work and may God bless them abundantly.
ABSTRACT

The study was on girls’ performance in mathematics and primary science in KCPE examination with objectives as to determine the profile of respondents in terms of type, nature and location to determine the level of performance of mathematics in KCPE examinations from year 2006-2010 to determine the level of girls performance in primary science in KCPE examination from 2006-2010 and to establish the significant relationship between mathematics and primary science in KCPE examinations. The study’s purpose was to test the hypothesis of no significant relationship between performance in mathematics and primary science in KCPE examination. To validate the theory of constructivism by Danget and Leman (1995). To add to the existing body of knowledge in the area of girls performance in mathematics and primary science in KCPE examination and generate data for further research study in the girls’ performance in mathematics and primary sciences in KCPE examinations. In the study it was revealed that there were more public schools than private schools, there were more mixed day public primary schools than private day and mixed boarding schools, most schools were allocated in rural than urban. The study established that mathematics was performed as well as science and there was significant relationship between mathematics and primary science. The study recommended for more schools in urban areas, improvement of the curriculum to cater for gender disparities and the government to initiate more girl’s boarding schools in both urban and rural areas.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>One</strong></td>
<td></td>
</tr>
<tr>
<td>THE PROBLEM AND ITS SCOPE</td>
<td>1</td>
</tr>
<tr>
<td>Background information</td>
<td>1</td>
</tr>
<tr>
<td>Statement of the problem</td>
<td>6</td>
</tr>
<tr>
<td>Purpose of the study</td>
<td>7</td>
</tr>
<tr>
<td>Research Objectives</td>
<td>8</td>
</tr>
<tr>
<td>Research Questions</td>
<td>8</td>
</tr>
<tr>
<td>Hypothesis</td>
<td>9</td>
</tr>
<tr>
<td>Scope</td>
<td>9</td>
</tr>
<tr>
<td>Significance of the study</td>
<td>10</td>
</tr>
<tr>
<td>Operational definitions of key terms</td>
<td>12</td>
</tr>
<tr>
<td><strong>Two</strong></td>
<td>13</td>
</tr>
<tr>
<td>REVIEW OF RELATED LITERATURE</td>
<td></td>
</tr>
<tr>
<td>Concepts, opinions, ideas from authors/experts</td>
<td>13</td>
</tr>
<tr>
<td>Theoretical Perspective</td>
<td>16</td>
</tr>
<tr>
<td>Related Studies</td>
<td>18</td>
</tr>
<tr>
<td><strong>Three</strong></td>
<td>24</td>
</tr>
<tr>
<td>METHODOLOGY</td>
<td></td>
</tr>
<tr>
<td>Research Design</td>
<td>24</td>
</tr>
<tr>
<td>Research Population</td>
<td>24</td>
</tr>
<tr>
<td>Sample Size</td>
<td>24</td>
</tr>
<tr>
<td>Sampling Procedure</td>
<td>24</td>
</tr>
<tr>
<td>Research Instrument</td>
<td>25</td>
</tr>
<tr>
<td>Validity and Reliability of the Instrument</td>
<td>25</td>
</tr>
<tr>
<td>Date Gathering Procedures</td>
<td>25</td>
</tr>
</tbody>
</table>
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Respondents Profile</td>
<td>28</td>
</tr>
<tr>
<td>2 Girls’ Performance in mathematics from 2006-2010</td>
<td>30</td>
</tr>
<tr>
<td>3 Girls’ performance in sciences from 2006-2010</td>
<td>31</td>
</tr>
<tr>
<td>4 Relationship between performance in mathematics and primary Science in KCPE Examination</td>
<td>32</td>
</tr>
</tbody>
</table>
# LIST OF ACRONYMS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>KCPE</td>
<td>Kenya Certificate of Primary Education</td>
</tr>
<tr>
<td>KCSE</td>
<td>Kenya Certificate of Secondary Education</td>
</tr>
<tr>
<td>FAWE</td>
<td>Forum for African Women Educationalist</td>
</tr>
<tr>
<td>FENSA</td>
<td>Female Education in Mathematics and Science in Africa</td>
</tr>
<tr>
<td>MOEST</td>
<td>Ministry of Education Science and Technology</td>
</tr>
</tbody>
</table>
CHAPTER ONE
THE PROBLEM AND ITS SCOPE

Background of the Study

According to the ministry of education KNEC report (2001, 2005) indicates that Performance in KCPE examination has been generally poor compared girls and boys at primary school level more especially in Nyamira North District in Kenya. One of the major contributors to this poor performance in mathematics and primary science in primary school is possibly due to various causes which have resulted in continued decline in performance in mathematics and primary science.

According to Wong (1992) basing on the observation has been found out that boys do out perform girls and the gender gap has widened by points. Through international assessment of educational performance Japan is one of the top performing countries in mathematics and primary science. The two primary international assessments that examine the performance of the students in mathematics and primary science are the trends in the international mathematics and science study and the program for international student’s assessment. The former assesses mathematics and science performance in grades four and eight. In science Japan fourth grades were ranked fourth in performance compared to their
international peers and eight grades ranked third. In this performance, there was no difference in average in science performance between Japanese boys and girls who were in 15 years old category. In this performance boys out performed girls by 20 points.

According to Leder (1992) mathematics gender gap has widened by points since 2003. However in Japan, the university gender gap is rapidly shrinking. Ever since discrimination legislation was adopted in Japan in 1985, the enrollment of Japanese females in universities has risen sharply.

