INFLUENCE OF GENDER ON ACADEMIC PERFORMANCE IN SCIENCE SUBJECTS A CASE STUDY OF GITHUMU ZONE KANDARA DIVISION CENTRAL KENYA

BY

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A RESEARCH REPORT SUBMITTED TO THE INSTITUTE OF OPEN AND DISTANCE LEARNING OF KAMPALA INTERNATIONAL UNIVERSITY IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF BACHELOR OF EDUCATION IN EARLY CHILDREN AND PRIMARY EDUCATION

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DECLARATION

I Joseph Kanyugi, hereby declare this is entirely my original work and has not been submitted to any other examining university or other institution for any award of degree or certificate.

Signed ~~Kanyugi~~ ....

Date 29|09|08 ....

KANYUGI JOSEPH

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APPROVAL

This research report resulting from the research report resulting from the researcher's effort in the area of Gender and Academic performance was carried out under my supervisor and with my final approval is ready for submission for the award of Degree in Early Childhood and Primary Education to the academic board Kampala International University.

Signed .... Date.. 29|9|08 ....

Mrs. Taligoola N. Deborah

DEDICATION

This research project is dedicated to the researchers with, Hellen, Sister Mama Melisa for their wonderful patience and encouragement accorded to me.

To the beloved children Prudence and Godwin who kept jovial mood with their mother through out this study at Kampala International University. May this work be an inspiration for them to seek higher learning.

ACKNOWLEDGEMENT

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ABSTRACT

A study on Gender and Academic performance in science was carried out in Githumu Zone with the purpose of investigating and establishing the factors influencing Gender and academic performance in the science subject in Githumu Zone. The specific objective of the study were; to compare out the boys/girls attitude towards the study of science. To identify some cultural practices that affect the performance of learners in the science. To establish whether both sexes participate fully in the science teaching learning situation. To determine whether motivation and the resources affect gender and academic performance of science in Githumu Zone. To identify appropriate intervention measures for the problems.

The method used in the investigation were qualitative, and descriptive given the nature of the research problem. Data was obtained mainly from two sources namely the pupils profile and teachers profile where a researcher formulate a questionnaires and distributed to them for assisting him to carry out the study. The population studied consisted of one hundred pupils where girls and boys sampled were equal and thirty teachers, eighteen male teachers and twelve female teachers who handles science subject in their respective schools. Teachers are all trained and obtained various qualifications and grades.

A questionnaire was developed from the sampled respondents. This instrument contained level of gender and academic performance.

The researcher based his questionnaire in area namely, attitude, social cultural motivation language and teaching resources. Each area contained questions quantified into the following 5: strongly agree, 4: agree, 3: disagree, 2: strongly disagree, 1: undecided.

After collection of the data, the researcher calculated the frequency and percentage to determine the level of attitude and academic performance in science in the areas such as social influence on gender performance, Differing attitude towards education by gender, gender and performance in science classroom interaction and participation, science and learning resource. It was found out that social influence on gender performance, gender and performance in science greatly contribute the performance by gender. The teaching strategies and language used by science teachers were also found to be ineffective classroom intervention and participation was also found to be poor. It was also found that both pupils and teachers have poor attitude toward science by gender. However it was observed that teachers and pupils posed some positive attitude towards science but there is room for improvement.

DEFINITION OF TERMS

Gender

Type of sex that is either male or female

Enrolment

This refers to the number of students who register with the Kenya National Examinations council as candidates for the examination set by the examination council, or the number of students who register with the same council to be examined in a particular subject set by the examinations council.

Hidden Curriculum

Are massages being given to both boys and girls through comments or body language by the teacher.

Stereotype

A fixed impression, opinion or briefs applied to a group or individual

Social cultural briefs and norms set of belief and practices according to different communities

Gender roles

Responsibilities men and women are expected to undertake in the home, work place and in the community

Gender disparity

Unequal opportunities regarding girls and boys caused by negative influence in learning science.

Gender biases

Showing of partiality in people based on their sex

Impediments

Barriers or problems hindering teaching and learning in science

Attitude

Way of feeling, thinking or behaving towards something or perceptions or a set of predisposition with response to specified class of objects or people.

Validity

Establishing whether the content of the instrument is measuring what it supposed to.

ACRONYMS

KCPE	Kenya Certificate of Primary education
KCSE	Kenya certificate of secondary education
KNEC	Kenya National Examination council
MOEST	Ministry of education science and technology
NGOs	Non governmental Organization

CHAPTER ONE

INTRODUCTION

1.1   Background of the Study

Education is the basis of development of any country in the world. Most government and individuals invest heavily in education in order to achieve this goal. Science is an important component of education. A number of studies have been carried out by specific researchers to identify and analyze factors that influence performance of gender in science in national examinations.

Most of these studies have been conducted in developed countries. In Kenya for example, there are few comprehensive studies that have been carried out on factors determining gender and academic performance in science in Primary Schools. The Ministers of Education in Kenya have been constantly expressing concern on the performance of science by both gender when announcing national examinations results.

It is also noted that there are tremendous gender disparities in the learning of Science between boys and girls, this is particularly so with 8.4.4 system of education in Kenya. Most of the studies have however come up with the proposed factors that affect the performance of gender in Science as well as some recommendations. The fact that the situation has not yet improved may be an indicator that there is need for further research in this area.

It has also been reported by Mass Media that there have been low girls enrolment in science as well as low intake of girls in the faulty of science in the universities and other institutions of higher learning in the republic. The problem has its root cause in primary schools where girls are said to perform poorer in science.

