

**DETERMINANT OF PERFORMANCE IN MATHEMATICS
AMONG GIRLS IN PUBLIC PRIMARY SCHOOLS IN ISINYA
SUB-COUNTY, KAJIADO COUNTY KENYA**

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DECLARATION

Declaration by the Student

This research thesis is my original work and has never been presented in any other university.

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DEDICATION

First to I dedicate this thesis to God who has guided throughout this process. I would also want to dedicate to my husband Mr. Anthony Gikandi, my daughter Cicilia Muthoni, my sons, Benedict Murithi and Benson Ngari and my grandson Alban Muriuki for their encouragement and prayers . Plus all my parents, brothers and sisters.

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LIST OF ABBREVIATIONS AND ACRONYMS

KCPE	Kenya Certificate of Primary Education
KNBS	Kenya National Bureau of Statistics
NACOSTI	National Commission for Science, Technology and Innovation
SPSS	Statistical Package for Social Sciences
UNESCO	United Nations Environmental, Social and Cultural Organization
USA	United States of America
SD	Standard Deviation
FPE	Free Primary Education

ABSTRACT

Mathematics is very important in various fields covering a wide range of academic activities undertaken by pupils in primary schools. It forms a solid foundation for future academic success. However, in Isinya Sub- County, it has been noted that girls have been attaining low scores in mathematics in Kenya Certificate of Primary Education over the years. The purpose of this study was to assess the factors influencing the performance in mathematics amongst girls. The study sought to determine the extent to which teacher factors, girl factors, and school factors influence girls' mathematics performance. The study was driven by the academic achievement theory and the dynamic theory of school variables. The study employed both quantitative and qualitative methodologies and the target population consisted of 33 head teachers, 80 mathematics teachers, and 325 seventh-grade girls, totaling 438 respondents, from whom a sample of 208 was drawn by use of Yamane's Formula. Questionnaires and interview guides were used as data collection instruments. The qualitative data was subjected to theme analysis and afterwards presented in a narrative format, aligning with the stated objectives. The quantitative data was subjected to descriptive analysis, employing measures such as frequencies, percentages, mean, and standard deviation. Additionally, inferential analysis was conducted using Statistical Packages for Social Science (SPSS Version 23). The research permit to collect the data was also being sought through an application at NACOSTI. The researcher later sought consent to collect data from the Kajiado County Research Board. The study established that teacher related factors such as experience, education, competency, organization all affect the performance of girls in mathematics subject, Girls showed negative attitude towards mathematics which has not improved mathematics' performance, peer pressure is detrimental to girl's math's achievement because clever girls were indirectly demotivated and absorbed in popular misinformed cliques. This implied that girls might consciously hide or distort their math's performance capabilities (potential) or results to fit-in their friends' opinions. Most of the schools in Isinya Sub County had no conducive facilities to enhance performance of girls in mathematics, some schools in Isinya Sub County were understaffed, most school lacked teaching aids, and some of the school did not have basis infrastructure facilities such as quality classrooms or sufficient water source. This study concludes that teacher related factors, school factors and girls' factors affects the performance in mathematics amongst girls in Isinya Sub-County. In order to enhance the academic achievement of female students in mathematic subject, the following measures needed to be developed and effected. The study recommended that there is need to improvise measures that enhance teacher capacity for teaching efficiency, the government, school management and other stake holders such as parents and advocacy organization needs to come up with multidimensional approach measures that would work towards transforming girls identity and value and that there was need for multiple efforts from government, school administration and parents to provide necessary resources that enhance quality learning and good environment for girls to excel in mathematic.

CHAPTER ONE

INTRODUCTION

This section discusses the study's context, the research problem, the research's purpose, aims, study queries, meaning, expectations, limits, and demarcations, and also the study's scope. Additionally, it includes a glossary of terms with their operational definitions.

1.1 Background to the Study

Mathematics is among the subjects taught in primary schools that is used in a variety of fields and covers a large range of activities. According to Singh et al. (2012), in Portugal providing learners with a strong basis in initial math learning is vital to their forthcoming theoretical achievement, not to reference to their daily functioning. This is especially true, according to Singh et al (2012), considering the rising hassles of the mathematics program in primary schools now. This confirms that if a learner joins primary school, it is predictable that primary school mathematics will receive more attention in mathematic. The drop in females' mathematical achievement, on the other hand, is a cause for concern.

Globally a study by Skipp and Dommett (2021) revealed that girls outperformed boys in Finland, but in most countries, including the United Kingdom (UK), boys outperformed girls. Moreover, within the UK, the gender gap was greater than for all countries that outperformed the UK. In the UK, teacher autonomy has gradually declined with the rise of neoliberalism, which has meant that for maintained schools, the government no longer offers a broad advisory outline of what they should teach but instead creates detailed unit plans, covering all aspects of the curriculum. This is accompanied with targets that teachers should look to address in each lessons. Consequently, a lack of autonomy for UK teachers can result in a shortage of experienced teachers in the state school sector, which may explain their lower mathematics score.

The socioeconomic background of a student can have a significant impact on their performance in mathematics. Girls from economically disadvantaged backgrounds may face challenges such as limited access to educational resources, lack of proper study environments, and financial constraints that can affect their performance.

Societal stereotypes and biases can influence girls' perception of their abilities in mathematics. Negative stereotypes and biases suggest that mathematics is a subject for boys can lead to self-doubt and reduced confidence among girls, affecting their performance (Casad et al., 2017) in Mexico New York.

The quality of teachers and their teaching methods can greatly influence girls' performance in mathematics. Teachers who provide engaging and supportive learning environments, use effective teaching strategies, and address individual learning needs can positively impact girls' performance. Parental involvement and support play a crucial role in girls' academic performance, including mathematics. Parents who actively engage with their daughters' education, provide encouragement, and support their learning at home can contribute to improved performance (Bages et al., 2016)

Availability and access to quality educational resources, including textbooks, reference materials, technology, and teaching aids, can affect girls' performance in mathematics. Limited access to these resources can hinder their learning and understanding of mathematical concepts. Peer influence and the classroom environment can also impact girls' performance in mathematics (Bages et al., 2016). Positive peer relationships, collaborative learning opportunities, and supportive classroom dynamics can foster a conducive learning environment that enhances performance. Cultural and societal factors, such as traditional gender roles, cultural expectations, and societal norms, can influence girls' performance in mathematics. Overcoming these barriers and promoting a more inclusive and equitable educational system can contribute to improved performance (McCoy et al., 2022).

In India, Fraser and Kahle (2014) assert that many girls in primary schools manifest a decline in mathematics concepts often presented in their test scores. In New York, McCaffrey et al. (2010) also assert that teachers are key to girls' performance in mathematics. According to McCaffrey et al (2010), teachers' efficacy and beliefs helps girls' academic growth. Teachers' effort in education, the aim they set for their lessons, and their degree of ambition are influenced by their level of education, teaching strategies, socialization, efficacy, and preparedness, and educators with a healthy sense of effectiveness frequently show better heights of preparation. Teachers are also additionally receptive to fresh philosophies and are more willing to try out

fresh approaches and policies in order to well address the requirements of girls in mathematics.

In the realm of educational gender disparities, South Asia emerges as the region where girls' education significantly lags behind that of boys, second only to Sub-Saharan Africa. Moreover, there exists a notable variation in primary-level enrollment rates between genders, with disparities ranging from 15% to 50 percentage points. According to Khan (2021), post-primary education in South Asia exhibits the most pronounced gender disparity among regions classified as third world. Attendance rates for boys and girls at schools exhibit significant disparities, with approximately one-third of males attending school compared to only one-fifth of girls attending secondary school. This discrepancy can be attributed to the combined impact of disadvantages experienced by girls at the primary level and their elevated rates of discontinuing education. However, it is important to note that there is a limited availability of data on this specific subject (Davidson et al., 2018).

Notwithstanding the significance of discovering remarkable elements that forecast teacher achievement, researchers and educators have had trouble distinguishing precise factors. There is minimal evidence that a girl's academic background and readiness can predict her math performance. McCaffrey et al (2010) also posit that besides teacher factors, school factors such as availability of physical facilities including libraries, conducive classrooms, laboratories and other forms of school infrastructure used for instructional purpose also affect mathematic performance.

In Austria, Habyarimana (2011) claims that educational facilities like libraries, resource centers, and classrooms have a good and significant impact on girls' mathematics performance. According to Darling-Hammond (2010), most of the conversation concerning science and mathematics schooling among girls, and also the need for instructors who are knowledgeable in these subjects, has attentive on high school students and teachers. It's a different story when it comes to evaluating the readiness of fully credentialed multiple-subject teachers to teach mathematics to female students in primary schools.

Rose (2008) claims that researchers in Ireland are increasingly able to discriminate mathematics instructional tactics based on the developmental levels of female students. This necessitates a comprehensive rethinking of the nature of the

mathematics teacher's role in boosting the capacity and willingness of girls to learn mathematics in the Irish environment. According to Chen and Li (2014), primary school females demonstrate numerical competence nearly from the moment they are born, with some demonstrating the ability to do fundamental operations. These talents show that number is an important part of the world that girls are familiar with. In support of these claims, De Smedt et al. (2013) conducted a study in Kuala Lumpur that found that most of what primary school girls know about numbers is linked to their developing comprehension and mastery of mathematical concepts. According to De Smedt et al. (2013), number including a set of items is a difficult activity that requires thinking, vision, and movement, with much of the complexity concealed by familiarity.

In Sub-Saharan Africa, according to Amarel (2008), most studies evaluating teachers' mathematical proficiency have concentrated on gauging educators' opinions of their own readiness deprived of a comparison investigation of other subtleties such as school and family participation elements, as well as females' mathematics achievement. According to Umameh (2011), mathematics is a subject that is taught as a required subject in Nigerian primary schools. Conferring to Umameh (2011), math is the backbone and a vital instrument for any country's scientific, technological, and financial growth. Similarly, Davies and Hersh (2012) see math as a vital topic not just for obtaining an academic certificate in high school or college. Though, it is discouraging to observe that, despite the position of math in Nigeria's educational arrangement, poor results have been registered in recent public examinations. According to Mefor (2014) in Nigeria performance in mathematics, especially amongst the girls in primary schools in internal and national examinations is low. A significant proportion of the African population lacks sufficient access to educational opportunities. The provision of educational opportunities enables the education of girls (Alabi, 2014).

Similarly, Mutehi (2013) in his comparison on Mathematics performance and other subjects in Uganda noted there was poor performance in comparison to other subjects. According to Kisakali et al. (2015) in Uganda studied teacher contribution to learner-teachers' expectation on learners Mathematics competence to ascertain the linkage between those expectations and the learners performance.

It is widely acknowledged that many governments allocate resources to provide education to their respective populations. However, it is frequently observed that these regulations do not adequately consider the unique circumstances and needs of female children (Aduda, 2003). In the context of Kenya, it is possible that female children may encounter barriers that hinder their access to education, thus impeding their enjoyment of a fundamental human right. According to Wanjiru (2015), several issues hinder children's access to education, including child labor, poverty, and lack of sponsorship, pursuit of wealth, grief, truancy, broken homes, and the engagement of children as domestic helpers.

The World Bank's 2018 report revealed that a significant proportion of Africa's population, specifically over half, amounting to more than 350 million individuals, lives below the poverty threshold of one US dollar per day. This suggests that poverty acts as a barrier, particularly for girls, preventing them from accessing education. Enrollment rates and literacy levels in primary schools in Africa are among the lowest globally. According to a 2020 report by the United States Agency for International Development (USAID), there exists a significant educational disparity in sub-Saharan Africa, with an estimated 42 million school-age children not enrolled in formal educational institutions. A significant number of youngsters face financial constraints that hinder their access to basic education.

Over the Ministry of Education in Kenya, the government encourages girls to pursue education, which is entrenched in the Basic Education Act of 2013, which requires the management to provide basic learning infrastructure, including as school amenities, play resources reserve hubs, instructional resources, and competent staff, as well as qualified personnel (Republic of Kenya, 2015). Despite these measures, though, Kwamboka (2012) reports that girls' math proficiency is seriously low. A report by Kenya National Examination Council (2020) shows how girls have been registering a decreasing trend in their performance in mathematics shown in Table 1.1

Table 1.1.**Mathematics' Performance in KCPE among Girls in Kenya**

Year of KCPE	Mathematics' Performance among Girls (%)
2016	38.18
2017	42.35
2018	48.74
2019	46.57
2020	39.23

Source: KNEC (2020)

Despite the importance of mathematics in any county's technical progress, poor performance by primary school girls in mathematics remains a recurrent problem in many of the county's schools (Uwezo, 2010). According to a survey published by KNEC (2017) to track learners' math achievement, 62 percent of girls in Kajiado County were unable to solve math questions. Similarly, according to a study done by Uwezo (2010), seven in ten girls in class VII were unable to complete class IV mathematical exercises.

Uwezo (2010) also discovered that 60% of girls in public primary schools in Kajiado County lack basic mathematical skills, with 34% of the girls unable to do simple activities that demonstrate basic mathematical understanding. This shows that, despite the value placed on girls' mathematical achievement by Kenyan society, girls' mathematics performance continues to worsen. Isinya Sub-county is no different, with many girls receiving poor arithmetic grades.

A Ministry of Education survey (MOE, 2020) indicates in Isinya Sub-county, girls are manifesting a downward trend in mathematics' achievement shown in Table 1.2.as compared to boys in table 1.3.

Table 1.2.**Mathematics' Performance in KCPE among Girls in Isinya Sub- County**

Year of KCPE	Mathematics' Performance Among Girls (%)
2016	30.13
2017	29.10
2018	28.61
2019	27.81
2020	26.03

Table 1. 3.

Mathematic Performance in KCPE among boys in Isinya Sub-county

<i>Year of KCPE</i>	<i>Mathematics' Performance Amongst boys (%)</i>
2016	40.85
2017	41.24
2018	43.52
2019	41.93
2020	42.87

Source: KNEC (2020)

Despite these figures, few empirical research has looked at the factors that contribute to girls' poor mathematic performance, necessitating this study.

1.2 Statement of the Problem

This study seeks to address the poor performance by girls in' Mathematics in public primary schools in Isinya sub-county. Mathematic is very significant in various fields and covers a wide range of academic activities undertaken by students in primary schools. It forms a solid foundation for future academic success. Salau (2014) noted that there was a significant relationship between achievement in Mathematics and sciences. Salau (2014) further noted that Mathematics is regarded as a science and that there is a relationship between Mathematics and students' overall ability outcomes. However, Salau never looked at learner factors like attitude and peer influence, teacher factors like educational level, teaching experience and classroom management which can also affect learner performance. Nalianya (2017) noted that in the Kenyan education system, Mathematics is taken as a compulsory subject by all learners in secondary schools. Thus it is imperative for learners to post better results in the subject as it affects the final score or grade. However, though a compulsory subject, Mathematics performance in the national examinations has not been admirable. Nalianya (2017) also focused on Kenyan education system, this study while this focus is on Mathematics performance in girls.