According to FEMSA report (2000) states that in Eastern African region, girls’ performance in mathematics and primary science has been a worry compared to the performance of other subjects, it states that gender disaggregated primary school performed relative in the other subjects, there is a significant gap between the performance of girls as compared to that of boys. This gap is not only evident during teachers made and standardized examination but also with the classroom participation. Basing on observation one would then wonder what the cause of this performance disparity is since both girls and boys come from similar homes, sit in the same classrooms, taught by the same teachers and are subjected to the same assessment. This rise an automatic question that of stakeholders, parents, teachers and pupils who are
responsible for the observed gender disparities. Research over the last two decades have shown males and females have different classrooms experiences because they approach learning differently in mathematics and primary science during elementary grades.

According to Eases Mulis, Linduist and Chambers (1988) suggested that the decline of female achievement is the result of a strong pattern of socialization to mathematics success or failure rather than to gender differences intimate ability. As progress through school they are likely to control their maths education. Therefore pupils, parents and teachers suggested that encouragement, explaining the importance of mathematics, individual attention, regular roll-calls, putting pupils of various abilities to work together in teams, give more time to question extra lesson and encouraging the pupils to practice problem solving among others.

According to Cheriwa (2002) identifies girls performance in KCPE examinations in Kenya has generally been poor than those of boys at primary school level. This deplorable performance has been attributed to poor performance in mathematics which also affects performance in primary science. This poor performance in these subjects by girls in primary school is possibly due to various causes which have resulted in continued decline in performance in the recent few years. Poor
performance in these subjects has attributed for low enrolment in secondary schools and universities for girls than boys from Nyamira North District in Kenya. Very serious sentiments have been raised from various quarters concerning this negative trend in performance in mathematics and science hence the need to carry out this research.

According to MOEST (2005), states that learning mathematics is compulsory for all students in both primary and secondary levels in addition. At least one lesson for each of the school day has been set aside for mathematics making the subject to have the highest number of students to teacher contact hours. Resources for the teaching of mathematics which includes teachers and textbooks are centralized to afford equity. The cumulative mathematics teacher student ratio has recorded at least 1: 30 and 1: 80 for primary and secondary schools respectively. All students sit for the same examinations in relatively similar environments across the country. Studies have shown that students who performance very well in mathematics also perform well in other subjects. Ensuring them entry into choice secondary schools and career opportunities Kenyan leaders at independence took up the responsibility to fight ignorance, poverty and disease by equipping citizens with knowledge that would support them to become logical in thought and
national in decision making. The realization of this goal rested with mathematics and primary science in education.

According to Alao and Adleke (2000) states that to overcome the problem of the poor performance in mathematics and primary science some of the causes have been identified as follows;

(i) The level of mathematics and science curriculum contents is too difficult hence the level of curriculum content and examinations should be modified to suit their level of performance.

(ii) The time allocated for both the curriculum coverage and examination is usually too short. Thus, the time allocated for both curriculum coverage and sitting for examination in mathematics and science should be increased.

(iii) Teachers should use more valid strategies in teaching mathematics and science to the learners.

(iv) Lack of teaching materials and teachers especially in the public schools is a major problem affecting performance of mathematics and primary science, these materials should be availed to improve on performance of these subjects.

According to Yeya (2002) states that Kenya’s education system has three transitive cycles called 8-4-4 system. Students enroll for 8 years in primary education before sitting for a Kenya certificate of primary
education (KCPE). Those who qualify continue with second cycle of 4 years in secondary school before sitting for the Kenya Certificate of secondary Education (KCSE) examination. Students who perform well complete the education system within 4 years of university education before joining the workforce. Attendance of early child classes is encouraged but not mandatory.

Statement of the Problem

According to the Ministry of Education report (2001,2005) from Kenya National Examination Council indicates that mathematics and science are fundamental and compulsory subjects in Kenya primary schools education which are performed poorly compared to other subjects. Although many strategies have been employed by curriculum developers to improve the performance of these subjects in KCPE examination, girls are still performing poorly in Nyamira North District and in the country at large. There is evidence that from the KCPE results from the year 2006-2010 which shows the poor performance trend in girls’ performance in mathematics and primary science compared to that of boys in the same subjects. This has raised concern from the government parents, teachers and learners and hence there is need to quickly identify the underlying causes of these poor performance and find solutions to this negative trend. The researcher therefore has a concern about these poor
performance in mathematics and primary science which may possibly cause a negative impact on the performance of other subjects in future. Therefore the researcher seeks to answer the question: is there any difference in girls’ performance in mathematics and primary science.

**Purpose of the Study**

(i) To test hypothesis of no significant relationship between performance in mathematics and primary science in KCPE examinations in selected primary schools in Nyamira North district in Kenya.

(ii) To validate the theory of constructivism by Dengate & Leman (1995) where the researcher’s study is anchored on.

(iii) To generate data for further research in the girls’ performance in mathematics and primary science in KCPE Examination in selected primary schools in Nyamira North District in Kenya.

(iv) To add to the existing body of knowledge in the area of girls’ performance in mathematics and primary science in KCPE Examination in selected primary schools in Nyamira North District in Kenya.
**Research Objectives**

The objectives of the study are:

1. To determine the profile of respondents in terms of type of school, nature of school and location of school in selected primary schools in Nyamira North District in Kenya.
2. To determine the level of girls’ performance in mathematics in KCPE Examinations from the year 2006 – 2010 in selected primary schools in Nyamira North District in Kenya.
3. To determine the level of girls’ performance in primary science in KCPE Examinations from the year 2006-2010 in selected primary schools in Nyamira North District in Kenya.
4. To establish the relationship between girls’ performance in mathematics and primary science in KCPE Examinations in selected primary schools in Nyamira North District in Kenya.