The performance in science is not a recent problem as far as gender is concerned. World wide, the subject suffers a minority acceptance by girls. Being of a focal subject in achievement of industrialization the problem may be among other causative factors against fast industrialization in developing countries. In Kenya yearly science has never gone missing in the subjects badly performed in Kenya Certificate of Primary education. Years back the situation was no better for science in the study by the African academy of science in several countries in sub Sahara Africa standard (1999). It was revealed that less than 10% of all candidates who sit for national examinations pass in science, more so girls are more affected than boys.

Science is regarded as important subject for entering various types of employment and courses; similarly, it also enjoys some special status in Kenya school curricula by being among the core subjects. If not effectively taught especially to the gender that perform poorly then scores are likely to be low. This has therefore put pressure on science teachers to ensure that both gender acquire the basic knowledge and skills in the subject. Teachers in both low and high performing schools have tried to devise various causes of gender disparities in learning science and change their attitude some cultural practices, motivate them and give equal opportunities in learning science which are important in helping learners improve performance in the subject.

The influence of the gender of learners on their performance in science in Githumu Zone is the contention of the study. The researcher has noted with concern about the gender disparity in the internal and external examination results in Githumu Zone where he is against this background that gender and academic performance in Githumu zone in science need to be investigated.

1.2   Statement of the problem

Science as a discipline plays a major role in industrial and technological advancement in any given society. A lot of emphasis needs to be put in the learning of science in school by the government as it is the backbone of the economy. If the above goals are to be a reality.

There is a great challenge between boys and girls as far as academic performance is concerned. Learning of science therefore needs to be strengthened through impacting scientific facts, skills and knowledge to all learners practically. The difference in gender performance in this field has been of great concern. This is mostly attributed by negative attitude toward science, social cultural practice by girls and boys dominating in science. This is destructive on the girls side as far as the performance is concerned.

The saying "if you educate an individual but if, you educate a girl you educate a nation" can not be realized if girls continue to perform poorly in science. The inference is that many nations have stagnated in scientific development due to girls being left behind. These girls should be encouraged to change their attitude and be more active and effective in all scientific endeavors to enhance development in the society. If this is said and done science will continue to play its vital role in fostering development in all aspects of life and raise the living standards of the people in the global society. It promoted equal opportunities between girls and boys in order for them to learn science well and compete in the national examination.

1.3   Purpose of study

The purpose of the study was intended to examine influence of gender on performance in the science subject in Githumu Zone Kandara Division central Kenya and find out ways of improving the performance of science particularly by girls.

1.6 Significance of the study

The researcher hopes that the study will benefit the following;

Teachers will try to improve their teaching techniques and change the attitude of gender towards the science. It will help them to give guidance to the pupils and parents on gender issues.

Pupils received effective and appropriate service from teachers and parents as well as community. This led to improved academic and gender performances of pupils in science.

School administration could also use the findings of the study in formulating strategies on how to improve academic and gender performance in their respective schools.

Parents and the gender populace to reflect on their cultural and religious beliefs and attitude towards the academic and gender performance in science

The ministry of education science and technology to come up with relevant policy and materials which will motivate girl child to take learning of science seriously and compete with boy child

Encourage other stakeholders both individuals and organizations who would wish to network to improve the well being of the girl child in the society through academic achievement.

Give the girl child an opportunity to realize and appreciate the significance of science and the need to acquire scientific knowledge towards future career.

The study will highlight some areas in which parents can advise on cultural practices that affect performance. This may foster better performance in science in the zone.

Future researchers may also use this study as a source of literature review when conducting similar studies.

1.7 Scope

The researcher carried out this study in Githumu Zone Kandara Division Muranga South District Central province Kenya. It is about sixty kilometers from Nairobi and Twenty kilometers from Thika town. The main language group under area of study is Bantu that is Kikuyu. The zone has twenty five schools with a population of 1375 pupils. The topography of the area is hilly and the climate is cool and wet. The economic activity carried under research study is farming where coffee is the main cash crop.

The subject scope is to examine the influence of gender on the performance of science, assess the attitude for boys/girls and cultural practices that affect academic and gender performance in science. Also to give appropriate intervention measures for the problem. The researcher is intending to carry out study from 1st of May up to 31st of July 2008.

1.8 Limitations

The researcher is likely to have a limitation of time to collect data since he has other duties to attend.

The researcher is also likely to have limitation of funds for traveling to schools and buying stationary, typing and other expenses.

He may have fear respondents responding truthfully towards some sensitive information.

He may likely face negative attitude by respondents when answering the questions.

The researcher may also face some difficulties in collecting data due to some people suspecting him on researching on them. Due to this some interviewees may fail to return some questionnaires.

Unpredictable weather conditions may hinder the researcher from reaching some respondents since some roads may be impassable.

Some of administrators are not cooperative they may refuse to allow the researcher from teaching the respondents to their schools.

CHAPTER TWO

LITERATURE REVIEW

Introduction
Theoretical framework

The quality of people's life depends on the development and discoveries of new knowledge and skills in the world. Scientific discoveries in the past made the world what it is today. Science education plays a vital role in the aspect by ensuring positive and peaceful development and future of mankind and serves the human needs.

However science education has not fully accomplished these goals due to its poor standards in school especially for girls. Gender disparity in science performance in primary schools is great. It is in this view that the researcher based his study.

There are various factors that influence the poor performance in science. They include negative attitude towards the subject, social cultural practice, lack of resources, lack of participation in school and outside school, lack of motivation, low curiosity and interest, fear of handling materials and making mistakes gender stereotype among others. The implication of this disinterest in the subject and poor performance hence low self esteem.