Despite the recognized significance of mathematics and the prioritization shown in policies and educational curricula, the academic achievement in mathematics among

female students in Kenya has consistently lagged below that of their male counterparts (Kisakali et al., 2015). The situation is worse among girls in Isinya Sub-County, with many of them receiving low academic grades in national mathematics examinations. Referring to a statistics published by the MOE (2020), girls in Isinya Sub- County scored a dismal 30.13 percent in mathematics in the 2016 KCPE, 29.10 percent in 2017, 27.81 percent in 2017, and 26.03 percent in 2020. There are research gaps. For example, Salau never looked at learner factors like attitude and peer influence, teacher factors like educational level, teaching experience and classroom management which can also affect learner performance. Efforts to address these issues haven't achieved much in the way of notable results. Notwithstanding these figures, few experimental studies have looked at the factors that affect girls' mathematic performance, this has necessitated this research which aims to fill the existing aforementioned research gaps

1.3 Purpose of the Study

The research measured the determinants of performance in mathematics among girls in public primary schools in Isinya Sub-county.

1.4 Objectives of the Study

The research was guided by the following objectives:

1. Establish the effect of teacher factors on performance in mathematics amongst girls in Isinya Sub- County; Kenya.
2. Determine the degree to which girls' factors affect performance in mathematics amongst girls in Isinya Sub-County; Kenya.
3. To establish how school factors, affect performance in mathematics amongst girls in Isinya Sub- County. Kenya.

1.5 Research Questions

The research was guided by the subsequent study queries:

What is the effect of teachers' factors on performance in mathematics amongst girls in Isinya Sub- County?

To what extent do girls' factors affect performance in mathematics amongst girls in Isinya Sub- County?

How do school factors affect performance in mathematics amongst girls in Isinya Sub- County?

1.6 Significance of the Study

Mathematics performance of girls in primary institutes in Isinya Sub- County is poor. The findings of this study may help school front-runners and teachers understand the underlying factors of low academic score in mathematics among girls in public primary institutes. The conclusions of the research might be used as a guide for head teachers in terms of management abilities, which could result to an enhancement in girls' mathematics performance in equally internal and national exams. Teachers might profit from this research since it provides them a better knowledge of their level of readiness to impart arithmetic to girls. This study may benefit girls in primary schools by improving the quality of mathematics instruction, which in turn may increase their performance in mathematics on national exams. Academicians and scholars might profit from the research because the findings might serve as a foundation for additional study in a related topic.

1.7 Limitations of the Study

The research's sampled respondents may not represent the whole population of students in Isinya Sub-County's public primary schools. The scholar guaranteed that the model is as illustrative as feasible in this circumstance. The results of this research might not be applied to other primary institutes external of Isinya Sub- County because there may be additional factors influencing girls' mathematics performance in addition to the ones studied. In this situation, the researcher suggested that more studies on the performance of girls in mathematics be done, but with a different focus on different dynamics. Some respondents, particularly mathematics instructors, may

be hesitant to disclose accurate and personal information because of the subtle topic of the study. In this situation, the researcher clarifies that the research is meant to supplement their efforts to increase girls' mathematic skills.

1.8 Delimitations of the Study

This research was led in public primary institutes in Isinya Sub- County. The research emphasizes on the teacher factors, girl factors and school factors as the key determinants of performance in mathematics amongst girls. The information for this study was gathered from head teachers, mathematics teachers as well as class seven learners. It was planned to use a mixed methodologies approach, which included the use of a simultaneous triangulation research design. To collect quantitative information from mathematics instructors, surveys were utilized. To gather qualitative information from head educators and girls, an interview guide was applied. It is anticipated that the research was to be completed amid June and December of 2022.

1.9 Assumptions of the Study

It was assumed that the issue of poor math's performance among girls in public primary schools in Isinya Sub- County, Kajiado County was an issue of concern which needed to be investigated. It is also assumed that there are different factors which determined performance of girls in mathematics such as teacher factors, girls' factors and school factors. It was assumed that respondents were co-operative throughout the research and delivered accurate information. It was assumed that the necessary approval to gather information from the organization would be acquired

1.10 Justification of the study

Education is of utmost importance in developing the human capital required for a nation's economic advancements (United Nations Educational, Scientific, and Cultural Organization [UNESCO], 2019). Mathematics is generally viewed as a difficult subject and more so to girls. While gender choices are made freely today, inequity remains in science and mathematics occupations, healthcare and technology. Mainstreaming the gender perspective at all levels of policy is one aspect of efficiently enhancing gender equality Organization for Economic Cooperation and Development [OECD, 2015]. The underachievement in mathematics significantly diminishes the opportunities and aspirations of numerous students to

pursue higher education. This is mostly due to the fact that a majority of higher education programs necessitate a minimum grade of seven out of twelve, equivalent to a C+, in mathematics for enrollment in any discipline. The academic achievement of female students in mathematics within public primary schools in Isinya Sub-County, located in Kajiado County, Kenya, has been a subject of ongoing concern.

This is because Mathematics performance in Kajiado County has been below the national average in the country over the years from the year 2016 to 2020. In the year 2016, the performance was 30.13% compared to the national average at 38.18% while in the year 2020 it was at 26.03% compared to the national average at 39.23%. Despite the issue of performance, few studies have been conducted to address the issue of math's performance of girls in public primary schools and in specific to Isinya Sub- County, Kajiado County

1.11. Operation definition of terms.

Determinants: are a set of factors or dynamics which are essential in the performance of girls in mathematics. These include; teacher factors, parental involvement and school factors. **Dependent Variable:**

A dependent variable is the variable that changes as a result of the independent variable manipulation. It's the outcome you're interested in measuring and it depends on your independent variable.

Education Policies: Education policies encompass a set of regulations designed to facilitate the effective, equitable, and secure instruction of students within educational institutions, in accordance with the prescribed standards and guidelines established by the governing body with which the school is associated.

Head Teachers' Management Styles: This is the specific approach that managers employ to achieve these objectives. This comprises the cognitive processes involved in decision-making, the strategic planning and organizational skills employed, and the manner in which authority is exercised.

Girls' Factors: Set of features which girls possess and could determine their mathematics' performance. They include attitude towards mathematic, peer pressure, motivation and self –concept.

Independent Variable: An independent variable is the variable you manipulate or vary in an experimental study to explore its effects. It's called independent because it's not influenced by any other variables in the study.

Girls' Performance: Marks that are attained by girls in public primary schools which are measured and determined in mean scores.

Intervening Variable: This elucidates the link between two distinct variables, typically denoted as the predictor variable and the outcome variable.

Mathematics: This is a subject in the primary school curriculum that deals with numbers and how they are related to each other and to the real world so as to enhance creative thinking and problem-solving ability.

Public Primary Schools: These are educational institutions that are owned and operated by the government. They serve as the initial stage of formal education, commonly referred to as primary education. Secondary education typically follows primary education.

School Factors: Environment in which girls in public school learn mathematics and which is a determinant to their performance. It includes; Conducive physical facilities, availability of resources, school culture and development of reward schemes.

Teacher Factors: Characteristics of mathematics teachers in order to be effective in improving the performance of girls' in mathematics. They include education level, teacher's experience and attitude to learner ability.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section review the theoretical framework and the empirical literature review focusing on the influence of teacher factors, girls' factors and school factors on performance in mathematics amongst girls. It also includes a synopsis of the literature, as well as a list of the gaps discovered throughout the review.

2.2 Empirical Literature Review

Empirical literature was reviewed founded on the idea of girls' performance in mathematics and the influence of teacher aspects, girls' factors and institute factors on performance in mathematics amid girls in civic primary institutes.

2.3. The Concept of Girls' Performance in Mathematics

Primary school mathematics abilities are meant to give girls the foundation they need to excel in primary school and beyond. Teachers should focus courses in primary school on basic abilities that will lead to advanced mathematics in high school and college, according to Anobile et al. (2012). Girls lay the groundwork for future life skills from primary school to the end of their college studies (Anobile et al, 2012). Ordering, geometry, and performing basic operations are examples of principles taught in primary schools. Anobile et al (2012), on the other hand, claim that mathematical challenges are common among primary school girls.

The notion of girls' success in mathematics pertains to the scholastic accomplishments and aptitude exhibited by female students in the field of mathematics. It encompasses their abilities, skills, understanding, and outcomes in mathematical learning and problem-solving. The performance of girls in mathematics can be measured through various indicators, such as test scores, grades, class participation, completion of mathematical tasks, and overall mathematical achievement. It provides insights into how well girls are mastering mathematical concepts, applying mathematical reasoning, and performing in mathematical assessments (Samuelsson & Samuelsson, 2016).

The concept of girls' performance in mathematics is influenced by various factors, including individual abilities, instructional practices, societal norms and expectations, and the learning environment. Understanding and addressing these factors can help promote equitable opportunities and support for girls in mathematics education. Importantly, the concept of girls' performance in mathematics should be approached with a focus on gender equity. Historically, there have been gender disparities in mathematics education, with girls facing various barriers and stereotypes that can affect their confidence and engagement in the subject. Efforts to enhance girls' performance in mathematics aim to challenge these stereotypes, promote gender equality, and create inclusive learning environments where girls can thrive (Tiedemann, 2018).

To support girls' performance in mathematics, it is essential to foster a positive mindset, promote self-belief, and cultivate an interest in mathematics from an early age. Providing quality instruction, utilizing effective teaching strategies, addressing individual learning needs, and encouraging girls' active participation are key elements in promoting their mathematical performance. Additionally, creating a supportive and inclusive classroom environment that values diversity, offers opportunities for collaboration, and encourages girls' voices and contributions can positively impact their performance in mathematics. By recognizing the unique challenges and strengths of girls in mathematics education, educators, policymakers, and society as a whole can work together to empower girls and ensure their equitable access to quality mathematics education, ultimately fostering their success and advancement in this critical field (Manger & Eikeland, 2018).

Teachers make primary schooling a little easier for girls by introducing them to primary school mathematics, (Blair & Razza 2007), and introducing mathematical ideas to young girls should be as early as possible, ideally when they are three years old. Girls must learn to count forwards and backwards from a young age if they are to understand the relationship between numbers in their future lives. However, a gap exists as the study was in the global context and thus the context of girls' performance in mathematics in public primary schools may be different from Kenya.

In a similar study, Vein et al. (2014) declare that by concentrating on number intellect, Chinese mathematics educators are imparting mathematical talents that will

be essential for new ideas and complex computations in the future. Female students in primary and secondary schools often struggle with mathematics, which requires knowledge of a symbolic system as well as fluency with a complex set of actions that demand aiming at matters and identifying them with signs in order to solve problems (De Smelt et al, 2013). Girls must also learn that some components of counting are purely traditional, while others are essential to its mathematical utility. However, there is a gap as the study was in the global context and thus the context of girls' performance in mathematics in public primary schools may be different from Kenya.

In the preceding six decades, notable advancements have been observed in the collegiate readiness of female students, resulting in a significant transformation of the gender disparity in higher education. According to the findings of Goldin and McClintock (2019), it has been observed that female high school students currently exhibit superior academic performance compared to their male counterparts across several areas, with a notable emphasis on verbal exam scores. The proportion of male college graduates has experienced a decline and subsequent reversal, resulting in females being the majority of college graduates. However, the study features global context and thus not on the context of girls' performance in mathematics and thus the gap the current study seeks to fill.

Mathematics serves as a fundamental prerequisite for admission into esteemed academic programs, including but not limited to medicine, architecture, and engineering, among various other undergraduate degree programs. The performance of female students in mathematics in Kenyan national examinations has been subpar, despite the significant societal importance of the subject (Aduda, 2018). There are multiple factors that have been ascribed to inadequate performance in mathematics, including ineffective teaching methods (Harbour-Peters, 2021), diminished interest in mathematics (Festus & Kurumeh, 2015), and insufficient availability of suitable instructional materials for mathematics education across all educational levels (Gambari, 2015).

Ale (2021) conducted a study investigating the factors contributing to the inadequate development of numerical abilities among students in Nigeria. From the research discoverers, the Ale attributed poor mathematic performances to shortages of qualified teachers, inexperienced teachers. This study only forecast on learners'

performance in general, however the current study will separate the study group and limits its scope on girl's performance mathematics subject.

The gender disparity in the field of mathematics has undergone transformation. There has been an observed increase in the enrollment of female high school students in mathematics and science courses. Consequently, the mean and standard deviation of performance on mathematics exam scores among females have seen a marginal increase, resulting in a modest disparity when compared to their male counterparts. Hedges and Nowell (2015) demonstrated that there exists a notable disparity between boys and girls in terms of their performance in the positive tail of the normal distribution curve, despite slight variations in mean performance.

The existence of a gender disparity has been well-documented across various mathematics assessments, such as the calculus test, the mathematics SAT, and the quantitative section of the Graduate Record Exam (GRE). According to Xie and Shauman (2013), there has been a consistent ratio of two males to one female among those who achieve scores in the top five percent in high school mathematics over the last two decades. In a study conducted by Ellison and Swanson (2016), an investigation was conducted on students who achieved a perfect score of 800 on the mathematics SAT in the year 2007. The findings of the study revealed a male-female ratio of two to one.

In certain regions of Ethiopia, girls are occasionally subjected to abduction for the purpose of marriage at an age as young as eight years old. In the West African region, individuals from impoverished rural households are often enlisted to serve as domestic workers inside coastal urban centers or even in adjacent nations. Finding domestic help in Nigeria has become increasingly challenging in recent times. This phenomenon can be attributed to the heightened recognition of the significance of education, resulting in a decline in the practice of parents employing their children as domestic workers. During his tenure as the Minister of Education and Executive Governor of Ebonyi state, His Excellency implemented measures to address the issue of parents using their children as domestic assistance, with a particular focus on the girl-child. According to a recent report published by Human Rights Watch, the Republic of South Africa is currently facing a significant challenge in ensuring girls' access to school due to the prevalence of sexual violence and abuse. Under the

dictatorship of the Taliban in Afghanistan, individuals have been effectively prohibited from accessing educational institutions.

Guttman, a journalist for UNESCO Courier, posits that prevailing norms, impoverished conditions, pervasive fear, and endemic violence contribute to the disproportionate representation of females, constituting 60% of the estimated 113 million out-of-school children. Moreover, the majority of these girls reside in the regions of sub-Saharan Africa and South Asia.

The utilization of mathematics in diverse domains such as science, economics, and other disciplines spans across the entirety of human knowledge. Despite the broad scope and significance of mathematics, a considerable number of female students continue to face obstacles that hinder their progress in the field. The survey undertaken in 2019 by the MOE, (2019) in eleven African countries, including Malawi, unveiled a significant deficiency in numeracy skills across the surveyed nations. According to the MOE (2019), the numeracy level was not attained by any of the countries that was set as a target during the international conference held in Jomtieme, Thailand, in 1990.

Mathematics skills score well among nations in Sub-Saharan Africa as compared to other corrections in primary schools, and any pupil who excels in such services is considered to have excellent reasoning talents. According to Ojedapo et al. (2014), a primary school student who achieves a score of 75.0 percent or higher on any mathematical test is deemed exceptional in mathematics. Despite these findings, Ojedapo et al. (2014) suggest that many primary school girls have developed math skills. This is in line with Fuhs and McNeil's (2013) statement that primary school mathematics instruction should emphasize portraying numbers with objects, drawings, or even family members. For example, photographs of apples or beloved fruits might be used to assist females grasp that the number corresponds the items portrayed when learning the basics of counting. However, a gap exists in (Ojedapo et al. 2014 ; Fuhs and McNeil's 2013) studies as their focus was in the global context and didn't indicate the determinants of mathematics performance amongst girls.

Teaching through representation or visuals, according to Fuhs and McNeil (2013), will assist girls to create links between the real world and the mathematics skills that are critical for academic achievement. Girls may become perplexed by classroom

learning if they do not make a connection between life and arithmetic. Although less research has been conducted on additional criteria examined in this study, numerous studies have consistently identified slight gender disparities in the attribution patterns of students regarding their performance in Mathematics.