**Research Questions**

1. What is the profile of respondents in terms of type of school, nature of school and location of school in selected primary schools in Nyamira North District in Kenya?
2. What is the level of girls’ performance in mathematics in KCPE Examinations from the years 2006 -2010 in selected primary schools in Nyamira North District in Kenya?
3. What is the level of girls’ performance in primary science in KCPE examinations from year 2006-2010 in selected primary schools in Nyamira North District in Kenya?

4. Is there any significant relationship between girls’ performance in mathematics and primary science in KCPE examination in selected primary schools in Nyamira North District in Kenya?

**Hypothesis**

$H_{01}$ There is no significant relationship between girls’ level of performance in mathematics and primary science in KCPE Examinations from the year 2006 – 2010 in selected primary schools in Nyamira North District in Kenya.

**Scope**

**Geographical scope**

The study took place in Nyamira highlands in Nyamira North District in Kenya.

**Theoretical scope**

The study was based on social constructivism by Danget and Leman (1995) on philosophical perspective on knowledge and learning.
**Content scope**

The content of this study was to investigate girls’ performance in mathematics and primary science in KCPE examinations in the selected primary schools in Nyamira North District in Kenya.

**Time Scope**

The study was carried out between December 2011 and August 2012.

**Significance of the Study**

Various studies established that girls had obstacles in many ways to utilize the educational and intellectual capacities to perform well in KCPE Examinations in mathematics and primary science which had resulted to low enrolment in science, engineering and technology based subjects.

Therefore, this study would help the following as follows;

This study would help **policy makers** to come up with neat findings which assisted them to adjust the curriculum so that it could suit and cater for gender disparities in the learning of mathematics and primary science in primary school level.

The study would help the **parents** for having the direct responsibility to provide the children with better education. It would assist the parents to help their children in the learning process by providing them with the right parental guidance, leadership and motivate them for better performance in mathematics and primary science for good careers.
The study would help the teachers as education providers so that to improve in their teaching techniques and methods of teaching and learning in mathematics and primary science so that the learners could perform better in the subjects in KCPE Examinations. It would also help them to monitor the process of curriculum implementation so that to meet the expected targets.

The study would help the learners in primary schools who would be preparing to sit for KCPE examinations to develop the right attitudes in acquiring knowledge and skills which would be fundamental for them to perform better in mathematics and primary science in their primary school level.

This study would also help the researcher to have first hand information so that to use the same experience as a teacher to solve the problems undergone by the learners in learning mathematics and primary science.
Operational Definition of Key Terms

Girls’ performance: performance from the Oxford English Dictionary means a person’s achievement under a test condition. Therefore girls’ performance is the achievement of girls in scoring marks in KCPE examination in mathematics and primary science in percentages ranging from 0% to 100%.
CHAPTER TWO

REVIEW OF RELATED LITERATURE

Concepts, Opinions, Ideas from Authors/Experts

Girls' Performance in Mathematics

It is the achievement of girls in terms of scoring marks in percentages in mathematics and primary science in KCPE examinations.

According Yara and Wanjoji (2011) on performance determinants of students’ performance in KCSE mathematics in Nyamaiya Division of Kenya, emphasize that success in educational institutions is measured by performance of students in external examinations. Examinations are used among others to measure the level of candidates’ achievements and clarify the candidates’ level of education, training and employment. They also provide the basis for evaluating the curriculum both at the local and national level. Examination when used properly, improves the quality of teaching and learning.

According to FEMSA report (2000) differentials in performance of boys and girls has been a focal point of research and concern for a long time including Kenya. In Kenya and Africa findings from FEMSA (Female Education in Mathematics in Africa) project profiled injustices that existed at classroom level and brought awareness of the differential treatment by gender in the teaching and learning of mathematics. According to Ministry
of Education (2001) indicate that discriminative treatment was found to have evolved from performance observation of the subject by girls in comparison with the boys. Instead of supporting the girl to improve their mathematical understanding, the results were used to describe innate ability. The study revealed that this was the rational used by mathematics teachers to accept poor performance from the girls while encouraging boys to improve their understanding. Research has shown that girls perform better than boys especially in urban centres. This finding indicates that student performance is based on the learning environment than on gender. According to Gitonga (2010) report identified discriminative acts in the mathematics curriculum, pedagogy, language and teachers’ belief and social expectations. Differentiation as observed by the type of questions that teachers asked, the waiting time given to students, and teacher expectations of students differed by gender. In addition examples in the textbook were found to be laced by social gender stereotypes.

**Girls’ Performance in Science**

This is the achievement of girls in terms of scoring marks in percentages in primary science in KCPE Examination.

According to Mihezo et al (2010) science is a compulsory subject and hence its examination is included in the two, high stake examinations
are carried out annually at the end of the first and second cycle of the 8-4-4 system. The KCPE examination done after eight years determines which students from 12,000 schools move on to the 4,000 secondary schools. At least 750,000 students (787,000 in 2010) sit for the annual KCPE examination. Due to lack of space in secondary schools, examination performance determines the 50% (300,000) who may proceed to the next level. The rest may either try to retry the examination another year or drop out of school. Based on their score, the students may be selected to join either the National Schools which are well endowed with learning resources or the District day school where textbooks and qualified teachers are not assured. Miheso et al (2010) further notes that achievement levels in science, measured through examinations are used to make important decisions with respect to the students’ entry point as an active participant in social economic development activities or for review of educational and national development goals.