It is worth noting that solution needs to be offered to alleviate these problems both girls and parent require guidance and counseling on the issue. Girls need to be motivated to arouse their curiosity and change their negative attitude towards the subject. Parents require advice to change their traditional briefs and norms as far as girls role are concerned. Teachers should re-evaluate their teaching approach and design other methods necessary to promote gender performance especially girls.

Conceptual framework

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┌──────────────┐     ┌──────────────┐     ┌────────────────────────┐
│ Gender       │     │ Gender       │     │ Motivation             │
│ selection    │────▶│ roles        │────▶│ Attitude               │
│              │     │              │     │ Cultural practices     │
└──────────────┘     └──────────────┘     │ Stereo type            │
                                          │ Unequal participation  │
                                          │ resources.             │
                                          └────────────────────────┘
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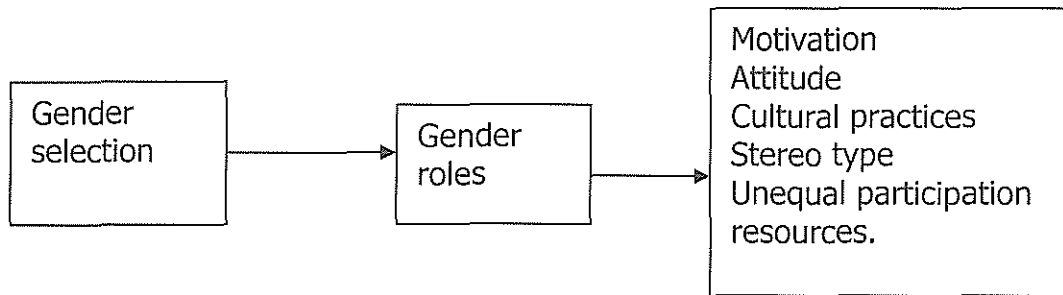
The community within which children are born influences the way they understand the world around them. Boys and girls are taught to play different roles. They learn to interact with material in their environment in different ways. In may of our communities boys have a freehand in exploring resources in their environment in the long run boys may learn the skill of investigation and develop positive attitude towards material exploration. However girls may learn to be passive lacking self confidence and show little interests in the manipulation of materials. In the school situation the children may carry these same attitudes along where boys may be aggressive ready to investigate the world around them, the girls may only watch believing investigation to be a preserve for boys.

Influences of gender on school enrollment

The comparative analysis of enrolment of gender shows that girls enroll in fewer numbers as compared to boys from pre-primary level up the ladder to the university. The trend remains the same at class eight and form four which are examination classes.

According to Kimalat W (1999), the population profile of Kenya shows that out of estimated 30 million people in 1999, about 51% is composed of children and dependent youths in the age range of 0-5 years. It is further noted that about 52% of the

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population is female. Looking at the school enrollment figures education statistics 1998, there are serious regional gender disparities.

Table 1: shows education statistics 1998 according to educational institution

	Gender	Frequency	Percentage
Pre-primary	Boys	554,376	
	Girls	422,230	34%
	Total	1076606	
Primary education	Boys	2,994,554	89.4%
	Girls	2,925,167	88.2%
	Total	5,919,721	88.8%
Secondary education	Boys	373,440	24.6%
	Girls	327,098	21.7%
	Total	700,538	23.2%
University education	Total	43,591	
	Female	29.2%	

Statistics for student's enrolment in primary, secondary school and other institutions of learning indicates that girls continue to register low enrolment. For instance in the year 1997/1998 and 1998/1999 male accounted for 321, 618 and 30,236 while female accounted for 14,569 and 14,175 respectively. According to the population percentages by gender one would accept high enrolment rate for girls than boys.

Sivingi S (2003) analysis on candidature enrolment or distribution for the last 5 years 1999-2003 indicated that girls enrolment of KCPE is about 48% on an average while that of boys is above 51%. The same trend continues in secondary school and colleges.

Aduda D (2003) analysis on KCSE examinations candidate enrolment trends over the case of 10 years by gender showed that girls continue to register low enrolment for the examination in all these years. It is clear therefore that specific factors that affect girls education at all level. Such are the factors which need to be investigated and solutions offered.

Performance in science

Science is one of core subject in school and colleges. Science performance however has been poor over the years compared to other subjects. Both boys and girls perform poorly in science however girl's performance is even worse than boys.

According to the analysis of the overall candidates performance per subject, it indicated that science was among the poorest performed subject with a mean (%) of 42.74%. the candidates performance by gender showed that girls performed poorer in science compared to boys. Girls scored 39.42% compared to 45.80% for boys. The scores indicate that most girls leave primary school without acquiring competence in science which is fundamental for admission to higher institutions of learning (Siringi S. 2003).

Nyakato k. (2004) while commenting on poor performance in science in recent Nyamiva students congress on science and technology, said that students did not show clear understanding of the theme "science and technology for economic recovery" as a result, the theme was poorly interpreted.

In the science congress held at Rigoma Secondary school, he said the project presented by the student lacked creativity. Girl's schools too were not well presented. These two events affirmed the sentiments that the problem starts in primary school.

According to the KNEC analysis of KCPE year 2001 and 2002 the performance trend in science by girls remain poor. This was so in the next three years. The performance of science by girls was low with mean of 23.03 compared to boys 25.88 in 2002 and 26.31 against 29.31 for boys in 2001. though the performance for girls in general was poor, girls in rural area performed dismally poor compared to girls in urban areas. The low mean mark for urban areas was 27.8, 54.16% and 25.63, 51.26% in rural areas.

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The indication is that performance by girls in science varies greatly depending on the environmental factors and disabilities in learning facilities. Due to these environmental difference, it can be inferred that the wealthier the environment, in terms of resource, social interactions, financial status to mention a few the better performance.