According to Bar-Tal (2020), male students tend to ascribe their achievements in Mathematics to stable elements such as problem difficulty or innate aptitude, but female students tend to attribute their triumphs to unstable factors such as effort, luck, and the quality of their teacher. Despite these claims, few empirical studies have looked into the underlying factors that contribute to girls' poor math performance. Teacher factors, girl factors, parental factors, and school factors are examples of such determinants. Mathematics abilities are essential for every primary school girl's academic achievement. In Isinya Sub-County. Primary school girls, on the other hand, perform poorly in mathematics. According to a study published by the Ministry of Education in 2020, girls in Isinya Sub- County scored 30.13 percent in mathematics in the 2016 KCPE, 29.1 percent in 2017, 28.61 percent in 2018, 27.8 in 2019 and 26.03 percent in 2020. However, more study is wanted to identify the degree to which diverse factors influence females' mathematics presentation in KCPE in civic primary institutes.

2.4. Teacher Factors and Performance of Mathematics amongst Girls

Teachers have an important impact on the achievement of girls in primary institutes when it comes to mathematics. The enormous effect that mathematics educators can have both in inspiring additional females to perform better in mathematics in school and in enhancing knowledge results is a frequent theme that arises from the works on girls' teaching. However, according to Moore (2008), a major setback in the performance of girls in mathematics is the problem of unqualified, competent, experienced mathematics' teachers with positive attitude towards girls' capabilities in solving tasks in mathematics.

Effective teaching practices can have a significant impact on girls' 'performance in mathematics. Teachers who use engaging and interactive teaching methods, provide clear explanations, promote active participation, and use real-life examples can enhance girls' understanding and interest in the subject including mathematics. Teachers' expectations and biases, whether conscious or unconscious, can shape girls'

performance in mathematics. Positive teacher expectations can motivate girls to excel, while negative biases or stereotypes can lead to lower expectations and hinder their mathematics performance. Teachers should be mindful of these biases and strive for equitable treatment and encouragement for all students (Mazana et al., 2020).

Recognizing and addressing the diverse learning needs of girls in mathematics is essential. Teachers who provide differentiated instruction and support, consider girls' strengths and weaknesses, and offer additional assistance when needed can positively impact their performance. The classroom environment plays a significant role in girls' performance. Teachers who create a supportive, inclusive, and safe learning environment where girls feel comfortable to ask questions, participate actively, and take risks are more likely to foster their confidence and engagement in mathematics (Bevan, 2021).

Adopting gender-responsive teaching practices can contribute to improved performance among girls in mathematics. This approach involves recognizing and addressing gender-related factors that may impact girls' learning experiences, such as providing gender-inclusive examples, offering diverse role models, and challenging gender stereotypes in the classroom. Teachers who engage in ongoing professional development in mathematics education can enhance their knowledge, skills, and pedagogical approaches. Staying up-to-date with effective teaching strategies and incorporating evidence-based practices can positively impact girls' performance (Musau et al., 2013).

Collaboration between teachers, parents, and the community can contribute to girls' performance in mathematics. Effective communication, involving parents in their daughters' mathematics education, and seeking their support and involvement can create a strong support system that reinforces learning both at school and at home. By recognizing the influence of teacher factors on girls' performance in mathematics and implementing strategies that address these factors, educators can create an inclusive and supportive learning environment that empowers girls to excel in mathematics (Abdulai, 2023).

To back up these claims, Stacki (2002) discovered that educators' gender had an impact on other actions of student engagement, like educator insights of student skill and girls' engagement with mathematics teachers, which was even better than the

consequence on attainment. In a study conducted in the United States, if mathematics was trained by a lady educator, female students were more probable to like learning mathematics, to feel more comfortable asking questions, and to believe that mathematics would be important in their future (Stacki, 2002). However, a gap exists as the study was in the global context and thus the teachers' factors affecting girls' performance in mathematics in public primary schools may be different from Kenya.

Unterhalter and Dutt (2001) research in India looked at the link between instructor gender and girls' scientific performance in five Indian states. Female and male school and classroom management dynamics, as well as attitudes on learner capacity, were uncovered in the study. The findings revealed that mathematics teachers were less probable to highlight the necessity for stern correction and to uphold correction through tutor. Teachers of mathematics were likewise significantly more probable to believe that all students are able to learn (Unterhalter & Dutt, 2001). However, none of these factors were statistically significant enough to be connected with girls' mathematics achievement in the majority of schools, prompting the need for this research.

According to Rajagopal (2000), as education levels rise, female representation in teaching diminishes dramatically. In South and West Asia, for example, the number of female mathematics instructors' declines from 46% in basic schools to 35% in primary schools. The authors claim that the role-model effect promotes females to be more involved, to behave responsibly, to put up more effort, and to achieve better academically because of the mutual understanding and identification that arises from sharing certain demographic characteristics between mathematics teachers and learners. However, little has been done to improve instructors' teaching skills in order to improve girls' math performance.

According to Jackson (2010), exceptional mathematics teachers have a number of ways at their disposal and understand when, how, and when not to employ and combine these approaches. These professionals comprehend the difficulty and developing nature of the superiority pre-primary schooling procedure, and they are knowledgeable in the concept and basis that underpins the tactics used in this process. However, Floden and Clark (2012) observed that even amid outstanding mathematics

tutors, there are disparities in exercise, and that no mathematics educator was rated to be exceptionally actual on all actions in that study, notwithstanding the ideal.

However, there are other findings that are consistent across research and provide significant insight into how excellent mathematics teachers differ from their more normal counterparts. According to Stacki and Pigozzi(2013) teachers provide big chunks of time, provide a compelling and appealing classroom situation, and have scarce correction problems.

The teachers also incorporate a balanced framework into their skill teaching, employ a meta-cognitive tactic to teaching support, and train girls in the usage of methods. They go on to say that math teachers use an active, adaptable, and diverse variety of instructional groups that are knowledgeable by a variety of determinative mathematics valuation gears, that they efficiently distinguish based on the needs of female learners, and that they have excellent classroom management skills. To put it another way, they are successful in implementing the above-mentioned balanced literacy framework that is coherent, systematic, and cognitively challenging. It is vital for educators to be trained in mathematics in order to transform a school's culture, because instructors are at the center of this transformational process. According to Sifuna (2010), an elegant and well-applied mathematics teacher teaching package is essential for the successful implementation and institutionalization of change programs.

In many countries in Sub-Saharan Africa, the presence of trained and qualified mathematics instructors in a school contributes to the creation of an added "girl-friendly" and helpful knowledge setting in which girls' wants and viewpoints are more probable to be spoken and valued, thanks to the presence of trained and qualified mathematics instructors (Klier, 2005). In Zimbabwe by Hyde et al. (2010) found that mathematics teachers' expertise plays a major impact in enhancing girls' self-esteem, which in turn enhances their mathematics performance. According to Hyde et al (2010), experienced and qualified mathematics' teachers act as role models to girls. In Kenya, statistical relationship between mathematics' teachers and performance of girls in mathematics cannot be overemphasized.

Kinsella and Olowojaiye (2018) assert that teachers' positive attitudes play a crucial role in fostering a conducive classroom environment, which can, in turn, attract a greater number of female students to the subjects being taught. Some educators may

hold unfavorable or stereotypical perspectives regarding the mathematical aptitude of female students. Simultaneously, there is often a shortage of female professors who can serve as influential figures and advisors for girls. It is imperative for educators to avoid perpetuating the notion that mathematics is a challenging discipline exclusively suited for a select group of intellectually exceptional individuals, thus preventing the creation of a discouraging perception among female students.

The predominant focus of research on teacher quality has been the investigation of the correlation between teacher attributes and the engagement of female students, both at the individual and institutional levels. In his study on teacher education and experience, Hanushek (2016) found that the predicted coefficient is statistically negligible in the majority of cases. The presence of statistical significance and reliance solely on estimated observable indicators do not provide substantial evidence to support the significance of these aspects. Nevertheless, the quality of teachers may not be correlated with observable features.

Based on a comprehensive analysis of research studies, Nazir (2018) conducted a study of many factors, including teacher certification and teacher experience, in relation to teachers' mathematical expertise. The findings of this review revealed a lack of consensus regarding the influence of these variables on girls' academic performance. When considering the undergraduate preparation for teaching, it is evident that instructors in the United States exhibit a level of preparedness that is comparable to their counterparts in other nations. This statement aligns with the guidelines set forth by the United States Department of Education (2016). Nevertheless, having a college degree may not necessarily provide as compelling evidence of a comprehensive grasp of fundamental mathematical concepts. The citation "Monk (2018)" refers to a source that is being referenced in an academic context. While this study provides valuable insights into the subject under investigation, it is important to note that the recommendations derived from the data may not be universally applicable. This is due to the substantial variations in culture and administrative practices within the studied area, which necessitate further research in order to fully comprehend the dynamics at play.

According to Crankson (2021), it has been observed that the possession of a teacher qualification can potentially exert a detrimental impact on the pedagogical practices

and educational outcomes within a specific subject area. In addition to qualifications, there are other instructor traits that may serve as predictors of females' mathematics performance, exhibiting either positive or negative associations. In the context of Kenya, a substantial number of girls are enrolled in early education settings, providing them with valuable opportunities to engage in early mathematics experiences. Studies on the cognitive abilities and educational development of female children during the initial six years of their lives substantiate the notion that early experiences provide enduring consequences. Teachers in educational settings often face challenges in properly guiding their teaching practices. Therefore, it is not unexpected that numerous early childhood programs still have a significant amount of progress to do in order to attain a high standard of mathematics education for female children.

In contrast to the persistent focus on gender disparities in mathematics learning among students, the topic of teacher gender has received significant attention in the educational literature. Nevertheless, prior studies have investigated the impact of the gender of teachers on the academic performance of students.

According to Saha (1983), there exists a significant impact on learners' achievement based on the gender of their teacher. The researcher presented the results subsequent to a meticulous analysis of the impact of teacher gender on the academic performance of students in the field of mathematics across 21 economically disadvantaged nations. The study's findings indicate that, on the whole, males exhibit greater proficiency in instructing mathematics and science compared to females. It was observed that students who were taught by male teachers demonstrated superior academic performance in the subjects of mathematics and science, as compared to their counterparts who were taught by female teachers.

The research undertaken in North Carolina examined the mathematics knowledge of teachers, utilizing a comprehensive dataset over a period of ten years, encompassing all primary school teachers and students in the state. In their study, Vigdor et al. (2007) discovered a favorable correlation between instructors' level of experience and knowledge, namely in areas such as curriculum, instruction, assessment, and mathematical content, and their impact on student accomplishment. Notably, these impacts were more pronounced in the context of mathematics education. According to the study conducted by Hill et al. (2005), there was a substantial correlation between

teachers' mathematical expertise and the academic progress of female students in both first and third grades. This relationship remained significant even after accounting for important factors at the student and teacher levels.

According to Eshiwani (2017), there is a widely accepted consensus on the significant impact of teacher qualifications on girls' performance in mathematics. Therefore, it is imperative that teacher preparation programs prioritize the emphasis on quality. According to Tella's (2019) study, the factors of professional background and educational achievement have significant roles in facilitating positive outcomes for girls in the field of mathematics. The acquisition of skills and expertise in a particular subject area significantly augments a teacher's capacity to comprehend and effectively utilize mathematical ideas and knowledge. The academic achievement of female students in mathematics is enhanced when they receive instruction from teachers who possess extensive training and a high level of education.

Apudo (2013) conducted a new study to investigate teacher perception on the correlation between gender and mathematics. The study aimed to acquire relevant information for this purpose. The study included a sample of 38 female instructors at the first-grade level, who were employed in 24 schools across the United States. The teachers were requested to pick their best, and thereafter analyze the factors contributing to their achievements or shortcomings. Additionally, they were asked to provide a description of the traits exhibited by these students. The educators' selections of the most and least accomplished students were afterwards juxtaposed with the mathematics examination results of their respective pupils. Upon conducting a meticulous examination of the data, the researchers discovered that there existed divergent perceptions among teachers regarding male and female pupils in the field of mathematics.

In a study carried out in Nairobi and Rift Valley Provinces, Teachers' training, attitude, experience, mentoring skills, and material mastery, according to Githua and Mwangi (2013), are key drivers of females' mathematics achievement. The quality of mathematics education, teaching tactics, socialization, efficacy, and preparedness, according to Githua and Mwangi (2013), influence the effort instructors put into mathematics education, the areas they issue for their lessons, and their equal of

ambition. However, the study context was not in Kajiado County prompting the need to carry this study.

Mathematics educators with a robust intellect of effectiveness frequently express stronger levels of planning and organization in primary schools in Isinya Sub-County, and vice versa (Sankok, 2012). According to Sankok (2012), such math teachers are more exposed to new thoughts and are more likely to try out new approaches and plans in order to healthier fulfill the requirements of their female students. However, Sankok (2012), like other empirical studies, did not examine the extent to which distinct teacher issues affect girls' math performance, necessitating this research.

2.5. Girl Factors and Performance in Mathematics amongst Girls

Factors related to girls in primary schools are key determinants on their ability to perform well in mathematics. These include; attitudes, peer pressure, age and social competencies. According to Andrews (2010), girl issues like gender play a significant and multifaceted role in mathematics' education. A study conducted out in Venezuela by Fennema and Sherman (2014), for example, found that there were disparities in mathematics ability based on the gender of participants. It has been hypothesized that discrepancies in performance are attributable, at least in part, to variances in attitudes toward mathematical concepts. Fennema and Sherman (2014) indicated that several gender changes in pupils' attitudes affected girls' performance in mathematics. This implies that there is a multiplicity of factors which hinder girls from performing better in primary school mathematics. However, a gap exists as the study was in the global context and thus the context of girls' performance in mathematics in public primary schools may be different from Kenya.

These comprise, but not restricted to, lack of motivation and self-concept, attitude, peer pressure and lack of family or parental role modeling. However, the extent to which each of these factors determine the extent to which girls perform in mathematics has not fully explored. In research done in the United Kingdom, Martin and Porter (2013) established that many suffer due to lack of self-concept, self-drive and personal motivation to undertake mathematics. According to Martin and Porter (2013), many girls don't have self-assurance in their capability to resolve math problems and thus, attain inferior consequences than they then would.

Martin and Porter (2013) further revealed that, in the UK, the position was made worse by the very high correlation between mathematical test performance and self-confidence among girls. This implies that self-confidence is key to the performance of girls in mathematics. However, the extent to which different aspects of self-confidence determine performance of girls in mathematics still needs much attention. In the same token, role of girls' attitude towards mathematics is also a key determinant of their performance in mathematics. To verify these declarations, in a research led in the Netherlands by Boswell (2012), it was discovered that what females enjoy and feel about their knowledge or educations might have a major impact on their mathematical ability. However, a gap exists as the study was in the global context and thus the context of girls' performance in mathematics in public primary schools may be different from Kenya.

The findings of Boswell (2012) revealed that males had higher notches on boldness gauges, such as sureness in knowledge in math, inspecting math as a male area, boldness toward mathematics achievement, mother's provision, father's provision, and practicality of arithmetic for girls, in primary schools where males outperformed females on mathematics achievement tests. The situation is similar in many nations in Sub-Saharan Africa, with girls' factors at the heart of their capacity to achieve in mathematics. In a study conducted in Nigeria, Mutai (2016) discovered that girls who have role models such as classmates, parents and teachers perform well in mathematics. According to Mutai (2016), despite the assertions that gender factors determine mathematics' performance, girls who are well-motivated and have support from their peers, teachers and parents register impressive grades in mathematics' test scores. This implies that incentive plays a significant part in the ability of any pupil to perform well in mathematics.