According to Chariswa (2002), schooling and examinations are synonymous for the Kenyan education system just as students’ performance in science is synonymous with success. Since these decisions are important and affect student transition in academic and career placement, equity in access to science knowledge is a priority for the ministry of education. Science is considered a very important subject for
this developing nation and as a result the subject has been reviewed more often than any other subject in the school curriculum. Most of the reviews made as based on student performance and hence are more political than empirically motivated. Examination performance decisions have led to new issues for mathematics education as they challenge or enhance societal perspectives on gender, culture, resources allocation, school administration, curriculum and teachers’ knowledge.

**Theoretical Perspective**

A theory is a set of assumptions based on a research for a purpose of explaining a phenomenon. Every discipline or subject has theories that explain its existence. Girls’ performance is a discipline that has elicited a list of research work with theories that vary in various aspects. However, the researcher’s topic of study girls’ performance in mathematics and primary science in KCPE is basically anchored on social constructivism theory by Dengate and Leman (1995) which is also called the philosophical theory perspective on knowledge and learning. Various forms of constructivism are viewed as spreading on continued between those that emphasis on individual cognition on one end and those emphasizing on social process on the other end. However, all variants share the belief that knowledge is actively constructed by the learners rather than conveyed to the learners from an external source for
instance Smith (1977) support that in its most popular form that constructivism may be viewed as a commitment to the idea that we conduct knowledge. This means that knowledge is and can not be placed inside our heads rather we make our own knowledge by selectively using our experience to create mental structures that form the basis for our knowledge.

Adequate (1999) supports this theory of constructivism from the rewards findings has shown that intervention programmes that have attempted to use methods that actively engage students in learning mathematics and science has been successful in improving girls’ confidence and achievements. This theory of constructivism is also supported by Boaler (2000) who found out that girls in schools that used an open problem solving teaching developed an increased confidence and enjoyment in mathematics and science as they attained statistically significant higher grades in examination than girls in school with a similar equitable approach to mathematics and primary science teaching.

This theory of constructivism from theoretical perspective shows the need to investigate girls’ performance in mathematics and science and improve the approaches and methods of teaching mathematics and primary science so in order to improve girl’s performance in these subjects in future.
**Related Studies**

According to McLeod (1992), a study on attitudes it states that attitudes are directed towards something (in this case mathematics and primary science), are seen as either positive or negative, and are grounded in experience. Way and Relich (1993) commented that, “although definitions of attitude vary, they generally include the idea that attitudes are learnt, manifest themselves in one’s response to the object or situation concerned, and can be evaluated.”

A number of studies report that there is a correlation between affective views of mathematics and primary science and mathematics and primary science achievements. For example Antonnen (1969) study reported a strong positive correlation between mathematics and primary science attitudes and achievements. Issues of gender have been a rich area, and probably initiated interest in research about affective factors in mathematics and primary science learning.

According to Leder (1992) study it states that, the achievement of girls in mathematics and primary science, across range of different contexts, were lower than those of boys and this were attributed to a number of reasons including affective factors. In a meta-analysis of studies on “gender comparisons of mathematics and primary science attitudes and affect”, Hyde, Fennema, Ryan, Frost and Hopp (1990) study
found out that, in general, female students held more negative attitudes to mathematics and primary science than male student, and these differences increased with age. They suggested that this was problematic because, "if females have more negative affect and attitudes about themselves and mathematics and primary science, they will... learn less mathematics and primary science than males do." IA L-Young-Loveridge (1992) study on attitude explored the attitudes towards mathematics of nine-year-old children in Newlands and found out that boys generally liked mathematics and primary science more than girls. More specifically, the boys held more positive views about mathematics than girls and a significantly higher proportion of boys perceived themselves as being good at mathematics and primary science than the girls did.

Most studies carried out to investigate performance of both boys and girls indicate that girls recorded low performance than boys. This view is supported by Alao and Adeleke (2000), but Armstrong (1981) noted that sex difference existed at high level and not at the junior Level in mathematics and primary science achievements.

According to Chamdimba (2005), study on “students’ attitude towards mathematics and primary science in Malawi”, one of the most common explanations for gender disparities in mathematics and primary
science achievements has focused on attitude that students have towards mathematics. Several studies have reported that there are gender differences in attitudes towards mathematics and primary science with girls showing more negative attitude than boys. In general, most studies reported that, compared with boys, girls lacked confidence, had debilitating causal attribution patterns, perceived mathematics and primary science as a male domain, and were anxious about mathematics and primary science. Further states that the causes of gender differences in mathematics and primary science attitudes were found to be multifaceted. For example researchers have identified such factors as parental and societal attitudes (Wong, 1992), and student's classroom experiences (Fisher & Rickards, 1998; Forgaz & Leder, 1996), as being influential in making girls internalize the feeling that they are inferior to boys in mathematics and primary science. Studies that have considered classroom environments consider teachers' classroom behaviours to a factor associated with students' attitudes Fisher & Rickards (1998) found out that students' attitudes towards mathematics and primary science tend to be more positive in classrooms where students perceived greater leadership and helping/friendly behaviours in their teachers, and more negative in classrooms where students perceived their teachers as admonishing and enforcing strict behaviours.
According to Chamdimba et al, (2005), study states that other researchers have compared the effect of single-sex and co-educational classrooms upon students’ attitudes as it is indicated by (Forgaz & Leder, 1996; Norton & Rennie, 1998). These studies indicate that students in single sex schools were found to have more positive attitudes than those students in co-educational schools. For example Norton and Rennie’s (1998) study of grades 8 to 12 in four secondary schools (one private single sex girls’ school, one private single sex boys’ school, one coeducational state high school and co-educational private school) in Queensland, Australia, found that boys in the single-sex schools had the most positive attitudes. The attitude of boys in co-educational schools were similar to girls in single-sex school, and the girls in the co-educational schools reported less positive attitude on most scales. All these results suggested that strategies that target teachers’ instructional practices may have an effect on students’ attitude towards mathematics and primary science.