The KNEC news letter (2001) pg 66 attributes this performance disparity between urban and rural areas to the exposure to wide experiences and information technology from the mass media for example television among others for urban areas.

Social influence on gender performance in science

Social-cultural beliefs and norms define the gender roles and create gender disparity among the community members. In most communities girls are involved in less challenging work of fetching firewood and water, sweeping the compound, baby sitting, secretary whereas boys perform hard task of providing shelter, herding, managers and bread winners. Boys have a freehand in exploring resources in their environment. In the long run boys may learn the skills of investigation and develop positive attitude towards material exploration (MOEST, 2001). This help to shape the attitude of girls negatively. They may learn to be passive lacking self confidence and show little interest in the manipulation of materials hence the general performance is affected. The may also believe that science is difficult and is meant for boys.

Differing attitudes towards education by Gender

According to his study Njuguna (1998) gave the following recommendations; in the findings there was a positive correlation between attitude toward science subjects and academic achievement in the subjects. He therefore recommended that studies be carried out to find out whether attempts to promote favorable attitude towards science subjects may influence academic achievement level of students in the subjects. He

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noted that the attitudes hold may have an impact on academic achievement since the predisposition of the learners are likely to have an impact on the process.

He therefore recommended that there is need to find out the prevailing attitudes are related to the academic achievement.

In another study according to Wasonga (1997) on the attitude towards science among primary and secondary schools in Kenya. It was noted that differences in school between boys and girls still exist in access and achievement particularly in the areas of science and mathematics. He gave the following recommendations;

- Counselors to begin counseling female students about ability and importance of science as early as form one to prevent further solidification of stereotypical attitudes.
- To institute remedial classes for female students especially in topics which they find difficult.
- Design intervention programmes to change girls attitude by exposing girls as early as possible to non traditional careers.
- Choose and use books that are gender positive that is those with illustrations that are gender biased.

According to Eiser (1994) people acquire attitudes through learning with environment and that attitudes are about things that happen in the world. He noted that attitude have a great deal to do with how people choose to behave.

Eiser and Plight (1989) say that attitude are both a social product and an intrinsic part of social action in that our attitudes influence how we live. Persons regard their attitudes as the truth at least until someone introduce new facts or argument to change their mind.

According to Munny Fernald and Fernald (1972), attitudes are learnt predispositions towards aspects of our environment. They tend to evaluate something neither positively nor negatively. An attitude is considered as consisting of three components. These include thinking, feeling and reacting, the thinking component pertains to belief for example a belief by student for example a belief by student that exams are difficult. The feeling component involves issues related to value that is one may feel attractive, repelled or neutral regarding something for example a student may feel repulsive when told of imminence of an examinations. Reacting involves a tendency to behave in a certain way for example a student may try to avoid examination. Reacting involves a tendency to behave in a certain way for example a student may try to avoid examination that is the attitudes, becomes manifest in overt behavior.

According to Petty and Caicopo (1985), states that attitudes guide behaviors. They are active processes for forming and changing behaviors by selectively activating various though of the attitude object. It persons already hold a positive towards an object or concept then this means that they are wisely to call to mind positive rather than negatively thoughts or association.

According to Fazio (1986) attitudes depend on the previous positive or negative experiences rather than the evaluative beliefs a persons calls to mind when deciding a cause of action.

According to Baron and Byrne (1987) states that babies do not enter the world with political interferences, racial hatreds or religious views, already formed. Such attitudes are acquired over a long period of time through learning and socialization. In Kenya research has shown that it is girls attitude that influences their academic performance due to gender stereo type.

According to Eshiwani (1985) stereo type of males and female characteristics and abilities have tended to prevail the academic and economic spheres. For instance Oblier (1975) observed than woman and that women are thought to be incapable of foresight and lack the ability to make and carry realistic plans. This is a belief, which over the years has contributed to females considering themselves academically incompetent while viewing males as academically competent. This attitude has fostered differential performance between male and female.

Classroom interaction and participation as influenced by gender
Classroom interaction and participation involves working together with each other in classroom or group discussions, manipulation of materials and resources in a free atmosphere. Gender stereo type from some communities and religious groups encourage girls to sit away from boys and are not expected to contribute to discussions. They make to believe that are not as clever as boys and they should seek guidance and leadership from boys (MOEST, 2001).

This impacts negatively on girls and snatch their opportunity to present their opinions and push them into submission and silence doubting their ideas however logical they may be.

On the other hand gender stereotype encourage boys to explore their environments and build their confidence. This makes boys dominate girls in terms of participation, doing actual experiment, recording and observations and relegate girls to arranging materials and passive role of listening. The boys at times bully the girls and even use language that demeans the girls abilities.

Science and learning resources

Science is a practical oriented discipline which requires varied teaching and learning resources to enhance its performance. Teaching and learning resources can bring about gender disparities or biases in learning.

MOEST (2001) indicated that gender biases in resources can be seen in three ways;
Language used
Examples given
Illustrations used
Pupils thinking, motivation, opinions and attitude can be shaped the language used. Examples given illustrations in the textbooks. Language use and illustrations can reinforce gender biases and stereo type by the world's and pictures used by depicting boys as superior and girls inferior and playing supportive roles.

Teachers attitude influence in science classroom

Attitude can be defined as a set of predisposition with responses to a specified class of objects or people. Attitude or feelings are either positive or negative and can affect learning negatively or positively. Teachers own expectations and attitudes about male and female pupils may be manifested in various forms for instance;

- Statement or comments used
- Classroom setting or arrangement
- Materials distributions
- Questions asked language used

MOEST (2001) stated that the way children are grouped sometimes may create gender disparities the way the teacher organizes groups creates learning patterns and determines the relationship between girls and boys. A science teacher may value girls and boys ideas differently sometimes teachers do not accept girls ideas in science while

boys ideas are appreciated. This situation is true and can be attributed to the social cultural beliefs and norms that boys are superior to girls.