However, it is important to note that there is a gap in the research as the study was conducted within a specific regional setting. Therefore, it is possible that the findings about females' performance in mathematics in public primary schools may not be applicable to the broader context of Kenya.

The field of mathematics education necessitates the presence of highly motivated female learners, as it entails the utilization of reasoning skills, interpretation abilities, and problem-solving techniques to address mathematical concerns and comprehend

complex concepts. The contemporary educational landscape poses a significant obstacle to the acquisition of mathematical knowledge, as it necessitates the cultivation of disciplined study habits, unwavering focus, and intrinsic desire. In order to address these problems, it is imperative for female students to exhibit a high level of concentration and motivation in order to make advancements. In their study, Broussard and Garrison (2014) investigated the correlation between classroom motivation and academic performance among children in the primary school age group. The study included a total of 122 participants from the first grade and 129 participants from the third grade. In accordance with prior research, the findings indicated a positive association between motivation and Mathematics grades at an elevated degree of expertise.

According to a study conducted by Lloyd et al. (2015), it was found that among a sample of 62 fourth-grade and 99 fifth-grade students, females demonstrated academic performance in Mathematics that was either on par with or surpassed that of boys. Additionally, the study revealed that girls exhibited attribution patterns that were more self-enhancing compared to the patterns observed in other studies evaluated within the same research. However, it was observed that girls exhibited a lower level of self-assurance in relation to their real performance in Mathematics. In comparison to males, girls were more inclined to ascribe their lack of success in Mathematics on a perceived lack of assistance from professors. However, the examination of the situation faced by girls in Kajiado County has not been thoroughly investigated, highlighting the necessity for conducting this study.

Numerous studies have identified arithmetic competence as a crucial determinant of pupils' performance in Mathematics. In a recent study conducted by Kaeley (2020), it was shown that arithmetic ability exhibited the strongest correlation coefficient when examining its relationship with Mathematics accomplishment. In a study conducted by Schiefele and Csikszentmihalyi (2015), it was observed that the academic performance of girls was mostly influenced by their degree of ability.

Previous studies have also explored the correlation between gender-related factors and mathematical proficiency in academic performance. In a study conducted by Watt (2016), longitudinal data collected over a span of 10 years was examined to explore the potential correlation between personality factors and gender disparities in long-

term academic performance in Mathematics and the sciences. The findings of the study indicated that the level of proficiency in Mathematics emerged as the most influential factor in predicting the future academic success in Mathematics among young females. Nevertheless, it appears that the proficiency in Mathematics did not exhibit a significant correlation with the long-term Mathematics performance among young males.

Numerous variables have been extensively examined in the context of predicting Mathematics achievement. Nevertheless, academics commonly prioritize the examination of gender-related matters concerning Mathematics achievement. As exemplified by a comprehensive meta-analysis conducted by Hyde et al. (2010), it has been observed that males exhibit superior performance in Mathematics assessments that require the application of problem-solving skills. Research studies have shown that females exhibit superior performance in computational tasks, whereas there is a lack of substantial gender disparity in the comprehension of mathematical concepts. According to a recent study conducted by Kimball (2019), it has been shown that females tend to achieve higher marks in the field of Mathematics compared to their male counterparts.

Oakes (1990) identified statistically significant gender disparities in the perceptions and attitudes about the utility of Mathematics among middle school students. For instance, female students exhibit diminished levels of interest in the field of Mathematics and tend to harbor unfavorable attitudes about the subject. According to reports, there is evidence to suggest that girls often acquire Mathematical concepts through rule-based approaches or cooperative activities, whereas boys tend to exhibit a proclivity for competitive engagement in order to achieve mastery of Mathematical concepts.

The predictive nature of Mathematics achievement has been found to be influenced by socio-economic status. Several studies have demonstrated a positive correlation between parental socio-economic position and the level of parental involvement in their children's schooling. Increased parental participation leads to the cultivation of favorable attitudes among children towards school and classes, as well as the improvement of their academic performance (Stevenson & Baker, 2017). There is a prevailing belief that academic achievement is adversely affected by low socio-

economic status, primarily due to limited access to educational materials and resources, as well as the presence of a distressing home environment characterized by potential disruptions in parenting and an elevated probability of family conflicts (Jeynes, 2022). The socio-economic position of a student is a prevalent determinant of academic achievement for various reasons.

In Uganda, Kabaka (2011) reports that girls' factors such as gender, peer pressure, parental motivation and attitude among others contribute immensely to the performance of girls in mathematics. According to Kabaka (2011), personal challenges such as taking new identity at school, adjusting to the strange buildings, new teachers and new academic activities pose challenge to girls to perform well in mathematics. Nonetheless, a gap exists as the study was in the regional context and thus the context of girls in public primary schools may be different from Kenya.

In Kenya and Isinya Sub- County in particular, the extent to which girl factors determine performance of girls in mathematics cannot be disregarded. A study carried out by Eshiwani (2000) noted that girl factors such as values, attitudes, social organizations, family or parental characteristics among others play a key role on how girls perform in mathematics. Among the factors that influence learning include age, gender, maturing, linguistic proficiency, socio-economic rank, social contextual, and the exact wants of a beginner collection, like specific talents and learning disorders and damages are all taken into account in the Isinya Sub- County (Eshiwani, 2000). However, further investigate is wanted to identify the degree to which these girl variables influence mathematics achievement among girls; hence the need for this study.

2.6. School Factors and Performance in Mathematics amongst Girls

School factors are a set of dynamics found within a school set up and play a significant role in ensuring that girls perform better in mathematics by providing the pre-requisite resources. Clark (2010) asserts that such school factors include; physical facilities and instructional resources. Schools that provide access to high-quality mathematics textbooks, instructional materials, technology, and learning resources can enhance girls' understanding and engagement in the subject. Availability of well-equipped mathematics laboratories and libraries can also contribute to their performance.

The curriculum and instructional design in schools have a direct impact on girls' performance. A well-designed mathematics curriculum that is coherent, aligned with standards, and emphasizes conceptual understanding can support girls' learning and achievement. The quality of mathematics teachers and their professional development opportunities are crucial factors. Schools with well-trained and qualified mathematics teachers who continuously enhance their subject knowledge and pedagogical skills can positively influence girls' performance (Crankson, 2021).

Creating a supportive and inclusive learning environment is essential. Schools that foster a positive school climate, encourage equal opportunities for girls, promote collaboration, and discourage gender biases can positively impact their performance in mathematics. Peer interactions and collaborative learning opportunities can enhance girls' performance in mathematics. Schools that promote peer learning, group activities, and cooperative problem-solving can foster a sense of belonging, facilitate knowledge sharing, and increase engagement in mathematics.

Schools that provide support systems and interventions tailored to address the specific needs of girls in mathematics can contribute to improved performance. This can include targeted tutoring, mentoring programs, and additional academic support initiatives. Schools that have policies and practices promoting gender equality can create an environment conducive to girls' performance in mathematics. This can involve addressing gender stereotypes, ensuring equal access to resources and opportunities, and actively encouraging girls' participation and achievement in mathematics (Andrews, 2010).

Schools that actively involve parents in their daughters' mathematics education and provide opportunities for parental engagement can positively impact girls' performance. Parental support, encouragement, and involvement in school activities can reinforce learning and motivate girls to excel in mathematics. By addressing these school-related factors, educators and policymakers can create an enabling environment that supports girls' performance in mathematics. It requires a holistic approach involving curriculum design, teacher training, supportive policies, and collaboration between schools, families, and the wider community (Mazana et al., 2020).

Cognizant of these assertions, according to Abdulai , (2023) schools should provide resources, hold mathematics workshops, and provide advice to primary school female learners in order for them to adapt to new ways for increasing their arithmetic performance. Isola (2010), who adds that schools provide instructional strategies such as audiotape recorders, audiovisual tape recorders, and projectors, has similar views. They also comprise still images, programmed instruction, filmstrips charts, and a variety of other tools that provide a variety of learning experiences (Isola, 2010).

According to Fraser and Kahle (2014), other kinds of instructional incomes comprise of games, acting, protests, trials, actual scenarios, genuine items and examples, representative and graphical symbol, and other forms of representation. Conferring to the United Nations Educational, Scientific, and Cultural Organization (2013), in order for a school to achieve good performance, instructional incomes need to be place in residence and utilized efficiently in classroom repetition. On other hand, schools also ensure they create a conducive environment for girls to register impressive grades in mathematics. According to Beynon (2012), schools provide classrooms, libraries and furniture which have had chief influences on the excellence of primary school education.

Sifuna (2016) has identified the presence of gender discrepancies in the allocation of government funds for educational institutions. The origins of these factors can be traced back to the colonial era, and their influence on the present-day academic performance of pupils persists (Barr, 2022). According to Sifuna (2016), there is a higher likelihood for female students to enroll in non-funded educational institutions in comparison to their male counterparts. Typically, educational institutions of this nature are characterized by a scarcity of resources, particularly in the realm of science laboratories. Furthermore, they tend to employ educators who possess lower qualifications compared to their counterparts in more privileged schools. Additionally, the range of courses offered at these institutions is often limited, hence placing their pupils at a disadvantage when vying for admission into universities. This assertion is supported by scholarly works such as those authored by Kiluva-Ndunda (2008), Sifuna (2016), and Barr (2022). This exacerbates the existing constraints on women's opportunities to pursue advanced education, specifically in the fields of science, mathematics, and technology.

The establishment of a conducive environment is crucial for the cultivation of knowledge in children. Finlayson (2020) asserts that it is imperative to establish an environment that is sufficiently engaging for children, enabling them to cultivate their aptitudes and fulfill their interests. The presence and quality of school infrastructure and resources may significantly impact student academic performance. Indeed, the investigation of elements associated with the school environment has emerged as a prominent area of inquiry within the realm of educational practitioners. According to Reynolds et al. (2016), empirical evidence indicates a positive correlation between the academic performance of female students and the presence of a secure and well-organized school environment. The study conducted by researchers also revealed a detrimental effect on the academic performance of female students in cases when there are flaws in school characteristics or components, such as inadequate temperature, lighting, and outdated infrastructure.

According to a study conducted by Saritas (2019), it was found that Mathematics skills were negatively impacted by temperatures over 23° C (74° F). According to Cash (2013), there is a correlation between the state of school buildings and student success scores. The study revealed that children in standard buildings tend to have lower scores compared to kids in above standard structures. Ellison and Swanson (2016) suggest that a contributing factor to the low performance and passing rate of female students in mathematics is the absence of instructional media and subject-specific tools, such as teaching aids for mathematics. The field of mathematics education encompasses two main instructional approaches: learner-centered and teacher-centered. The latter is commonly known as the traditional approach, as described by Schuh (2020).

Rivkin et al. (2011) showed a research in the United States that demonstrated a connection amid the availability of school amenities and students' mathematical attainment. They also stated that poor academic achievement among girls is caused by a lack of facilities and resources in public primary schools. A library is another important facility that correlates to girls' math success. Avery (2012) found that numerous types of libraries exist for females to utilize for learning mathematics in a study of 113 participants on the Library and Literacy Action Plan in Scotland. The study also found that girls in schools with well-stocked libraries performed better in mathematics than their counterparts in schools without such a resource center (Avery,

2012). This supports the idea that by providing relevant curriculum-related resources, schools may give a wealth of materials in mathematics and assist girls in developing the skills they need to make the best use of knowledge.

The situation is comparable in many nations in Sub-Saharan Africa, such as Nigeria and Ghana, where the physical condition of most public primary schools influences females' mathematics performance. Mefor (2014) conducted a study in Nigeria that indicated that girls in the 11th grade who attended class in above-standard buildings performed higher in mathematics than their counterparts who attended class in inadequate facilities. When the socio-economic status of students is taken into consideration, these findings reveal that air training, the absenteeism of drawing, the disorder of discipline workrooms, locker housings, the disorder of classroom equipment, the color of the walls, and the level of audibility are all significantly correlated with scholar attainment in math and science.

Increases in educational investment, according to Verspoor (2012), may not be enough to improve girls' math performance without careful use of present resources, as well as additional funding and changes. In Kenya, primary schools have seen cases of girls performing poorly in mathematics. Onyango (2010) says that, in order to strategize for physical incomes, it is necessary to classify the incomes needed, manner a wants valuation based on excellence criteria, and evaluate the component cost and material consumption. However, he only looked generally looked at resources for all subject but not specifically Mathematics hence the need of this study.

In Isinya Sub- County, there are limited school facilities and instructional resources are equally not adequate and appropriate. For example, a report by Lucas and Mbiti (2012) shows that FPE was launched with a sole objective of enhancing access to quality primary education through delivery of school physical facilities and delivery of instructional resources such as books and teaching aids for all subjects including mathematics. However, in many public primary institutes in Kajiado County and especially, Isinya Sub- County, the ratios of physical facilities and resources such as mathematics' books to students, more so girls are still very high (Lucas & Mbiti, 2012). Despite these observations, Lucas and Mbiti (2012) as did other empirical researchers have not indicated how having adequate instructional resources, counseling services, adequately well-carried and armed public library, intended and

favorable classrooms have influenced performance of girls in mathematics in civic primary institutes. A gap exists as the study didn't focus on the performance of girls in mathematics in public primary schools.

2.7. Theoretical Literature Review

A theory is a collection of interconnected ideas, descriptions, and assertions proposed to explain and predict events (Cooper & Schindler, 2006). The dynamic theory of School Factors and the Academic achievement theory were used in this study.

2.8. The Dynamic Theory of School Factors

The Dynamic Theory of School Factors proponents were Slater and Teddlie (1992). According to Slater and Teddlie (1992), the concept of effective schooling is perceived as a continuous and evolving activity. Furthermore, the dynamic model posits that effective schools and educational systems are anticipated to undergo changes in order to sustain their effectiveness amongst evolving contexts. Consequently, they are required to adjust their educational practices in response to the shifting circumstances. Based on the premise that influences at the school level can have both direct and indirect impacts on student achievement, this idea has been proposed. It is projected that school elements will have an influence on classroom features, notably teaching training. Among the reasons for this supposition is the detail that efficiency lessons have demonstrated that the classroom level is extra essential than the school and organization levels, and that specifying classroom elements is regarded to be an absolute requirement for important the system and school levels. Because of this, the dynamic theoretical model is applied to components of school life that are linked to similar fundamental ideas of mathematics instruction amount, learning opportunities, and education quality.

According to the dynamic theory of school factors the overall atmosphere, values, and norms within a school contribute to its climate and culture. Positive school climate, characterized by supportive relationships, inclusivity, and high expectations, can foster a conducive learning environment and positively impact students' motivation, engagement, and performance. Effective school leadership and management are critical for creating an environment that supports student success. Strong leadership involves setting clear goals, establishing effective policies and procedures, fostering

collaboration among staff, and providing instructional support and resources (Creemers et al., 2013).

Teddlie and Reynolds (2000) employed this concept in their analysis, which indicated that there are a diversity of issues that affect students' academic performance. Conferring to Teddlie and Reynolds (2000), the dynamic model is multi-level by design and denotes to four diverse levels, suggesting that the schooling and education scenario is highlighted, and the characters of the two principal characters, the instructor and the student, are investigated. The dynamic model also refers to challenges that occur at the school level above and beyond these two levels. Several of these elements are believed to have an impact on the teaching-learning situation because they have an impact on the formulation and assessment of the school's strategies on training and knowledge environments. The training and learning environment is also affected by the larger educational setting in which students, instructors, and educational institutions are likely to function and succeed (Creemers & Kyriakides, 2007).