According to Yara and Wanjohi (2011) study on performance determinants of students’ performance in KCSE mathematics and primary science in Nyamaiya Division of Kenya, they recommended that adequate attention should be paid to those variables that can predict students’ performance by the government and other stakeholders of education in Kenya. Yeya (2002) noted that poor student attitude to mathematics and
primary science as subjects are evident in many students. Chariswa (2003) recommends motivation of mathematics teachers and students through the provision of incentives to raise their morale for better grades in mathematics and primary science who are doing the same or similar jobs to them and compare how much effort they put into the job and how much they are rewarded for their work.

Since the development of primary mathematics and primary science curriculum takes into consideration of the process theories of motivation, the various elements of curriculum that may affect girl students' attitude towards primary mathematics and primary science were considered in this study.

**Summary of Gaps Identified in the Literature**

In summary, mathematics and primary science are compulsory subjects in KCPE examinations. A number of variables have been identified that contributes to poor performance in these subjects.

According to Yara and Wanjohi (2004) study, identify some of the factors as teacher's experiences, teacher's qualifications, teacher and student's attitudes and school categories. Although performance in these subjects still remains poor in some areas in Kenya it has also been established that girls' performance is poorer than that of boys. It has been established from the other studies that schools category is significant and
can be used to predict student’s performance in mathematics and primary science.

From the literature there had been no studies on the relationship between girls’ performance in mathematics and girls’ performance in science. All the literature sought the factors affecting performance alone. Therefore the study is worthwhile.
CHAPTER THREE

METHODOLOGY

Research Design

The design of this study is descriptive survey which adopted descriptive correlation design correlating performance in mathematics and science in KCPE.

Ex-post factor was used to retrieve data from schools on students’ result

Research Population

The population comprise of 144 schools comprising a total of 19,972 girls in the schools.

Sample Size

In the study, a sample size of 18 primary school comprising 1239 girls for the last five years from 2006-2010 was analyzed.

<table>
<thead>
<tr>
<th>Category</th>
<th>Population</th>
<th>Sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schools</td>
<td>144</td>
<td>18</td>
</tr>
<tr>
<td>Numbers of girls</td>
<td>1239</td>
<td>1239</td>
</tr>
</tbody>
</table>

Sampling Procedure

In the study, purposive criteria was used in selecting a group of girls to compare their difference in performance in mathematics and performance in science in KCPE in criteria was also used to correlate the
performance in mathematics and performance science in rural and urban schools

**Research Instrument**

It includes section A of the school profile in terms of type, nature and location and section B comprising a checklist of student’s result using academic achievements as follows:

<table>
<thead>
<tr>
<th>Mean range</th>
<th>Scale</th>
<th>Score (%)</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.26-4.00</td>
<td>4</td>
<td>100-80</td>
<td>Very good</td>
</tr>
<tr>
<td>2.51-3.25</td>
<td>3</td>
<td>79-60</td>
<td>Good</td>
</tr>
<tr>
<td>1.76-2.50</td>
<td>2</td>
<td>59-40</td>
<td>Pass</td>
</tr>
<tr>
<td>1.00 – 1.75</td>
<td>1</td>
<td>39-0</td>
<td>Fair</td>
</tr>
</tbody>
</table>

**Validity and Reliability of the Instrument**

The researcher could not vilify the validity and reliability of the instruments because the student’s results were already prepared and printed by the Kenya national examination council and therefore the researcher was to collect the student’s results and analyze.

**Data Gathering Procedure**

*Before the administration of the questionnaires*

An introduction letter was obtained from the College of higher Degrees and Research for the researcher to solicit approval to conduct the
study from respective heads of primary schools. The respondents were explained about the study and were requested to sign the consent form.

**During the administration of the questionnaires**

The researcher requested for the students result checklist from the school head teachers and photocopied the original and returned them to the school.

**After the administration of the questionnaires**

The researcher studied the student’s results after retrieval and picked only girls from the result checklist and computed their marks scored in mathematics and science to get their means.

**Data Analysis**

Frequencies and percentages were used to analyze the profile, the objective number two and three were analyzed using the mean then the correlational coefficient was used to analyze objective four using Pearson Linear Coefficient correlation which helped the researcher to identify factors contributing to poor performance in mathematics and science in KCPE examinations.

**Ethical Considerations**

The researcher provided the respondents with necessary information as regards to the main purpose of research, expected
duration and procedure followed. The researcher was in a position also to keep the privacy of the respondents.

Limitations of the Study

Intervening variables such as the attitudes of head teachers the moods and traditions of the school could affect the respondent’s data
CHAPTER FOUR
PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

Introduction

In this section, core of the study is presented.

Data collected from the respondents is analyzed. The discussion is presented in accordance with research questions and objectives of the study.