Hidden curriculum

The negative expressions, language or body language has negative impact on children. Girls may develop a negative attitude towards science hence their performance is adversely affected (MOEST, 2001).

Literature shows that various factor affected the performance of gender in science. Without these adverse factors girls are likely to perform well in science just as they do in language mathematics, CRE and other disciplines.

Gender and language use in classroom

Because men are socialized to look upon women and to view them as inferior and not capable of making decisions or take up challenges, may teachers, male carry this attitude into the classroom. Unconsciously or deliberately they say a thing in the classroom that discourages girls from performing well. For example, it is common for teachers to tell the girls that they are not meant to take subjects such as science because these are meant for boys. Teachers also constantly refer to the girl's physical attributes reinforcing the attitude that girls are basically sexual objects similarly teachers reinforce the masculinity and superiority of the boys by encouraging them not to be beaten academically by the girls.

Constant exposure to such language by the teacher in the classroom perpetuates the traditional superior position of the boys and men and the inferior one for girls and women. Female teachers who have also been socialized to believe in the inferiority of women also reinforce these attitudes in the classroom just as much as their male colleagues.

CHAPTER THREE

METHODOLOGY

3.0   Introduction

This chapter analyses the method employed by the researcher in the study. The research methods included the research approach, research design, target population, sample population, sampling procedure and instruments used in data collection.

3.1   Research design

This study employed a descriptive survey method to determine the teaching/gender performance in science of Githumu Zone in Kandara Division, Muranga south district Kenya.

3.2   Organization of the study

3.2.1 Target population

The study was carried in ten schools out of twenty schools from Githumu zone, Kandara division Muranga south District, Kenya.

3.2.2 Area of study

The study was conducted in Githumu zone in Kandara division, Muranga South District Kenya about twenty five kilometers off Thika-Nairobi highway.

3.3   Data collection techniques

3.3.1 Instrumentation

This study was researcher made instrument which was a structured close ended questionnaire that contains level of gender and academic performance in various areas

like attitude, stereotype, resources, teaching methods, teachers qualities. Respondents answered questions quantified into the following;

Strongly agree (you agree with no doubt at all)

Agree (you agree with some doubt)

Disagree (you disagree with some doubt)

Strongly disagree (you disagree with no doubt at all)

The questionnaire was basically selected owing to its advantages over other tools for data collection. It is time saving because it is least involving and hence least expensive. The respondents filled the questionnaires individually without giving their identity; this ensured the data was collected without influence from the researcher.

3.3.2 Reliability of the research instruments

Validity was concerned with establishing whether the content of the instrument was measured, what was supposed to measure. Validity is the degree to which the empirical measure or several measures of the concept accurately measures the concept. Content validity is a non-statistical method which was used to validate the content employed in the questionnaire for the purpose of this study, the content validity of the instruments was obtained though the expert judgment of the supervisor.

3.3.3 Pre-testing of instrument

The piloting of the questionnaire was carried out before the commencement of the actual research work. The questionnaire was piloted in three schools in the zone which was excluded from the actual study. The pilot study gave the researcher an insight on the items that were reconstructed or replaced to obtain the necessary information from the respondents.

Mulusa (1990) suggests that any thank spaces inaccurate response, inconsistencies and other weaknesses noticed during the pre-test, indicate a need to review the suitability of the instrument.

During piloting, the researcher delivered the questionnaires to the schools and with the permission of the head teacher, the researcher left the questionnaire with four teachers who were randomly selected. The researcher collected the completed questionnaires personally after three days for analysis.

3.4 Sample size

This study involved pupils for P8 and P7 and teachers from ten schools. The schools the researcher carried out his study were Garacharage, Ruona, Kamichee, Gathage, Mukuria, Gichagiini, Gitare, Wahu, Githu, Kiangara, Kahiga and Kiguoya.

The respondents were pupils from class seven, class eight and their teachers. Researcher took eight pupils from each class, four boys and four girls. Then two teachers from each school, one female teachers and one male teachers.
The total number of teachers were twenty and eight pupils making a total of twenty eight respondents. All teachers are trained teachers with an experience of handling the subject on the study.

3.5 Sampling technique

The sampling procedure, the researcher used a simple random sampling. The researcher found it convenient for him because of their merits over others. In deciding the sample schools in the zone the researcher used convenient sampling procedure while collecting the data the researcher used convenient sampling procedure while collecting the data the researcher used random sampling procedure for respondents.

The sampling procedures was cost effective and free from biases and the researcher selected the right sample populations to help him to carry out his study.

3.6 Data collection procedure

The researcher developed the instruments from objectives of the study. He obtained a letter of introduction from the university and used this letter a proof that he is a student of Kampala International University. A researcher showed it to the zonal inspector of schools and head teachers of schools of study and then made a programme on when to conduct the study.

3.7 Data analysis

The frequencies and percentages used to describe the profile as to age gender and class.