The instructional practices employed by teachers greatly influence student learning. Effective teaching methods, such as differentiation, active learning, and formative assessment, can enhance students' understanding and engagement. Quality feedback, scaffolding, and differentiated instruction tailored to individual student needs are also important factors. The curriculum and available resources greatly impact students' learning experiences. A well-designed and relevant curriculum that aligns with educational standards, along with access to up-to-date instructional materials, technology, and educational resources, can support student achievement (Kyriakides, 2008).

Collaboration between schools, parents, and the wider community is vital. Positive home-school partnerships, where parents are actively engaged in their children's education, can reinforce learning and provide additional support. Community involvement and resources can also contribute to a richer learning environment. School policies and practices shape the overall educational experience. Inclusive policies, equitable practices, and efforts to address factors like gender disparities, cultural biases, and special educational needs can help create a more equitable and supportive learning environment for all students. The dynamic theory of school

factors recognizes that these elements interact and influence each other. Changes in one factor can have ripple effects throughout the educational system, impacting students' academic performance and overall development (Kyriakides, 2008).

Conferring to this philosophy, aspects like social standards for knowledge and the significance that people place on education play a big impact in determining the expectations that teachers and students have of one another. Thus, the prototypical argues that aspects at the school and background levels have both intended and unintended effects on student attainment because they can affect both student attainment and teaching and knowledge environments. This is supported by research. According to Kyriakides (2009), the school learning environment is a component of school climate that is regarded as the furthestmost significant forecaster of school performance because knowledge is the fundamental purpose of a school. Furthermore, efficient schools are capable of meeting both teachers' and students' needs, in this case female pupils, while also participating in systematic adjustments to the school's inner procedures so as to attain mathematical objectives more successfully in uncertain circumstances.

For the purposes of this research, factors involving the institute and other investors are activities in use by the school to ensure that mathematics educators and added shareholders, such as parents, have a rich knowledge of the expectations placed on them in order to progress the performance of female scholars in math. That is, one of the two overarching variables is the support provided to math instructors and other investors in order to advance the performance of female students in math. To be precise, the procedures and doings that occur in the institute to advance schooling and knowledge. Furthermore, this philosophy emphasizes that causes or elements like teachers, family participation, the girls themselves, school infrastructure, availability of instructional materials, and cooperation practices all have an impact on how well girls succeed in mathematics. In other words, only adjustments in determinants or factors associated with severe problems in schools are predicted to be linked to improvements mathematics performance of girls. The Dynamic Theory of School Factors was relevant in the present study as it highlighted the changes that the school management need to make so as to enhance girl's performance in mathematics in Isinya Sub- County.

2.9. Academic Achievement Theory

The proponent of Academic Achievement Theory is Walberg who indicated that the educational results, including cognitive, behavioral, and attitudinal aspects, are influenced by the psychological features of individual pupils and their immediate psychological settings (Reynolds & Walberg, 1992). According to this hypothesis, individual learners' psychological characteristics as well as their immediate psychological environments have an impact on educational results such as cognitive, behavioral, and attitudinal outcomes. Learning outcomes are influenced by nine key variables, according to Walberg, including students' skill/previous attainment, incentive, phase/developing level, amount of teaching, superiority of teaching and classroom environment. Other factors that influence educational outcomes include parental participation, home setting, peer cluster, and contact to mass broadcasting external to the school (2012).

The theory posits that individuals' academic achievement is influenced by Expectancy beliefs and Task value. Expectancy beliefs refer to individuals' perceptions of their own competence and ability to succeed in academic tasks. These beliefs are shaped by past experiences, feedback received, and social comparisons. Students who have higher expectancy beliefs are more likely to believe that they can perform well academically, leading to increased effort, persistence, and better performance value refers to the importance or significance that individuals attach to academic tasks and goals. It encompasses intrinsic value (enjoyment and interest in the task itself), attainment value (importance of achieving success or avoiding failure), utility value (relevance and usefulness of the task for future goals), and cost value (effort or sacrifices required to achieve the task). Higher task value is associated with increased motivation, engagement, and better academic performance (Sideridis, 2005).

The academic achievement theory suggests that individuals' academic achievement is influenced by the interaction between their expectancy beliefs and task value. When students believe they have the ability to succeed (high expectancy) and perceive the academic tasks as valuable and meaningful (high task value), they are more likely to be motivated, engage in learning activities, and achieve higher levels of academic performance. In addition to expectancy beliefs and task value, the theory acknowledges the influence of other factors, such as socio-cultural factors, teacher

support and expectations, parental involvement, and peer influences, which can impact students' academic achievement (Singh, 2011).

According to Walberg (2012), psychosocial features like self-idea, approaches, actions, inherent inspiration, and general student appointment in knowledge are valuable in program assessment trainings and can offer educators with valuable info in order to position more optimally operative schoolrooms. In order to advance girls' mathematics attainment, it is necessary to include both educational process goals and achievement goals in this study.

The academic achievement theory has implications for educators and policymakers in fostering academic success. It suggests the importance of creating supportive and inclusive learning environments, providing challenging and meaningful tasks, offering personalized feedback and support, promoting students' self-beliefs and confidence, and highlighting the relevance and value of academic content. By addressing students' expectancy beliefs and task value, educators can help enhance students' motivation, engagement, and ultimately, their academic achievement. The theory highlights the importance of cultivating a growth mindset, fostering intrinsic motivation, and nurturing students' sense of competence and relevance in their academic pursuits (Zimmerman, 1990).

The Academic Achievement Theory acknowledges the importance of family and peer influences on academic motivation. If girls receive support and encouragement from their parents and peers, it can boost their motivation and performance in mathematics. The Academic Achievement theory provides a framework for understanding and improving girls' performance in mathematics by addressing their beliefs, motivations, self-efficacy, attributions, and the social and cultural factors that influence their academic experiences. By fostering a positive and supportive learning environment, educators and parents can help girls overcome barriers and excel in mathematics. The Academic Achievement theory was relevant in the present study as it helped the researcher understand psychological characteristics of individual girl learners and their immediate psychological environments and in turn helps incoming up with recommendations to enhance girl's performance in mathematics in Isinya Sub-County

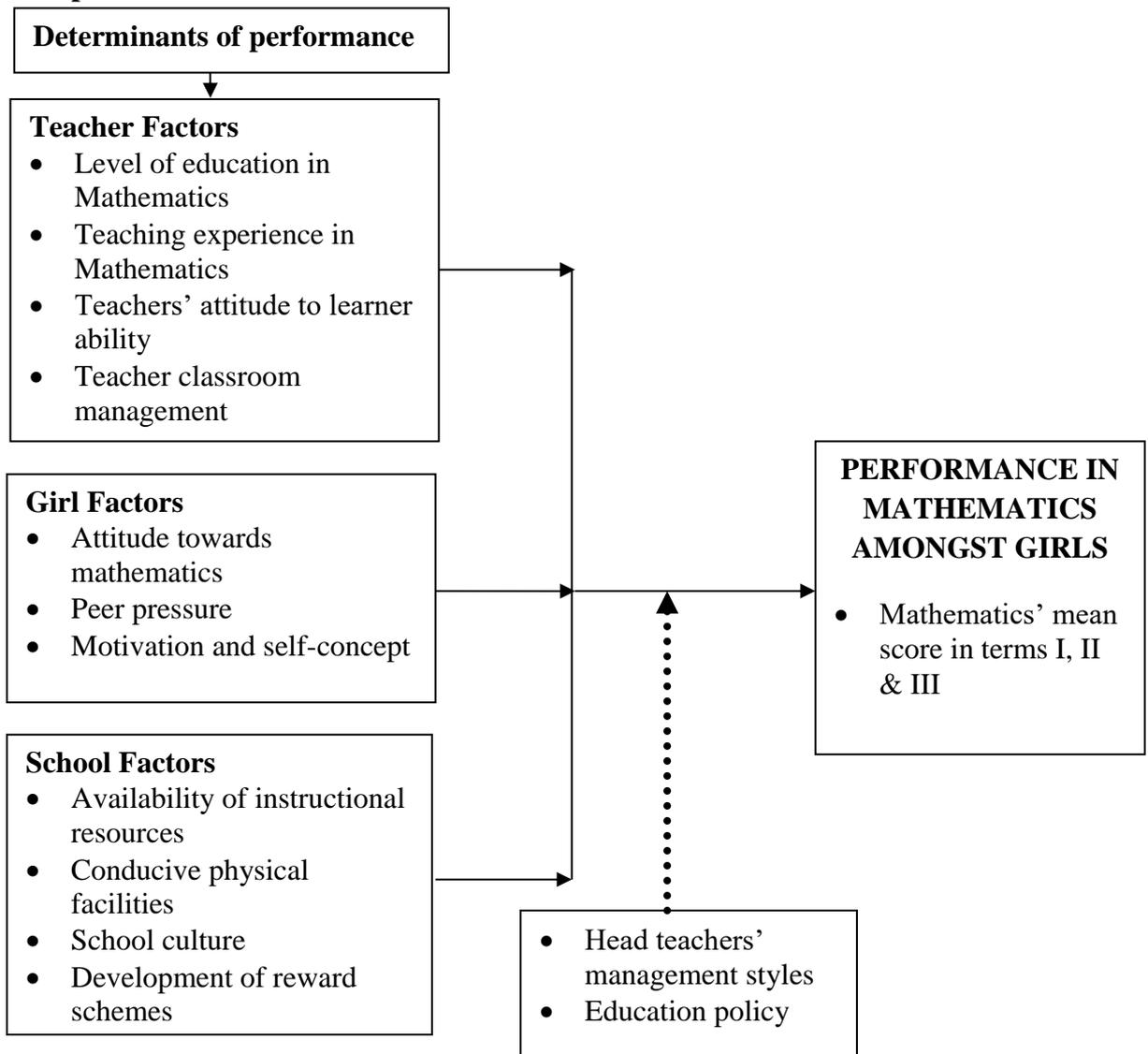
2.10. The Conceptual Framework

A conceptual framework is a model showing the relationship between variables and was used in determining performance of girls in mathematics (Mugenda & Mugenda, 2008).

Figure 2.1:

The Conceptual Framework of the Present Study

Independent variables



Source: Researcher (2022)

Intervening variables

The independent variables were the determinants of girls' performance in mathematics that included the teacher factors in terms of the level of education in mathematics, teaching experience in mathematics and teachers' attitude to learner ability. This is because the teachers' knowledge and experience in regard to mathematics plays a great role in enhancing the learners' knowledge and in turn influence their performance in mathematics.

The next independent variable was the girl factors that included their attitude towards mathematics, peer pressure, role models, parental involvement, motivation and self-concept. This was because, despite the importance of teachers in installing knowledge in regard to mathematics to the girls, there was need that the girls are self-motivated and also disciplined so as to improve their mathematics performance.

The final independent variable was school factors measured in terms of availability of instructional resources, conducive physical facilities, school culture and development of reward schemes. This was because there was need for adequate infrastructure, finance, staffs and also learning materials so that the girls can be able to perform well in mathematics.

Finally, head teachers' management styles and education policy were the intervening variable that linked the determinants of mathematics performance and girls' performance in mathematics. Education policies are a set of regulations designed to facilitate the effective, equitable, and secure instruction of children in accordance with the standards established by the governing authorities and the educational board with which the school is associated. These rules dictate the curriculum and instructional practices implemented in educational institutions, as well as the strategies employed by schools to oversee and administer pupils and staff.

Educational policies at school level would influence a variety of procedures within the institution. The head teacher style of managing both the teachers and students put in place by the government impacted on the performance of girls in mathematics since policies geared towards motivating girls improved their performance. The head teacher management style impacted on girls' performance since if the head teacher was able to motivate the teachers their morale would improve and also if the head teacher instills discipline in girls they would be self-motivated and thus they would tend to perform well.

2.11. Summary of Literature Review

According to the findings, there are a diversity of issues that affects females' arithmetic ability. The review, however, highlighted a number of research and knowledge gaps. Referring to an account from the MOE, (2020), girls in Isinya Sub-county scored 30.13 percent in mathematics in the 2016 in KCPE, 29.10 percent in 2017, 28.61 percent in 2018, 27.81 percent in 2019, and 26.03 percent in 2020. However, more investigation was required to understand the degree to which diverse factors influence mathematics performance among girls. In terms of teacher factors, a study by Sankok (2012), as well as other empirical studies, did not examine the extent to which distinct teacher issues affect females' mathematics performance.

On the subject of girl factors, further study is wanted to comprehend the extent to which these aspects influence girls' mathematical ability. In terms of school factors, Lucas and Mbiti (2012), like other empirical researchers, have not shown how different school factors such as instructional resources, counseling services, adequately well-kept and armed libraries, intended and favorable classrooms, or armed laboratories affect girls' mathematics performance in public primary schools. These are the knowledge and research gaps that this research aims to fill.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This section defines the study approach that was used to do the research and how it was implemented. It includes the research design, study site, aim populace, model size, sample methodology, study tools, pilot study, dependability and rationality, statistics gathering methods, statistics examination, logistical considerations, and ethical considerations, among other things.

3.2 Research Design

A research design, conferring to Kothari (2005), is an outline for making decisions ranging from comprehensive expectations to full information collecting and study procedures based on the study methodology. A mixed research approach was used in this investigation. In other words, both quantitative and qualitative methodologies were used in the research. According to Creswell (2014), a mixed method research design is one that includes logical molds that govern the way of data gathering and examination, as well as the use of a combination of qualitative and measurable methodologies throughout the research process. It's a research method that emphasizes on collection, examining, and combination measurable and qualitative information in a sole or sequence of investigations (Creswell, 2014). Its core evidence is that integrating quantitative and qualitative methodologies offers a more comprehensive sympathetic of study hitches than one technique unaided. The mixed method research design was used in this study since the study is both quantitative and qualitative hence through the use of questionnaire and an interview guide the study objectives would be achieved.

A mixed research design was used as it allows researchers to adapt their approach to the specific needs of the research question. The researcher can then decide to give more weight to either the qualitative or quantitative component based on the nature of the topic or the research goals. Researcher can enhance the validity of the findings by applying a combination of qualitative and quantitative data collecting and analysis methodologies. Qualitative findings possess the capacity to elucidate and provide interpretation for quantitative outcomes, and conversely, quantitative data can

reciprocally enhance the understanding and explication of qualitative findings. This validation enhances the credibility and robustness of the research outcomes (Sekaran & Bougie, 2013).

3.3 Location of Study

An established research site is defined by Merriam (2014) as the location that the researcher chooses in order to follow up on the ideas generated by research data and is located in an area where control problems are recognized to be common. This research was conducted in Isinya Sub- County, with 30, 663 size in population and a land area of 102.9 km², giving it a .populace thickness of 298 people per km² (Kenya National Bureau of Statistics, [KNBS] 2009). Livestock rearing, dairy agriculture, beef and goat farming, trading, tourism, and subsistence agriculture are the main economic activities in Isinya Sub-County. There are 33 public primary schools, 21 private primary schools (MOE, 2020).