Table I
Profile of Respondent

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequencies</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public</td>
<td>14</td>
<td>77.78</td>
</tr>
<tr>
<td>Private</td>
<td>4</td>
<td>22.22</td>
</tr>
<tr>
<td>Total</td>
<td>18</td>
<td>100</td>
</tr>
<tr>
<td>Nature</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public mixed day school</td>
<td>13</td>
<td>72.22</td>
</tr>
<tr>
<td>Public mixed boarding school</td>
<td>2</td>
<td>11.11</td>
</tr>
<tr>
<td>Public girls boarding school</td>
<td>1</td>
<td>5.56</td>
</tr>
<tr>
<td>Private mixed day and boarding</td>
<td>2</td>
<td>11.11</td>
</tr>
<tr>
<td>Total</td>
<td>18</td>
<td>100</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>5</td>
<td>27.22</td>
</tr>
<tr>
<td>Rural</td>
<td>13</td>
<td>72.22</td>
</tr>
<tr>
<td>Total</td>
<td>18</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Field data 2012
From the study, it was established that public primary schools were more than private primary schools. As shown in table 1 there are 14 (77.78) public primary schools and 4 (22.22) private schools. The reasons why public primary schools are more could be due to poverty index of the people and hence the public primary schools are sponsored by the government while private schools are sponsored by individuals. The government policy is also an intervening factor as there is provision of free primary education to public primary schools.

From the study it was also established that there are more public day primary schools in Nyamira North District compared to public mixed boarding, public girl’s boarding schools and private mixed day and boarding schools. This are indicated in table 2 above as public mixed day schools 13 (72.22), public mixed boarding school 2 (11.11), public girls boarding school 1 (5.56) and private mixed day and boarding schools 2 (11.11). This could be the fact that most parents can not afford to pay their children’s fee in public boarding or sent them to private mixed day and boarding schools.

From the study it was also established that there are more schools constructed in rural areas than in urban. As shown in table 3 in rural there are 13 (72.22) schools constructed while in urban there are 5 (27.78) schools constructed. This could be the fact that in urban areas more land
is allocated to government projects and other business. Therefore there is limitation of land and other resources for schools construction. In other words in rural there is more land provided for school construction and there is demand for more schools due to high population.

**Table 2**

Girls’ performance in Mathematics in KCPE from 2006-2010

<table>
<thead>
<tr>
<th>Mathematics</th>
<th>School</th>
<th>Mean</th>
<th>Interpretation</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>57.68</td>
<td>Pass</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>48.89</td>
<td>Pass</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>48.67</td>
<td>Pass</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>47.35</td>
<td>Pass</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>46.95</td>
<td>Pass</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>45.61</td>
<td>Pass</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>43.97</td>
<td>Pass</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>43.95</td>
<td>Pass</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>43.85</td>
<td>Pass</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>43.35</td>
<td>Pass</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>43.33</td>
<td>Pass</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>42.92</td>
<td>Pass</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>42.51</td>
<td>Pass</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>40.11</td>
<td>Pass</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>40.02</td>
<td>Pass</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>39.43</td>
<td>Fail</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>38.59</td>
<td>Fail</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>38.24</td>
<td>Fail</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td><strong>Average Mean Index</strong></td>
<td><strong>44.20</strong></td>
<td><strong>Pass</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: KCPE Results from 2006-2010*
From table 2 the average mean of 44.20 computed by 18 schools shows that most of the schools passed mathematics except a few. This indicates that there is average pass in mathematics performance 44 years. Which means most girls passed mathematics but with low marks and therefore there is need for urgent attention to improve the performance of mathematics.

Table 3

<table>
<thead>
<tr>
<th>School</th>
<th>Mean</th>
<th>Interpretation</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>56.07</td>
<td>Pass</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>48.23</td>
<td>Pass</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>46.61</td>
<td>Pass</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>46.33</td>
<td>Pass</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>44.72</td>
<td>Pass</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>43.21</td>
<td>Pass</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>43.12</td>
<td>Pass</td>
<td>7</td>
</tr>
<tr>
<td>8</td>
<td>41.93</td>
<td>Pass</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>41.92</td>
<td>Pass</td>
<td>9</td>
</tr>
<tr>
<td>10</td>
<td>41.35</td>
<td>Pass</td>
<td>10</td>
</tr>
<tr>
<td>11</td>
<td>40.97</td>
<td>Pass</td>
<td>11</td>
</tr>
<tr>
<td>12</td>
<td>40.43</td>
<td>Pass</td>
<td>12</td>
</tr>
<tr>
<td>13</td>
<td>40.39</td>
<td>Pass</td>
<td>13</td>
</tr>
<tr>
<td>14</td>
<td>39.43</td>
<td>Pass</td>
<td>14</td>
</tr>
<tr>
<td>15</td>
<td>39.16</td>
<td>Fail</td>
<td>15</td>
</tr>
<tr>
<td>16</td>
<td>36.53</td>
<td>Fail</td>
<td>16</td>
</tr>
<tr>
<td>17</td>
<td>35.78</td>
<td>Fail</td>
<td>17</td>
</tr>
<tr>
<td>18</td>
<td>35.06</td>
<td>Fail</td>
<td>18</td>
</tr>
<tr>
<td>Average mean index</td>
<td>42.29</td>
<td>Pass</td>
<td></td>
</tr>
</tbody>
</table>

Source: KCPE result from 2006-2010
From table 3 it indicates that the average mean for science was 42.29 which show that there was a pass in science. However, the scores were low indicating that science was not performed very well by candidates in KCPE examinations. Therefore, to improve the performance there is need for urgent attention to look for causes of this poor performance and look for solutions.