Formula

$f/n \times 100$

Where f = frequencies

　　　n = Total number

　　　100 = constant

The weighted mean used to determine the gender of performance in science

Formula $\overline{X} = \Sigma x/n$ where X= Mean score

　　　　　　Σx = Summation X

　　　　　　N = Total number of pupils

The obtained data expressed in the following numerical values

4.3-5.0	excellent
3.5-4.2	very good
2.7-3.4	good
1.9-2.6	fair
1.0-1.8	poor

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CHAPTER FOUR

PRESENTATION OF DATA, ANALYSIS, DISCUSSION AND SUMMARY

4.0   Introduction

The purpose of this study was to investigate and examine factors that influence gender on performance in the science subjects in Githumu zone. In this chapter the findings from the data collected is presented, analyzed and interpreted using descriptive method. This study present and discuss the profile of the pupils and teachers as to age, gender and level of teaching performance of science in terms of social influence on gender, differing attitude towards education by gender, teachers attitude influence in science classroom, gender and language use, classroom interaction and participation as influenced by gender, motivation, hidden curriculum and science and learning resources.

4.1   Background characteristics of respondents

The researcher selected 100 pupils from class seven and eight. Fifty of these pupils were girls while boys were also fifty. He categorized the pupils according to their age, gender and their academic level. He collected the data and calculated its frequency and percentage.

Table 2: Shows the profile of pupils.

Category	Frequency	Percentage %
16yrs	8	8
15yrs	16	16
14yrs	36	36
13yrs	40	40
Total	100	100
Gender		
Male	50	50
Female	50	50
Total	100	100
Academic level		
P.7 Female	25	25
" Male	25	25
P.8 Female	25	25
Male	25	25
Total	100	100

Source: Field data

A total of one hundred pupils were included in this study where fifty were male and fifty were female. Their ages were categorized into four, sixteen years old, fifteen years old, fourteen years old and thirteen years old.

8% were sixteen years old, 16% were fifteen years old, 36% were fourteen years old and 40% were thirteen years old. The classes were categorized into two P7 and P8. in each class boys were equal to the number of girls. 50% of respondents were girls from P7 and P8. it implies that there was no gender disparities when responding to researchers questionnaires.

4.1.1 Profile of teachers

Table 3: Shows the profile of teachers according to their gender and professional qualification

Category	Frequency	Percentage
Gender		
Male	18	60
Female	12	40
Total	**30**	**100**
Professional qualification		
BED	1	3.3
SI	3	10
AT III	6	20
AT IV	8	26.7
P1	12	40
Total	**30**	**100**

A total of thirty teachers were sampled out in this study where 18 were male and 12 were female; 60% were male while 40% were female.

According to table 2, teachers were categorized as per their qualifications majority were P1 which was 40%, 26 were categorized as ATIV, 20% were AT III while thirteen percent were BED, SI and SII. It clearly indicates that female teachers do not teach science subject there is also Gender disparities among the teachers.

4.2 Enrolment of learners in Githumu according to Gender

According to Kimalat W (1999), the population profile shows that about 52% of the population was boys. This made the researcher to compare the number of boys and girls as they enroll from class one to class eight.

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Table 4: shows the number of boys and girls as they enroll from class one to class eight

Year	Gender	Total	Percentage
2006	Boys	4536	52.41
	Girls	4090	51.41
2007	Boys	4282	51.97
	Girls	3958	48.03
2008	Boys	4371	50.81
	Girls	4231	49.19

According to the above statistics it clearly indicate that generally boys are enrolled more than girls for the last three years. In 2006 boys were 52.58% girls were 47.41%, the following year boys were 51.97% while girls are 49.19%. Therefore there is a need for a research to investigate the above disparity on gender enrollment and give intervention measures.

4.2.1 Environment of gender in lower, middle and upper classes

Sivingi S (2003) analysis on enrolment of girls and boys for last 5 years, where it indicated that girls enrolment was 48% as compared to boys 51%. This made the researcher to investigate the trend of girls and boys as they progress to the upper classes.

Table 5: Show gender in lower, middle and upper classes

Year	Gender	Lower primary	Upper primary	Total	Percentage
2006	Male	2274	2264	4536	52.59
	Female	2093	1997	4090	47.41
2007	Male	2186	2164	4282	51.97
	Female	1993	1965	3958	48.03
2008	Male	2164	2207	4371	50.81
	Female	2285	1946	4231	49.19

Source: Field data

Table 5 shows the number of girls and boys while they are in lower classes and upper classes. Lower classes are from P1 TO P4 while upper classes are P5 to P8. according to the data tabulated above, it shows that the number of girls who were enrolled in lower classes were more than the ones enrolment in upper classes indicating that some girls drop out of schools as they progress in their higher levels, boys are almost constant indicating that very few boys drop out of school. The number of boys enrolled in class one is almost the same number that complete the primary level of education that is P8. Therefore the researcher has every reason to carry out a study on why the number of girls are more than the boys who drop out of school while they are in the upper classes.

4.3 Degree of attitude of the respondents

Eisen and Plight (1989) say that attitude are born a social product and an intrinsic part of social action in that our attitudes influence how we live.

Wasonga (1997) on the attitude towards science noted that difference in school between boys and girls still exist in access and achievement in the areas of science subjects.

Table 6: Showing degree of attitude of the respondents

Category	Mean	Interpretation	Rank
Social influence on gender performance	1.5	Poor	5
Differing attitude towards education by gender	1.6	Poor	4
Teacher attitude influence in science classroom	1.9	Poor	1
Gender and language use in class	1.8	Fair	2
Hidden curriculum	1.7	Poor	3
Total	**1.7**	**Poor**	**3**

Source: Field data

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Table 6 above shows the level attitude on gender in five categories namely social influence on gender performance, differing attitude towards education by gender, teacher attitude influence in science classroom, gender and language use in class and hidden curriculum.

It shows that majority of attitude were rated poor, social influence on gender performance category had the lowest mean followed by differing attitude towards education by gender hidden curriculum and language use and the highest was teachers attitude influence in science classroom.