Girls have registered and continue to register low grades in mathematics in Isinya Sub- County. As previously indicated, conferring to an account by the Ministry of Education (2020), girls in Isinya Sub-county scored 30.13 percent in mathematics in the 2016 KCPE, 29.10 percent 2017, 28.61 percent in 2018, 27.81 percent in 2019, and 26.03 percent in 2020. Despite these figures, few empirical researches have looked at the factors that influence girls' mathematics achievement. As a result, the study's concentration is on Isinya Sub- County.

3.4 Target Population

A target population is a group of people or items that is the subject of a technical investigation, and research is conducted for the profit of the people (Creswell, 2014). The target population comprised of 438 respondents comprising of 33 head teachers from sampled schools, 80 mathematics' teachers and 325 girls in class VII as shown in Table 3.1

Table 2.1:

Target Population of the Study

Categories	Target Population
Head teachers	33
Mathematics Teachers	80
Girls in Class VII	325
Total	438

Source: Isinya Sub- County Education Office (2021)

3.5 Sampling and Sampling Techniques

A sample depicts a subsection of a populace that is illustrative of the whole populace (Creswell, 2014). Using Yamane's Formula, it was possible to establish the sample size for this investigation:

$$N_0 = \frac{N}{1 + N(e^2)}$$

N_0 = Sample size at 95% confidence interval

N = Target Population

e = Confidence level of 5%

The desired sample was:

$$N_0 = \frac{438}{1 + 438(0.05)^2}$$

$$N_0 = 208$$

A stratified random sampling technique was applicable due to the presence of a non-homogeneous population of interest, which might be separated into distinct groups or strata in order to get a representative sample. Erik and Marko (2011) argue that the utilization of stratified random sampling enhances the accuracy of estimates for population parameters and guarantees a sample that is more representative of a generally homogeneous population. Founded on the amount of regions in Isinya Sub-county, stratified sample was used to establish four strata. Three head teachers 19 mathematic teachers and 120 class 7 girls from each zone were chosen using

purposive sampling from schools that have experienced incidents of very low math performance among girls. To eliminate prejudice, 30 girls in class VII were chosen from each zone using simple random sampling. The researcher was able to collect a sample of 12 head teachers, 76 math's instructors and 120 class 7 girls using this method as described in Table 3.2.

Table 3.2:

Sample Size Grid

Categories	Sample Size
Head teachers	12
Mathematics' Teachers	76
Girls in Class VII	120
Total	208

Source: Researcher (2021)

It was considered that the samples chosen were enough and accurately represented the desired population, making them trustworthy for drawing accurate conclusions.

3.6 Instruments

According to Sekaran and Bougie (2013), research tools gather statistics on a certain set of study purposes. These comprised of a survey for math teachers as well as an interview guide for head teachers and girl students. The study used questionnaire and the interview guide as the instruments for data collection. Questionnaire

3.7 Questionnaire for Mathematics' Teachers

The research used a self-developed questionnaire with closed-ended assessment substances to acquire measurable statistics from Mathematics teachers. A questionnaire, rendering to Morse (2000), is a tool containing questions in a sequence and other stimuli designed to collect data from defendants and is frequently arranged for statistical examination of the responses. It was used since it's an economical and efficient method of collecting data owing to the large sample size and hence it was ideal for the study. The survey was divided into two units, each collecting data on different aspects of the study. The gender and degree of education of mathematics teachers were collected in Section A of the questionnaire. The study objectives were used to create test items for units B, C, D, and E of the survey. Conferring to Creswell

(2012), the Likert gauge displays a gauge with hypothetically equivalent spacing amid replies, hence test representing scales.

3.7.2 Interview Guide for Head teachers and Girls in Class VII

In this research, the investigator collected qualitative information from 12 head teachers by means of structured interviews and open-ended test items. In the words of Kothari (2005), structured interviews provide a goal-absorbed try by the examiner to get dependable and valid measures from one or additional applicants in the form of verbal responses. The advantage of an interview guide for the present study was that it allowed the researcher to collect detailed data with clarity. The interview guide also allowed the investigator to request searching and extra queries, grow a good relationship with the participants.

3.7.3 Interview Guide for Girls in Class VII

In this research, the investigator collected qualitative information from class VII by means of structured interviews and open-ended test items. The interview guide ensured that all interviewers ask the same core questions and cover the same key topics. This consistency is essential for maintaining the reliability and comparability of interview data, especially in research involving multiple interviewers or participants. Using a guide allows for the standardization of the interview process. This reduces the potential for interviewer bias or variability in questioning, ensuring that each participant receives a similar interview experience. The guide helps interviewer ensure that they cover all essential topics and questions during the interview. This is particularly important in research where comprehensive data collection is necessary (Kothari, 2005)

3.8 Piloting of Research Instruments

The research instruments were piloted with 20 participants from a selection of public primary schools in Kajiado Central Sub- County. This is because Kajiado Central neighbors Isinya, Sub County therefore, they have the same environmental factors that can affect girls' performance and also the performance of Mathematics performance of girls in Kajiado central is similar to Isinya Sub- County. As per Kothari (2005), the pilot model should make up 10% of the education model (10.0 percent of 208). To eliminate bias, five respondents in the piloting were chosen from

each zone using simple random selection. The goal of the piloting was to pre-test the study measuring tools so as to determine their rationality, dependability, trustworthiness, and reliability. During the real data collection, the pilot participants were not encompassed.

3.9 Validity of the Research Instruments

When it comes to validity, according to Orodho (2005), it is the grade to which evidence supports any conclusions or recommendations made by a researcher on the basis of information obtained via the use of a certain instrument. To determine validity, items were assessed for content validity. The researcher looked over each item and the replies given with the help of math experts to determine whether the items produced the appropriate info. Test items that were insufficient in terms of generating the required information were removed, and others were to be offered that were more appropriate. Conferring to Creswell (2014), researchers assess content rationality by asking a board of specialists to determine if the queries are genuine.

Validity, rendering to Creswell (2014), indicates that a person's notches on a tool make sense, are relevant, and allow the researcher to attract solid deductions about the population from the example being researched.

3.10 Reliability of the Research Instruments

According to Morse (2008), dependability is defined as the ability to reproduce trainings or conclusions, or the correctness or constancy of the study tool in measuring whatever it events. To improve the instruments' dependability, the researcher critically examined the steadiness of the replies on the pilot surveys with the support of her supervisor in order to make a verdict on their dependability. The researcher reviewed the study instruments for suitability of substances, looking for those that are vague or unclear. These items were rephrased to ensure that the respondents understood them completely. The test items' dependability was determined using the test rest technique. The test substances were provided to a collection of defendants doubly in this situation. The Pearson's Product Moment Correlation was applied to calculate the correlation constant amid the two sets of scores. A coefficient of $r=0.75$ was established. This indicated good internal

dependability, since Oluwatayo (2012) considers such an index to be perfect for the research.

3.11 Methods of Data Collection

The researcher received a preliminary communication from Kenya Methodist University's School of Postgraduate Studies, as well as a National Commission for Science, Technology, and Innovation (NACOSTI) permit. The researcher also requested a message of authorization from Kajiado County Commissioner and County Director of Education. These letters presented the researcher to various public primary schools in Isinya Sub-county, where the research was conducted. The study began data gathering after receiving the necessary letters of approval and licenses. The researcher made a pre-visit to each of the primary schools that were sampled in order to obtain permission and schedule appointments with the participants in order to conduct the research and familiarize herself with them prior to the real study. The surveys were distributed to the mathematics teachers. After that, the researcher collected the surveys. Each instructor was allowed two hours to complete the questionnaires. At the same time, the researcher spoke with the head teachers and class seven girls. Each respondent was interviewed for up to an hour by the researcher. The researcher took short-lived notes during the interview.

3.12 Data Analysis Procedures

Data processing, according to Merriam (2014), entails the editing, coding, classification, and tabulation of gathered data in order for them to conform to the analysis process. The data analysis procedure in this study commenced by classifying shared refrains from the respondent's descriptions of their knowledge. The essential information was written down into expressions or verdicts that each expresses a solitary, distinct notion. Codes and labels were applied to the responses to the closed-ended items. The replies were counted by frequency to create information on the defendants and to show the overall tendency of results on the many factors below examination.

Thematically aligned with the research purposes, qualitative information was evaluated and obtainable in tables and prose style. Quantitative statistics was examined using descriptive statistics such as incidences, fractions, average, and

standard deviation, as well as inferentially using One-Sample t-Test Analysis with aid of Statistical Packages for Social Science (SPSS Version 23) to see if there are any differences between the means of different determinants and girls' math performance. Tables and charts were used to present the study's quantitative findings.

3.13 Ethical Considerations

In research, ethical subjects include detailing the research's substance and what participants were expected to do, as well as how informed consent was gained and confidentially ensured. The research permit to collect the data was sought through an application at NACOSTI and Kajiado County Research Board. The researcher guaranteed participants that any information provided and were to be utilized for academic reasons only. The respondents were guaranteed confidentiality and promised that the data would not be divulged to any person who is not part of the study.

The privacy of the information was maintained, and the researcher guaranteed participants that any provided information was not to be disclosed to anyone. The researcher assured the respondents that their privacy was maintained, and the study was meant for academic purpose only. Anonymity was maintained whereby the researcher instructed the respondents that they need not indicate their identities in the questionnaires and in addition guaranteed participants in the interview that no disclosure was made to anybody in regard to their identities. This assurance allowed the respondents to give all information without holding any information back and give truthful responses. The research assistants also instructed that disclosure of anyone's identity would breach the ethical standards of data collection and would lead to sanctions.

Respondent's were informed that their engagement in research was voluntary. The researcher informed them of their right to not participate and right to withdraw before their responses in the study could be recorded. While participation in the study was voluntary, the researcher encouraged as many respondents to participate in the study. The respondents were informed about the purpose of the study and after agreeing to participate they were required to complete and sign the consent form. The researcher described the countryside and

goal of the study to the participants. The researcher clarified the technique for data collecting to the respondents so that they can gladly participate. The raw data was saved in a file for future reference. Computer printouts were filed after the data had been examined, Softcopies were stored using various storage systems like CDs.

CHAPTER FOUR

DATA PRESENTATION, DSCUSSON AND INTERPRETATION

4.1 Introduction

The analysis, presentation, and interpretation of data collected in the field are presented in this chapter with the goal of accomplishing the study's objectives.

4.2 Response Rate

The study used 208 as the sample population which comprised of the Head teachers, Mathematics' Teachers and Girls in Class VII; drawn from Isinya Sub-county. Table 4.1 displays the study response rate.

Table 4.1:

Response Rate

Category	Frequency	Percentage (%)
Responded	177	85.1
Did not respond	31	14.9
Total	208	100

According to Table 5 from a sample of 208 a total of 177 questionnaires were returned duly filled, translating to an 85.1 percent response rate. Mugenda (2008) asserted that a response rate should be considered satisfactory at 50%, and achieving a 70% response rate is deemed favorable. This therefore implies that the response rate of 85.1% was satisfactory and good for analysis, drawing conclusions and making inferences.

4.3 General Information

The study commenced by investigating on participant's background information. Information sought under this section include gender and highest educational qualifications

4.4 Distribution of Teachers by Gender

Teachers were requested to provide information about their highest educational attainment, and the findings have been presented in Table 4.2. This was to help in knowing and understand

Distribution of Teachers by Gender

Table 4.2;

Distribution of teachers by gender.

	Frequency	Percentage
Male	46	70.8
Female	19	29.2
Total	65	100.0

From the study results, it was established that majority (70.8%) of the respondents were males whereas 29.2% were females. This implies majority of the mathematics teachers in Isinya Sub County were males.

4.5 Highest Level of Educational Attainment

Teachers were required to indicate their highest educational qualifications. Results are presented in Table 4.3.

Table 4.3:

Highest Level of Educational Attainment

	Frequency	Percentage
Diploma	47	72.3
Degree	18	27.7
Total	65	100.0

The study revealed that majority of the primary teachers as show by 72.3% had diploma certificates while 27.7% had bachelor's degree. This implies that majority of the math's teachers in Isinya Sub County had diploma certificates.

4.6 Levels of Performance in Mathematics among Girls

The study aimed to assess the academic performance of female students from 2016 through 2020.

Table 4.4:

State the Mathematics' Performance amongst Girls in Class VII

Year of Examination	Term1 %	Term II %	Term III %
2016	33.7	36.9	26.9
2017	26.8	28.0	26.4
2018	29.5	29.2	31.0
2019	25.4	27.9	29.9
2020	28.7	29.4	27.7

Assessment on performance of girls based on mean scores show a on and off trend, the best Performance (M=36.9) was registered in second term in 2016, while poorest performance was recorded in 2019 first term (M=25.4). Mostly these results also showed steady decline in girls' performance in math except in the year 2018 where girls recorded slight improvement.

4.7 Response from Mathematics Teachers.

The following is response from mathematics teachers:

4.8 Teacher Factors and Performance in Mathematics amongst Girls

The study sought to determine the extent to which teacher factors affected performance in mathematics amongst girls in KCPE in your school. Results are presented in Table 4.5.

Table4.5:***Teacher Factors and Performance in Mathematics amongst Girls***

	N	Max	Min	Mean	Std Dev.
My level of education has not improved performance in mathematics amongst girls in my school	65	2.00	5.00	4.12	0.93
I have taught mathematics for a long time which has really determined KCPE performance in mathematics amongst girls in my school	65	1.00	5.00	3.82	1.32
I rarely believe that girls can learn mathematics which has negatively determined their mathematics' performance	65	3.00	5.00	4.12	0.55
My experience has determined performance of girls in mathematics	65	3.00	5.00	4.08	0.48
I do not feel motivated to teach girls mathematics since their performance in mathematics' examination is low	65	1.00	2.00	1.37	0.49
In my school, girls lack female mathematics' teachers to model girls to like mathematics	65	3.00	5.00	4.31	0.64

Statistical evidence show that majority of the teachers agreed that in most schools in Isinya, girls lack female mathematics' teachers to model girls to like mathematics (Mean = 4.31 SD =0.64). Their level of education has not improved performance in mathematics amongst girls in the school (Mean = 4.12 SD =0.93) and that they rarely believe that girls can learn mathematics which has negatively determined their mathematics' performance (Mean = 4.12 SD =0.55). These results run counter to the conclusion drawn in the study by Akiri and Ugborugbo (2009), which stated that there is no statistically significant correlation between teacher effectiveness and academic performance.

Results further revealed that teachers experience determined performance of girls in mathematics (Mean =4.08 SD =0.48), most of the teachers have taught mathematics for a long time which has really determined KCPE performance in mathematics amongst girls in the school (Mean = 3.82 SD =1.32). However, there was high standard deviation demonstrated and that teachers disagreed with the statements that they don't feel motivated to teach girls mathematics since their performance in mathematics' examination is low (Mean = 1.37 SD =0.49). These findings are in line with study conclusion by Akinsolu (2010), concluded that

teacher-student ratio, teacher’s experience and qualification has a significant impact on academic performance.

4.9 Girl Factors and Performance in Mathematics amongst Girls

The study sought to determine the extent to which girls related factors affected performance amongst girls in KCPE in your school. Results are presented in the table below;

Table4.6:

Girl Factors and Performance in Mathematics amongst Girls

	N	Max	Min	Mean	Std Dev.
Girls show negative attitude towards mathematics which has not improved mathematics’ performance	65	3.00	5.00	4.18	0.68
Peers encourage girls to avoid mathematics since it is difficult which has not improved their mathematics’ performance	65	4.00	5.00	4.29	0.46
In my school, family members and parents rarely act as good role models to girls to enable them work hard in mathematics	65	4.00	5.00	4.35	0.48
In my school, parents are rarely involved in their girls’ study activities as a way of improving performance of girls in mathematics	65	4.00	5.00	4.38	0.49

Statistical evidence show that majority of the teachers agreed that, in most schools in Isinya Sub County parents were rarely involved in their girls’ study activities as a way of improving performance of girls in mathematics (Mean =4.38 SD =0.49) and that family members and parents rarely act as good role models to girls to enable them work hard in mathematics (Mean = 4.35 SD =0.48). Similar conclusion by Meenu Dev (2016) corroborated that parental participation in pupil’s education consequently influenced their academic performance.