Table 4
Relationship between Girl’s Performance in Mathematics and Primary Science in KCPE Examination

<table>
<thead>
<tr>
<th>Variable Correlated</th>
<th>Mean</th>
<th>r</th>
<th>Sig.</th>
<th>Interpretation</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Girls’ Performance in Mathematics</td>
<td>44.20</td>
<td>0.011</td>
<td>0.05</td>
<td>Significant relationship</td>
<td>Rejected</td>
</tr>
<tr>
<td>Girl’s Performance in Science</td>
<td>42.29</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The significant value 0.123 shown in table 6 indicate that there is a positive significant relationship between the level of performance in mathematics and primary science in KCPE examination in primary schools in Nyamira District in Kenya.
This means that performing well in mathematics positively affects the performance of science in girls' performance in mathematics and science and vice versa. This means that the factors affecting mathematics are the same factors affecting primary science as girl's performance is concern.
CHAPTER FIVE
FINDINGS, CONCLUSION AND RECOMMENDATIONS

FINDINGS

Major findings of the study are:

Profile of Respondents

From the study it was indicated that there are more public primary than private primary schools which are 14 public primary schools and 4 private primary schools.

The study finding also indicates that there are more public mixed day primary schools than private mixed and day boarding schools.

The study findings indicate that there is only one girl’s boarding school while there are two public mixed boarding schools.

From the study it is indicated that more schools are constructed in rural areas than urban areas.

Girls’ Levels of Performance in Mathematics

From the study it is indicated that most primary schools had average pass in mathematics and few had a fail in mathematics.

The study findings that the level of performance in mathematics is almost the same in all schools.

From the findings it indicates that there are a few schools which scored below the pass. The study findings schools there is only one school which
scored over the pass mark and generally mathematics was not performed well.

**Girls’ Level of Performance in Science**

From the study findings it is indicated that most schools attained a pass and the marks are almost the same. The study finding also indicates that there is school with low scores of marks which led them to fail in their performance in science. The study finding shows that there is only one school which scored over 50%. The study finding indicates that science is not well performed.

Relationship between the level of girls’ performance in mathematics and level of girls’ performance in science

From the study findings it was established that there was a positive significant relationship between girls’ level of performance in mathematics and girls’ level of performance in science.

**CONCLUSION**

In this study the researcher sought to draw the conclusion basing on the purpose of the study.

Based on the findings of the study, the researcher concluded that there is significant relationship between performance in mathematics and
primary science in KCPE examination in selected primary schools in Nyamira North District in Kenya.

Regarding the theory of constructivism by Dengate & Leman (1995) where the researcher’s study is anchored on it was stated that there should be a commitment that we conduct knowledge. This means that knowledge is and can not be planted inside our heads rather we make our own knowledge by selectively using our experience to create mental structures. Therefore girl’s performance in mathematics and science needs commitments.

The findings of the study indicates that there is need to add to the existing body of knowledge in the area of girls’ performance in mathematics and primary science in Nyamira North District in Kenya. The findings of the study have generated data for further research in the area of girls’ performance in mathematics and primary science in KCPE examinations in Nyamira North District in Kenya.

**RECOMMENDATION**

From the study findings the researcher recommended the following

The government, communities and non governmental organizations to assist and encourage private developers to invest more in building and constructing more private schools in both rural and urban areas. Whereby
the government should assist these private developers to employ trained teachers in their schools and pay salaries for them.

The government should preserve more land for future development more especially construction of more primary schools which offers basic education to young ones. Also the government should invest more in building primary schools in towns because the populations in towns grows to fast which could in future call for more concern.

Ministry of education in Kenya, leaders, educationist, teachers, parents and pupils should have concern so that to observe critically the performance of mathematics and primary science to come out with strategic and methods of teaching so that to manage good performance in both mathematics and primary science

The ministry in conjunction with Kenya institute of education should formulate good policies and develop a good curriculum which will cater for gender disparities because as a concern it has turned out that boys out perform girls in science subjects than arts subjects

The government should initiate more girls’ boarding schools in primary schools so that girls could be isolated from house choral works. This is because mostly girls are subjected to house work than boys. Also the leaders should campaign for girl- child to go to school but not ignored and advantaged by boys.
REFERENCES


Journal for Research in Mathematics Education, 28(1), 106-111.


Book review constructing the individual knowerRadical

The perspectives of pre-service teachers. In B. Atweh, C. Kanes, M. Carss, & G. Booker (Eds), *Contexts in Mathematics Education*


Yeya, M.S. (2002). An Investigation of the Probable Causes of Poor Performance in KCSE in Matunga Division, Wakali District, MED project, Kenyatta University.
APPENDIX I

TRANSIMITTAL LETTER
OFFICE OF THE DEPUTY VICE CHANCELLOR (DVC) SCHOOL OF
COLLEGE OF HIGHER DEGREES AND RESEARCH (CHDR)
RE: INTRODUCTION LETTER TO CONDUCT RESEARCH IN YOUR
INSTITUTION

Mr. Kennedy Ongera is a bonafide postgraduate student of Kampala
international University pursuing Masters of Education in Early Childhood
and Primary Education.
He is currently conducting a field research for his thesis entitled, “Girls’
Performance in Mathematics and Primary Science in KCPE
Examinations in selected primary schools in Nyamira North
District, Kenya”.
Your institution has been identified as a valuable source of information
pertaining to his research project.
The purpose of this letter is to request you to avail him with the pertinent
information he may need.
Any information shared with him will be used for academic purposes only
and shall be kept with utmost confidentiality.
Any assistance rendered to him will be highly appreciated.