The tabulated results showed that the teachers attitude influence in science classroom was rated fair followed by the gender and language use in class, differing attitude towards education by Gender and social influence on gender performance were rated poor. These give the impression that social cultural influence and differing attitude by gender greatly contribute the performance in science Githumu Zone.

4.3.1 Teachers attitude influence Gender in science classroom

From the tabulated table 1.9 fair calculated for teachers attitude towards education by Gender category, we could assume that the science teachers does not consider gender while teaching science in various classes. According to the profile of teachers questionnaire it shows that teachers have low opinion on girls than boys. Majority think that boys can perform better than girls. This is so because they does not involve girls in various classroom activities especially during the provision of learning materials and resources and settings as they thought that girls are weaker than boys, does not encourage interactions, and cooperation, does not associate subject matter to real life situation, does not use learning materials which are locally available to make science subject real, does not involve both gender in real life situation, does not support girls

with learning disabilities therefore making them to have negative attitude towards science.

The profile of teachers shown that even the teachers themselves have negative attitude towards the science as majority of respondent were male teachers indicating that about 40% were female teachers who are teaching science. This problem shows that its background comes from the primary school, tertiary level up to University level.

4.3.2 Gender and language use in class

The calculated mean for the Gender and language use in class category was 1.8 (poor), indicate that the science teacher does not use simple clear and understandable language very well, does not use varied teaching styles to explain content taught very well male teachers generally look upon woman and view them as inferior and not capable of making decision or take up challenges. Many teachers carry this attitude into the classroom, unconsciously or deliberately where they say a thing in a classroom that discourages girls from performing well making them to have negative attitude toward science. It is common for teachers to tell girls that they are not meant to take subjects such as science because they are meant for boys.

Teachers also constantly refer to the girls physical attributes reinforcing the attitude that girls are basically several objects similarly teachers reinforce the masculinity and superiority of the boys by encouraging them not to accept to be beaten academically by the girls.

Constant exposure to such language by the teachers in the classroom perpetuates the traditional superior position of the boys and the inferior one for girls. The made of language used by boys to girls in their respective classroom interaction clearly indicate

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that there is gender disparity among themselves as they thought that they are science oriented as girls are art oriented.

4.3.3 Differing attitude towards education by gender

Differing attitude towards education by gender category was1.6 (poor). We could say that the researcher had noted that differences in school between boys and girls still exist in access and achievement particularly in the areas of science subject. He also noted that the attitude learners hold may have an impact on academic achievement, since the predispositions of the learners are likely to have an impact on the learning process. Teachers fail to counsel female/girls about ability and importance of science as early as lower classes to prevent solidification of stereo typical attitude. According to the respondent it has shown that it is girls attitude that influence their academic performance due to gender stereo type. It is observe that girls performance in science is low as compared to boys though they give equal opportunities but they are not performing well as boys do. They consider themselves academically incompetent while viewing males as academically competent. This attitude has fostered differential performance between boys and girls.

4.3.4 Social influence on Gender

Social influence on gender category was ranked last 1.5 (poor). We could assume that science teachers does not guide pupils on social aspect. It seems that social cultural has greatly influence the gender roles and create gender disparities among the boys and girls as well as community members. At school the researcher has noted that girls are involved in less challenging work especially when providing the learning materials for science. They are also not fully involved in exploiting their resources within their environment. Parents also consider their daughters as more delicate them boys where they less involve them in science oriented activities.

According to the respondent the social aspect both at home and school indicate that girls are discouraged on various aspect of life especially on choosing career, parent encourage girls not to take course which are for boys like Engineer and others which are science oriented. Teachers on the other hand while socialized with girls they also influence their mind by emphasizing on Art subject more than science subjects. They do not property guide them on career which will motivate them to develop positive attitude towards science subjects and material exploration. The researcher has noted that girls do not socially interact well with teachers which may lead them to be passive lacking self confidence and show little interest in the manipulation of material hence the general performance in science is affected.

4.4   Level of academic performance

According to the KNEC analysis of K.C.PE year 2004 and 2007, the performance trend in science by girls remain poor.

Table 7: Level of academic performance

Category	Mean	Interpretation	Rank
Gender and performance in science	1.5	Poor	3
Classroom interaction and participation as influenced by gender	1.7	Poor	1
Science and learning resources	1.6	Poor	2
Total	**1.6**	**Poor**	**2**

Source: Field data

Table 7 shows the level of academic performance in three categories namely; gender and performance in science, classroom interaction and participation as influenced by

gender, science and learning resources. It shows that the academic performance in all level were rated poor. The gender and performance in science category had the lowest mean followed by science and learning resources and classroom interaction and participation as influenced by gender category.

4.4.1 Classroom interaction and participation as influence by Gender
The tabulated results shown that classroom interaction and participation as influenced by gender category was ranked with mean 1.7 (poor) which means that during the science lesson there is poor pupils/teachers relationship which lead to poor classroom interaction among pupils and it seems that boys and girls do not interact and participate in various classroom activities involving working together with each other in classroom or group discussions, manipulation of materials and resources in a free atmosphere. Gender stereo type makes some girls to shy away from boys and are not expected to contribute to discussions during learning process in classroom. They are made to believe that they are not as clever as boys. These influence their academic performance.

4.4.2 Science and learning resources and motivation
The calculated mean for science and learning resources category was rated 2 with mean 1.6 (poor). We could assume that the science teachers did not involve both gender while making models provision of learning materials, provision of simple clear and visible charts and diagrams. Mostly boys are charged with provision of learning materials especially during practical lesson. Girls are not given equal opportunity to manipulate science materials like boys. It seems that engaged in activities that will dim them to be motivated to change their attitude towards science. Girls are not given chance to be responsible for various science equipments. Therefore in calculated the negative attitude towards science by gender. It requires varied teaching and gender. It requires varied teaching and learning resources to enhance its performance as it is a practical oriented discipline. Resources motivates the learners attitude which can be

seen in three way namely language used example given and illustrations used. Pupils thinking, motivation, opinions and attitude can be shaped by the language used while making a resource. This can adversely affects the gender as some of them bring the gender disparities.