The study further revealed that Peers encourage girls to avoid mathematics since it is difficult which has not improved their mathematics’ performance (Mean =4.29 SD =0.46) Girls showed negative attitude towards mathematics which has not improved mathematics’ performance (Mean =4.18 SD =0.68). These findings concur with research findings by Similarly, Crankson (2021) asserted that student’s attitude to school and their interest in learning influence their academic performance.

4.10 School Factors and Performance in Mathematics amongst Girls

Teachers were asked to indicate the extent to which the availability of the following materials in school and results are presented in Table 4.7.

Table 4.7:

School Factors and Performance in Mathematics amongst Girls

	Great Extent	Fairly	Never	Mean	Std Dev.
Availability of instructional resources		39(60%)	26(40%)	2.40	0.49
Conducive physical facilities	14 (21.5%)	40(61.5%)	11 (17%)	1.95	0.62
Development of reward schemes	17 (26.2%)	18(27.7%)	30(46.2%)	2.20	0.83

Statistical evidence (40, 61.5%) showed that most of the schools within Isinya Sub County had moderate quality in reference to physical facility conduciveness, there was also moderate availability of instructional resources (39, 60%). However, evidence show that most of the schools (30, 46.2%) had not developed reward schemes to motivate best performers in math's subject.

The study sought to determine the extent to which school related factors affected girls' performance in mathematics subjects. Results are presented in Table 4.7. The findings supported Abdulai, (2023) findings that schools should provide resources, hold mathematics workshops, and provide advice to primary school female learners in order for them to adapt to new ways for increasing their arithmetic performance.

Table4.8:

School Factors and Performance in Mathematics amongst Girls in School

	N	Max	Min	Mean	Std Dev.
Instructional resources are not available in my school to supplement teaching of mathematics amongst girls and perform	65	2.00	5.00	4.28	0.70
My school has no conducive facilities to enhance performance of girls in mathematics	65	4.00	5.00	4.38	0.49
In my school, there is no reward scheme for girls who perform well in mathematics	65	4.00	5.00	4.31	0.47

Majority of the teachers agreed that most of the schools in Isinya Sub County had no conducive facilities to enhance performance of girls in mathematics (Mean =4.38 SD

=0.49) they hadn't organized for reward schemes for girls who perform well in mathematics (Mean = 4.31 SD= 0.47). Instructional resources are not available in many schools to supplement teaching of mathematics amongst girls and performance (Mean = 4.28 SD =0.70). These findings contradict the recommendations by Tety (2016) noticed that instructional materials have an impact on academic performance.

4.11 Response from Interviewees:-Head teachers-;

4.12 Levels of Performance in Mathematics amongst Girls

Interviewees (head teachers) were asked to clarify on mathematics' performance amongst girls in their school for the last five years.

Table4.9:

Performance in last five years

	Opinion	Percentage
Mathematics' performance amongst girls in your school for the last five years	Decreasing	70%
	Increasing	30%

In their response, majority (70%) of the interviewees (head teachers) reported that mathematics' performance amongst girls has been decreasing, however 30% of the interviewees indicated that girl's mathematics' performance amongst girls was on a positive course. From the qualitative data, head teachers reported that the mathematics' performance amongst girls varied from one class to the other, in most cases, girls performed below average. Majority of the girl's perceived math's subject as difficult and thus little efforts on math's which translated to poor performance. From the findings, it was evident that performance in mathematics, especially amongst the girls in primary schools in internal and national examinations is low.

4.13 Teacher Factors and Performance in Mathematics amongst Girls

Interviewees were asked to relate the extent to which the teacher factors determine performance in mathematics amongst girls in school.

Table4.10:***Teacher Factors and Performance in Mathematics amongst Girls***

	Opinion	Percentage
Do teacher factors determine performance in mathematics amongst girls in school?	Yes	86%
	No	24%

Assessment on teacher factors and performance in mathematics amongst girls drew mixed results, for instance although majority(86%) of interviewees agreed that teacher factors determined performance in mathematics amongst girls in school, some head teachers reported that teacher factors such as experience, skills, teaching motivation were instrumental in inspiring girls to embrace math's subject and thus positive performance. These findings confirm the assertions by Ewetan and Ewetan (2015) emphasized that the level of teacher's experience has significant impact on academic performance in Mathematics.

On contrary some head teachers reported that teacher factors had no influence at all on performance amongst girls in mathematics and the whole issues relied on learners' self-concept. The findings concur with those of Kimani et al. (2013) on teacher factors influencing academic achievement who found that the teachers experience, age, gender and professional qualification were not significant to academic performance of students.

4.14 Girl's Factors and Mathematics' Performance amongst Girls

Head teachers indicated some of the factors which affect girls' ability to perform in mathematics in their school.

Table4.11:***Girl Factors and Mathematics' Performance***

	Opinion	Percentage
Are there some of the factors which affect girls' ability to perform in mathematics in your school	Yes	82%
	No	18%
To what extent do girls' factors determine their mathematics' performance in your school?	Great extent	74%
	Very great extent	26%

Interviewees (82%), (head teachers)majority agreed that; some of the factors affected girls' ability to perform in mathematics in school, from the points noted, interviewees

classifies these aspects into three categories which included school related factors, individual related factors and social cultural and economic factors. With reference to school related factors affecting girl child performance in math's, the participants indicated aspects such as teacher qualification, teacher experience, extent to which the school is equipped with teaching aids corporation spirit between teachers, students and parents affected girls math performance..

On demographic related factors, majority (74 %) of the interviewees agreed to a great extent that girls' factors determined their mathematics' performance. In their opinion the whole aspect revolved on self-esteem which determines the level of motivation in embracement of subjects such as math. Explanation given (26%) by interviewees who agreed to a very great extent indicated that girls draw inspiration from environments in which they are in, this implies that without environmental aspects modeling a culture that embraces math's is difficult for these learners to embrace such or motivation on their own. In their submission, teachers, must inspire learners to embrace Math's as foundation subjects, parents must too motivate and encourage girls in in the same. Partnerships should be made between all stakeholders in development of culture that upholds math's driven culture in girls' schools.

Descriptive results further showed numerous aspects that determine how the learner performs in class, some of the factors indicated include, resource availability teaching aids, quality classrooms, availability of teaching staff, (teacher pupil ratio), quality learning environment, individual level of discipline, parental support, social economic backgrounds, and school culture.

On extent to which girls' factors determine their performance in mathematics subjects, head teachers reported that how an individual perceives (in terms of attitude, interest self-esteem, and motivation personal goals, and personality traits) a subject like math's consequently determines how she will perform, in their opinion, some girls perceived math's subject as boys' subjects and thus culture affected their performance. These results align with the conclusions reached by Sibanda et al. (2015), which suggested that consistent studying habits, self-motivation, school attendance, personal goals, and personality traits all play a role in influencing girls' performance in the subject of mathematics.

Table4.12:***School Factors and Performance in Mathematics amongst Girls***

	Opinion	Percentage
How would you rate the level of availability of resources and facilities in your school	Readily available	20%
	Not available	80%
How do school factors determine performance in mathematics amongst girls in your school?	Very high	60%
	High	40%

On demographic related factors, majority (80%) of the interviewees (head teachers) agreed to a great extent that schools were ill equipped with math's teaching resources; however, 20% indicated that their schools were well resourced. Head teachers were asked to rate resource availability and facilities. Reports given show most schools lacked resources, for instance, some teachers indicated that their schools were understaffed, most school lacked teaching aids, some of the school did not have basis infrastructure facilities such as quality classrooms or sufficient water source, play grounds that could guarantee quality learning environment and all these aspects affected how girls performed in math's subjects. These findings concur with Narad and Addullah (2016) that learning facilities were significant determinants of academic performance.

In addition, 60% of the interviewees (head teachers) indicated to a Very high extent while 40% indicate to a High level. On extent to which school factors determine performance in mathematics amongst girls, head teachers reported that availability of teaching and learning materials, and competency of teachers, school environment and that size of a class or students to teacher ratio also influenced girls performance. Similarly, Bakasa (2011) found that school factors such as effective teaching when combined with class size have a positive impact on academic performance.

Girls' interview**4.15 Provision of Teaching and Learning Resources in Mathematics (class seven girls)**

Interviewees' were asked to clarify whether the school in Isinya Sub – county provides pupils with teaching and learning resources in mathematics.

Table.4.13:***Provision of Teaching and Learning Resources in Mathematics***

Statements	Opinion	Percentage
Does your school provide you with teaching and learning resources in mathematics?	Yes	55%
	No	45%
What is the condition of school facilities in your school	Poor	70%
In your school, is there a culture where girls like mathematics	No	82%
Does your school reward you whenever you perform well in mathematics	No	79%

From descriptive reports, 55% of interviewees (class vii girls) indicated that school provide girls with teaching and learning resources in mathematics, 70% of interviewees (class vii girls) indicated that the condition of school facilities was poor, 82% of class vii girls indicated that there was culture where girls like mathematics and those girls (79%) agreed that the school management did not reward girls whenever they performed well in mathematics.

Participants clarified that most of the schools in Isinya Sub -County did not provide girls with teaching and learning resources in mathematics. In their opining lack of adequate teaching materials affected girl's performance in math's subject. The findings concur with study results by Kyriakides (2019) learning resources such as teaching aids prove to be a formidable supplement for teachers when the reinforcement of a skill or concept is necessary. Not only do they allow students more time to practice, but they also present the information in a way which offers learners a different way to engage with the material.

Table 4.14:***Teacher Factors and Performance in Mathematics amongst Girls***

	Opinion	Percentage
Does your teacher motivate you to learn mathematics	Yes	75%
	No	25%
Do teachers' level of education, experience and attitude determine your ability to perform in mathematics	Yes	100

Assessment on relationship between teacher's motivation and performance in mathematics amongst girls, got mixed results from the girls .Majority, 75% of

interviewees (class vii girls) agreed their teacher's motivate them to learn mathematics. Qualitative data showed that math's teachers used various motivation strategies in class for instance; math's teachers' encouraged each student to have a growth mindset. They provided necessary guidance to pupils during every mathematics lesson, they encouraged, group work, critical thinking and collaborating and solving math's problems. Teachers also employed the use technology and play fun math games. These findings support the study findings by Unterhalter and Dutt (2021) pupil motivation was key creating positive learning culture amongst learners.

Furthermore, all of the interviewees (100%) concurred that teachers' educational background, experience, and attitude significantly contribute to girls' performance in mathematics. Through their qualitative insights, it became evident that teachers' level of experience and their attitude were frequently highlighted as influential factors on girls' math achievement. The results indicate that each female student derives cues from their teacher's demeanor, ultimately shaping their own attitude, which in turn may impact their mathematical learning outcomes. These findings concur with study conclusion by Moore (2000) the highly experienced teachers were more organized in exercising pedagogical skills in teaching of Mathematics and this was significantly related to positive achievement among pupils

Table 4.15:

School Factors and Performance in Mathematics amongst Girls

	Opinion	Percentage
Some of the school in Isinya sub – county lack modern facilities to support quality learning process	Yes	80%
	No	20%
Located far away from learner's homestead	Yes	53%
	No	47%

Assessment on the relationship between condition of school facilities and learning process class seven girls revealed that (80%) some of the school in Isinya Sub – county lacked modern facilities to support quality learning process. For instance, some schools lacked quality classrooms that could contain learner's concentration in learning process. Others indicated that (53%) schools were located far away from learner's homestead thus forcing learners to walk for long distance; some also lacked tap water, adequate playground and electricity. All these factors reduced learners' performance in math. The findings support research conclusions by Mbiti (2012) that

school facilities and the physical environment of the classroom can enhance learning and build culture.

Table 4.16:

Promotion of Culture Where Girls Like Mathematics

	Opinion	Percentage
Schools in Isinya Sub – county were stretching towards promoting a culture where girls like mathematics	Yes	60%
	No	40%
Pupils are given an opportunity to work on engaging problems, productively struggle; discuss their thinking, and learn from mistakes to develop mathematical proficiency	Yes	64%
	No	36%

The class seven girls reported that (60%) most of the schools in Isinya Sub – county were stretching towards promoting a culture where girls like mathematics, the administration strived to ensure that all girls were taught by a professional teacher who liked mathematics and knows math deeply. In building positive math’s culture, teachers’ reflected on their practice and continued to develop as experts in effective math teaching practices. Also (64%) pupils said they were given an opportunity to work on engaging problems, productively struggle; discuss their thinking, and learn from mistakes to develop mathematical proficiency. Similar conclusion by Sankok (2012), show that development of math’s culture in schools call for effective formative assessment, which allows teachers to monitor and help students improve their learning, as well as maintain focus on their goals, occurs on a daily basis.

Whether schools in Isinya Sub – county rewarded girls whenever they performed well in mathematics, descriptive results showed that only a few of the schools had reward program for girls who performed outstandingly. However, the resource mobilization to guarantee reward program was limited. Results show that extrinsic rewards can facilitate a learners’ interest in subjects (like math’s) originally lacked interest in. extrinsic rewards allows the school girls in Isinya Su-county to acquire new skills and knowledge, which eventually lead to intrinsic motivation if the learners continue to pursue the activity. These findings support the study findings by Hayat et al (2020) rewards can form positive reinforcement, given that they give people who learn them a sense of purpose and success when they master a subject, skill, or exercise.

4.16 Girl Factors and Mathematics' Performance amongst Girls

Table 4.17:

Extent to which the following factors affect performance in mathematics

	Opinion	Percentage
Peer pressure	Yes	88
Attitude	Yes	90
Role models	Yes	74
Parental involvement	Yes	80
Motivation	Yes	76
Self-concept	Yes	70

On extent to which peers pressure affect pupil ability to perform in mathematics, critical examination of information given by class seven girls showed that (88%), said peer pressure is detrimental to girl's math's achievement because clever girls were indirectly demotivated and absorbed in popular misinformed cliques. This implied that girls may consciously hide or distort their math's performance capabilities (potential) or results to fit-in their friends' opinions. These findings are in line with study conclusion by Fuhs and McNeil (2013) knowing that a peer would help if needed resulted in a learning benefit.

Interviewees (class seven) agreed role models (74%) affected girls' ability to perform in mathematics. This showed that, role models are essential in improving the sense of belonging and fit which are critical in fostering positive personality and accomplishments in math's subjects. Girls chose role models based on personality and accomplishments. The presence of proficient female role models has the potential to enhance the academic performance of girls in mathematics assessments, bolster their sense of self-efficacy, and foster their dedication to pursuing the field of Mathematics. The aforementioned results provide empirical evidence for the study's assertion made by Woods (2020) that engagement in science outreach initiatives that incorporate female role models has a positive impact on the self-perceived ability and enthusiasm towards science among female students in middle school.