Yours truly,

Novembriseta R. Sumil,
PhD. Deputy Vice Chancellor, CHDR.
APPENDIX II
CLEARANCE FROM THE ETHICAL COMMITTEE

Date
Candidate's Data,
Name: ONGERA KENNEDY ORUKO
Reg.No.: MEE/15801/111/DF
Course: MASTER OF EDUCATION IN EARLY CHILDHOOD AND PRIMARY EDUCATION.
Title of the study: "Girls' Performance in Mathematics and Primary Science in KCPE Examinations in selected primary schools in Nyamira North District, Kenya".

Ethical Review Checklist
The study reviewed considered the following:
• Physical Safety of Human subjects' Psychological Safety Emotional Security.
• Privacy
• Written Request for Author of Standardized Instrument
• Coding of Questionnaires! Anonymity/confidentiality
• Permission to conduct the study of informed consent
• Citations! Authors recognized Results of Ethical review approved
• Conational (to provide the Ethics Committee with corrections)
• Disapproved; Resubmit Proposal.
Ethics Committee (Name Signature)
Chairperson Members
APPENDIX III
INFORMED CONSENT

I am giving my consent to be part of the study of Mr. Ongera Kennedy Oruko.

I will focus on “Girls’ Performance in Mathematics and Primary Science in KCPE Examinations in selected primary schools in Nyamira North District, Kenya”.

I shall be assured of privacy, anonymity and confidentiality and that I will be given the option to refuse participation and the right to withdraw my participation any time. I have been informed that the research is voluntary and that the results will be given to me if ask for it.

Initials:-----------------------------------------------
Date:-----------------------------------------------
APPENDIX IV

RESEARCH INSTRUMENT

Research instrument on Girls performance in mathematics and primary science in KCPE examinations in selected primary schools in Nyamira North District in Kenya.

Dear respondent,

The researcher is a student of Kampala International University, in his first year’s degree. He is carrying out a research study on the topic, Girls’ performance in mathematics and primary science in selected Primary schools in KCPE in Nyamira North District in Kenya.

The purpose of this study is to collect data on the above topic your response will be treated with confidentiality and the information obtain is strictly for educational purposes.

Section A

Details for the school

Direction: On the space provided before the option tick the best choice

1. Type of school
   _____ Public school.
   _____ Private school.

2. Nature of school
   _____ Public mixed day school.
   _____ Public mixed boarding school.
   _____ Private mixed boarding and day schools.
   _____ Public girls boarding school.
3. Location of school
   ____Urban
   ____Rural

B. Performance in KCPE

Use the Criteria Below

<table>
<thead>
<tr>
<th>Interpreted</th>
<th>Mark</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very good</td>
<td>100-80%</td>
<td>4</td>
</tr>
<tr>
<td>Good</td>
<td>79-60 %</td>
<td>3</td>
</tr>
<tr>
<td>Pass</td>
<td>59-40 %</td>
<td>2</td>
</tr>
<tr>
<td>Fail</td>
<td>39-below</td>
<td>1</td>
</tr>
</tbody>
</table>

4. Performance in mathematics from 2006 - 2010

_____100- 80%
_____79-60%
_____59- 40%
_____39 — below

5. Performance in primary science from 2006-2010

_____100-80%
_____79-60%
_____59-40 %
_____39 – below
CURRICULUM VITAE

NAME : ONGERA KENNEDY ORUKO

DATE OF BIRTH : 31ST – AUGUST- 1967

OCCUPATION : TEACHER

MARITAL STATUS : MARRIED

CONTACT : P.0.BOX. 103, KEBIRIGO

CELL PHONE : 0728-027460

EDUCATION BACKGROUND

<table>
<thead>
<tr>
<th>Educational level</th>
<th>Institution</th>
<th>Year</th>
<th>Award</th>
</tr>
</thead>
<tbody>
<tr>
<td>University</td>
<td>Kampala International University</td>
<td>2007-2010</td>
<td>Degree</td>
</tr>
<tr>
<td>College</td>
<td>Nyanchwa TTC</td>
<td>1990-1992</td>
<td>PTE</td>
</tr>
<tr>
<td>Secondary Sch</td>
<td>Homa – Bay</td>
<td>1983-1986</td>
<td>KCE</td>
</tr>
<tr>
<td>Primary Sch</td>
<td>Ramba</td>
<td>1976-1982</td>
<td>CPE</td>
</tr>
</tbody>
</table>

WORKING EXPERIENCE

Egentonto primary school – Nyamira District 1996-1999
Materio primary school - Nyamira District 2000- 2004
Nyamotaro primary school – Nyamira District 2005- 2008
Kenguso primary school  - Nyamira District  2009-2010
Maagonga primary school – Nyamira District  2010 –up to date

HOBBIES

- Sports
- Music
- Reading story books
- Listening music
- Attending workshops and seminars

LANGUAGE PROFICIENCY

<table>
<thead>
<tr>
<th>Language</th>
<th>Written</th>
<th>Spoken</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>Excellent</td>
<td>V. Good</td>
</tr>
<tr>
<td>Kiswahili</td>
<td>Excellent</td>
<td>V. Good</td>
</tr>
<tr>
<td>Ekegusii</td>
<td>Excellent</td>
<td>V. Good</td>
</tr>
</tbody>
</table>

REFEREES

<table>
<thead>
<tr>
<th>Name</th>
<th>Designation</th>
<th>Institution</th>
<th>Cell Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joseph . A. Gichora</td>
<td>Headteacher</td>
<td>Maagonga primary</td>
<td>0711197368</td>
</tr>
<tr>
<td>Enock M. Ombogo</td>
<td>Seniorteacher</td>
<td>Mwancha primary</td>
<td>0715842804</td>
</tr>
</tbody>
</table>