4.4.3 Gender performance in science

Gender and performance in science category was ranked 3 with mean of 1.5 (poor). We could say that according to the respondent girls perform poorly in science than boys. For the last three years the statistic shows that science performance has been poorly done as compared to boys. This may be affected by the environmental factors, ineffective usega of learning materials and disabilities in learning facilities.

4.5   Gender and performance as percentage

According to (Eshiwani 1985) stereotypes of males and female characteristics and abilities have tended to prevail the academic performance.

The finding shows that girls perform poorly as the data indicates for the last three years. The performance was below average. In year 2005 they got the mean score of 41.68 while the following year it was 38.92% which was drop as compared to year 2005. It was noted that the science was ranked the lowest among other subjects that year although that year science was done poorly by both gender. In the year 2007 they realize a rise where they scored a mean score of 44.60%. This shows that may be teachers have encourage girls to change the attitude toward science subject. Although it was still below average. Therefore there should be thorough investigation on the reason why girls are not performing well in science subject as boys.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

5.0   Summary of findings

According to the researchers findings and other theorist, there are various factors that influence gender and academic performance in science in Githumu Zone. It is inferred that the social economic factor, attitude, motivation, learning resources, classroom interaction, hidden curriculum, differing attitude to gender and performance in science.

Stereotype has also contributed to the poor performance of gender especially girls as they believe that science is meant for boys. The researcher has noted that attitude and social culture mostly influence the performance of girls in science.

Due to these factors it is also noted that girls thought that science is meant for boys that is why they do not indulge themselves in science manipulative skills, practical activities, discussions and making inferences as they are passive during the science lesson.

According to Eiser (1994) people acquire attitudes through learning with environment and that attitudes are about things that happen in the real world. He noted that attitude have a great role in changing the attitude of gender, social cultural practices in order to improve and intervene on this dismayed result on performance of girls in science.

5.1   Conclusion

Science being a focal subjects, it has revolutionized our life of thinking attitude, outlook and technological advancement in any given society. The effect of science is visible all round us. Science has also brought about a change in such   important aspects as health, communication, transportation, power and agriculture. It can now be said

without any institution that we owe our very existence to science the average span of human life has been doubted.

The gender of learners on their performance in science in Githumu zone showed that girls indeed perform poorly due to the aspect of social influence. Gender and performance in science, differing attitude towards education by gender, teachers attitude towards gender classroom interaction and participation, motivation, gender and language use in class, science and learning resources. All the above were evaluated generally poor. However intervention measures should be taken to alleviate the performance in science as far as gender is concerned.

5.2   Recommendations
The researcher would like to make the following recommendations as per the objectives of the study;
To alleviate the gender disparities, both boys and girls should be guided on the important of science subject as it is the core backbone of the modern technology. Girls should be given equal opportunities to compete with boys write from the primary level.

For school enrolment the parents and community should be encouraged to enroll more girls in primary level where they will acquire knowledge and exposed to science oriented subject which will help them to compete with boys in their future career opportunities. The school should give a conducive environment for the girls so that they may complete their education from P1 to P8 as the statistic shown that some girls drop out of school while they are P6, P7 and P8 due to early marriages, pregnancy and moral decay.

For social cultural practices that affects the performance of learners in the science by gender, the teachers and stakeholders should be changed with responsibilities to

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educate the parents and responsibilities to educate the parents and entire communities the importance of educating a girl child. They should be educated on the changes in the modern world as far as the education is concerned. They should change the behavior and cultural practices that hinders the education of girls. Parents should be encouraged to take their children both girls and boys to school when they are of age and be made aware of the outdated cultural practices such as F.G.M female genital mutation early marriages for better health and enhance better performance for girls.

For better performance in science the girls should be encouraged to work hard and strive to excel in learning, participate in science activities, discussion assignment display good behavior and be focused in academic achievement.

To improve on attitude teachers and counselors should counsel girls about ability and importance of science as early as lower primary to prevent further solidification of stereo typical attitudes. To institute remedial classes for girl's especially in topics which they find difficult; Design intervention programmes to change girls attitude by exposing girls as early as possible to non-traditional careers. Choose and use books that are gender positive that is those with illustrations that are not gender biased, expose girls a conducive learning atmosphere where they interact with science materials.

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APPENDICES

Appendix A: Questionnaires for teachers

Assess the attitude of your science learners towards the subject is it very positive, negative or very negative?

....

....

Do your learners often come for assistance in their science problem?

Agree   ☐   Disagree   ☐

How often do you complete science syllabus for each class?

....

....

In your opinion, does the gender of your pupils determine their performance in science?

Do you give equal opportunity to both boys and girls in science learning activities?

....

....

Mention some gender factors that affect the performance of science in your school

According to your opinion does cultural practice, influence gender performance in your subject?

....

....

When you ask for science materials, who readily provides them?

Agree   ☐   Disagree   ☐   Not sure   ☐

How can science teacher help girls to overcome learning difficulties in science? State three ways

....

....

....

Lack of adequate learning materials contributed to poor academic performance?

Agree ☐   Disagree ☐   Not sure ☐

What strategies have you employed to develop gender attitude in order to improve their academic performance?

....

....

....

Does the community, stakeholders, NGOs helps to improve the gender and academic performance in your school?

Agree ☐   Disagree ☐   Not sure ☐