Parents' through Parental involvement (80%) served as role models and guides in encouraging their girls' to pursue high educational goals and desires by establishing the educational resources. Parents who held positive learning philosophy might induce positive math's culture to their children through supervision on home

assignments, or buying of materials that enticed positive attitude towards embracement of math's culture. These findings are in line with study conclusion by Ojedapo et al. (2014) the role of parents is instrumental to girls' performance in math's subject.

The girls (76%) reported that motivational strategy used by teachers and parents' promoted girls' extrinsic motivation. Use of motivation strategies led to a better performance of girl' learners in math's subject. Motivation helped to improve in mathematics and enabled girls recognize subjects that are recipes for their dream careers. These findings support study conclusion by Sankok (2012), motivation exerts a significant influence on the intended outcome of the student's learning process, encompassing several aspects such as objectives, exerted effort, sustained perseverance, and overall performance.

Girls' reports showed that individual self-concept (90%) affected girl's achievement in mathematics. This belief tends to affect the approach of girls towards Mathematics. In most cases, girls with positive self-drive were more likely to perform better than girls with low self-esteem. Results also showed that most of the Girls in Isinya Sub County had low self-concept and esteem which affected their learning of Mathematics subject. The findings concur with research conclusions by Kyriakides (2019). Positive self-beliefs are at the heart of the positive attitude towards Mathematics. It is imperative for girls to possess a strong sense of self-worth, self-awareness, and personal identity in order to effectively engage with and acquire knowledge in the field of science. The next section encompasses the data analysis and subsequent discussions.

CHAPTER FIVE

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a discussion of research findings in relation to the research objectives. The objectives of the study include: to establish the effect of teacher factors on performance in mathematics amongst girls in Isinya Sub County; to determine the degree to which girls' factors affect performance in mathematics amongst girls in Isinya Sub County and to assess the effect of school factors on performance in mathematics amongst girls in Isinya Sub County. The chapter further presents conclusions, recommendations and areas for further research based on the findings.

5.2 Discussions of Key Findings

5.3 Teacher Factors and Performance in Mathematics amongst Girls

In line with the first objective, the study notes that in most schools in Isinya, girls lack female mathematics' teachers to model them like mathematics, that teachers experience determine performance of girls in mathematics, most of the teachers have taught mathematics for a long time which has really determined KCPE performance in mathematics amongst girls in the school, and that they still feel motivated to teach girls mathematics despite the fact that the performance of girls in mathematics' examination being still low. These findings are in line with study conclusion by Akinsolu (2010), concluded that teacher-student ratio, teacher's experience and qualification has a significant impact on academic performance.

Results show that math's teachers used various motivation strategies in class for instance; math's teachers' encouraged each student to have a growth mindset. They provided necessary guidance to pupils during every math's lesson, they encouraged, group work, critical thinking and collaborating and solving math's problems. Teachers also employed the use of technology and play fun math games, supporting Unterhalter and Dutt (2021) that pupil motivation was key creating positive learning culture amongst learners.

From the qualitative synthesis, the teachers' level of experience and attitude was strongly mentioned to influence girls' achievement in mathematics. The findings indicate that female students are influenced by the teacher's demeanor, which then shapes their own attitudes and potentially impacts their performance in mathematics. These findings concur with study conclusion by Moore (2000) the highly experienced teachers were more organized in exercising pedagogical skills in teaching of Mathematics and this was significantly related to positive achievement among pupils.

Assessment on teacher factors and performance in mathematics amongst girls drew mixed results, for instance some head teachers reported that teacher factors such as experience, skills teaching motivation was instrumental inspiring girls to embrace math's subject and thus positive performance. These findings confirm the assertions by Ewetan and Ewetan (2015) that the level of teacher's experience has significant impact on academic performance in English Language and Mathematics.

Contrary reports show that teacher factors had no influence at all on performance amongst girls in mathematics and the whole issues relied on learner's self-concept. The findings concur with those of Kimani et al. (2013) in Kenya on teacher factors influencing academic achievement, found that teachers experience, age, gender and professional qualification had no statistical significant relationship with academic performance of students.

The teacher's level of education had not improved performance in mathematics amongst girls in the school and that teachers rarely believed that girls could learn mathematics. These findings concur the study conclusion by Akiri and Ugborugbo (2009) found that there was no relationship between teacher effectiveness and academic performance.

5.4 Girl Factors and Performance in Mathematics amongst Girls

Statistical evidence showed that, in most schools in Isinya Sub County parents are rarely involved in their girls' study activities as a way of improving performance of girls in mathematics and that family members and parents rarely acted as good role models to girls to enable them work hard in mathematics. Similar conclusion by Meenu Dev (2016) corroborated that parental participation in pupil's education consequently influence their academic performance.

The study further revealed that peers encouraged girls to avoid mathematics since it is difficult which has not improved their mathematics' performance. Girls showed negative attitude towards mathematics which has not improved mathematics' performance. These findings concur with research findings by Similarly, Crankson (2021) asserted that students' attitude to school and there interest in learning influence their academic performance. Descriptive results show numerous aspects that determine how the learner performs in class, some of the factors indicated include, resource availability teaching aids, quality classrooms, availability of teaching staff, (teacher pupil ratio), quality learning environment, individual level of discipline, parental support, social economic backgrounds, and school culture.

On extent to which girls' factors determine their performance in mathematics subjects, interviewees reported that how an individual perceives (in terms of attitude, interest self-esteem, and motivation personal goals, and personality traits) a subject like math's consequently determines how she will perform, in their opinion, some girls perceived math's subject as boys subjects and thus culture affected their performance. The aforementioned results are consistent with the conclusion drawn in the study by Sibanda et al. (2015), which posits that girls' performance in mathematics is influenced by their consistent study habits, self-motivation, school attendance, personal goals, and individual personality traits.

On extent to which peers pressure affect pupil ability to perform in mathematics, critical examination of information given by learners show that peer pressure is detrimental to girl's math's achievement because clever girls were indirectly demotivated and absorbed popular misinformed cliques, this implies that girls may consciously hide or distort their math's performance capabilities (potential) or results to fit-in their friends' opinions. These findings are in line with study conclusion by Fuhs and McNeil (2013) knowing that a peer would help if needed resulted in a learning benefit.

Assessment on extent to which role models affect girls' ability to perform in mathematics, show that, role models are essential in improving the Sense of belonging and fit which are critical in fostering positive personality and accomplishments in math's subjects. Girls chose role models based on personality and accomplishments. Exposure to competent female role models can improve girl's performance on

math tests, feelings of self-efficacy, and commitment to pursue Mathematics. These findings support study conclusion by Woods, (2016) that participating in science outreach programs featuring female role models increases school girls' sense of self-efficacy and interest in science.

Parents serve as role models and a guides in encouraging girls to pursue high educational goals and desires by establishing the educational resources. Parent who holds positive learning philosophy may induce positive math's culture to their children through supervision on home assignments, or buying of materials that entice positive attitude towards embracement of math's culture. These findings are in line with study conclusion by Ojedapo et al. (2014) the role of parents is instrumental to girls' performance in math's subject.

Descriptive data indicate that the implementation of motivational techniques by both instructors and parents has been found to enhance girls' extrinsic motivation. Furthermore, the utilization of motivational tactics has been linked to improved academic performance among female students in the field of mathematics. Motivation played a crucial role in demystifying mathematics and empowering young girls to see the relevance of topics that serve as stepping stones towards their desired professional paths. The aforementioned data provide support for the study's conclusion posited by Sankok (2012), which suggests that motivation has a significant influence on the desired outcomes of student learning, encompassing aspects such as goals, effort, persistence, and performance.

Reports show that individual self-concept affects girl's achievement in mathematics. This belief tends to affect the approach of girls towards Mathematics. In most cases, girls with positive self-drive were more likely to perform better than girls with low self-esteem. Results also showed that most of the Girls in Isinya Sub County had low self-concept and esteem which affected their learning of Mathematics subject. The findings concur with research conclusions by Kyriakides (2019), Positive self-beliefs are at the heart of the positive attitude towards Mathematics. Girls should have a high sense of self-worth, self-awareness, and personal identity that enables them to learn science subjects.

5.5 School Factors and Performance in Mathematics amongst Girls

Statistical evidence (Mean 40, 61.5%) show that most of the schools within Isinya Sub County had moderate quality in reference to physical facility conduciveness. There was also moderate availability of instructional resources (39(60%). However, evidence show that most of the schools (30, 46.2%) had not developed reward schemes to motivate best performers in math's subject. Most of the schools had no conducive facilities to enhance performance of girls in mathematics. They hadn't organized for reward schemes for girls who performed well in mathematics and that Instructional resources were not available in the schools to supplement teaching of mathematics amongst girls. These findings contradict the recommendations by Tety (2016) who noticed that instructional materials have an impact on academic performance.

Reports given show that the schools in Isinya Sub County lacked resources. For instance: some teachers indicated that their schools were understaffed, most school lacked teaching aids, some of the school did not have basis infrastructure facilities such as quality classrooms or sufficient water source, play grounds that could guarantee quality learning environment and all these aspects affected how girls performed in math's subjects. These findings concur with studies by Narad and Addullah (2016) learning facilities have a significant determinant to academic performance.

On extent to which school factors determine performance in mathematics amongst girls, head teachers reported that availability of teaching and learning materials, and competency of teachers, school environment and that size of a class or students to teacher ratio also influenced girls performance. Similarly, Bakasa (2011) found that school factors such as effective teaching when combined with class size have a positive impact on academic performance.

Descriptive reports revealed that the location of a school has a significant impact on the academic performance of girls and more so in math's subject supporting conclusion by Nambuya (2013) who revealed that the availability of physical resources such as library, text-books, adequacy of classrooms and spacious playing ground affect the academic performance of pupils.

The study uncovered that most of the schools in Isinya Sub county did not provide girl's with teaching and learning resources in mathematics; in their opinion lack of adequate teaching materials affected girls performance in math's subject. The results of this study align with the findings of Kyriakides (2019), indicating that teaching aids, such as learning resources, can be a valuable tool for teachers when they need to reinforce a particular skill or concept. In addition to affording pupils increased practice opportunities, these instructional methods also provide learners with another means of interacting with the content.

Assessment on the relationship between condition of school facilities and learning process revealed that some of the schools in Isinya Sub – county lacked modern facilities to support quality learning process. For instance, some schools lacked quality classrooms that could contain learner's concentration in learning process. Others were located far away from learner's homestead thus forcing learners to walk for long distance; some lacked also tap water, adequate playground and electricity, all these factors reduced learners' performance in math's lessons. The findings support research conclusions by Mbiti (2012) that school facilities and the physical environment of the classroom can enhance learning and build culture.

The majority of schools in the area have been actively working towards fostering a culture that encourages females to develop an interest in mathematics. The administration made efforts to ensure that all female students were instructed by a highly qualified mathematics teacher who has a profound understanding and enthusiasm for the subject. When establishing a favorable mathematics culture, educators engage in self-reflection and strive for ongoing professional growth to enhance their proficiency in implementing appropriate instructional strategies for mathematics. Additionally, students were afforded the chance to engage with challenging issues, engage in productive struggle, engage in discussions about their thought processes, and learn from errors in order to cultivate their mathematical ability. Sankok (2012) also arrives to a comparable finding, suggesting that the cultivation of a mathematical culture inside educational institutions necessitates the implementation of efficient formative assessment practices. These practices enable professors to actively monitor and support students in their learning endeavors, while simultaneously ensuring that students remain focused on their educational objectives. Moreover, this process of formative assessment should ideally occur on a daily basis.

Descriptive results show that only a few of the school in Isinya Sub County had reward program for girls who performed outstandingly. However, the resource mobilization to guarantee reward program was limited. Results showed that extrinsic rewards can facilitate a learners' interest in subjects (like math's) that they originally did not have interest in. The provision of extrinsic rewards enables the school girls in Isinya Sub-county to gain novel skills and knowledge, ultimately fostering intrinsic motivation should the learner persist in their engagement with the activity. The aforementioned conclusions corroborate the research findings conducted by Hayat et al (2020). Rewards have the potential to serve as a type of positive reinforcement by providing learners with a sense of significance and achievement as they strive to attain mastery in specific activities, skills in addition to subject.

5.6 Conclusions

Based on study's findings, this study concludes that teacher related factors such as experience, education, competency and organization, all affect the performance of girls in mathematics subject. In most schools in Isinya, girls lack female mathematics' teachers to model them like mathematics, that teachers experience determine performance of girls in mathematics and that the teachers' level of experience and attitude was strongly mentioned to influence girls' achievement in mathematics. Highly experienced teachers were more organized in exercising pedagogical skills in teaching of Mathematics and this was significantly related to positive achievement among pupils.

The study concludes that girls' factors affect the performance in mathematics amongst girls in Isinya Sub-County; Interest manifested by girls' pupils, regular studying, class attendance, self-motivation, peer pressure and attitude towards learning, Girls show negative attitude towards mathematics which has not improved mathematics' performance Peer pressure is detrimental to girl's math's achievement because clever girls were indirectly demotivated and absorbed in popular misinformed cliques .This implies that girls may consciously hide or distort their math's performance capabilities (potential) or results to fit-in their friends opinions.

The study concludes that school factors affect the performance of girls in mathematics subject in Isinya Sub- County. Most of the schools in Isinya Sub County have no conducive facilities to enhance performance of girls in mathematics, some schools in

Isinya Sub County were understaffed, most school lacked teaching aids, and some of the school did not have basic infrastructure facilities such as quality classrooms or sufficient water source. Resource availability teaching aids, quality classrooms, availability of teaching staff, (teacher pupil ratio), quality learning environment, individual level of discipline, parental support, social economic backgrounds, school culture, availability of physical resources such as library, text-books, adequacy of classrooms and spacious playing ground affect the girls performance in math's subject.

5.7 Recommendation

Given that teacher related factors were found to play a critical role in improving girls' performance in math's subject;

I recommend that there is need to improvise measures that enhance teacher capacity for teaching efficiency. Such may include strategies like developmental trainings, workshops, seminars and teacher motivation strategies.

I recommend that the head teachers being major stakeholder in the schools should provide the right leadership skills and also motivate the teachers towards having the right attitude geared at improving the girls' performance in Mathematics in schools. This is because if the head teacher is able to motivate the teachers their morale will improve and also if the head teacher instills discipline in girls they will be self-motivated and thus they will tend to perform well.

I recommend that the government through the Ministry of Education being a major stakeholder in education should provide adequate and timely resources in schools to ensure that there is adequate infrastructure geared towards improving girls' performance in Mathematics in schools. This is because availability of instructional resources, adequate infrastructure, finance, staffs and also learning materials enable girls to perform well in mathematics.

I recommend that on enhancing girls' individual factors; the governments, school management and other stake holders such as parents and advocacy organization needs to come up with multidimensional approach measures that work towards transforming girls' identity and value. This will call for structures that motivate girls in learning while appreciating societal values that impede girls from exceling in education.

I also recommend that in dealing with school related factors that hamper girl's performance in Mathematics; similarly call for multiple efforts from government, school administration and parents. This is critical in providing strategic plans and necessary resources that enhance quality learning environment for girls' experience not only in math's but in career.

5.8 Recommendation for Further Studies

The study investigated on determinants of performance in mathematics among girls in public primary schools in Isinya sub-county; similar studies maybe conducted on neighboring counties such as in Narok and results compared.

Since the study was carried out in a semi-arid area with pastoral community I recommend a similar study be conducted in farming high potential area to look at determinant of girls in public primary school mathematic performance.

More research can also be carried out on specific factors like girls attitude towards mathematics or peer influence towards mathematics and its effect on girls in public primary schools performance in mathematics.

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APPENDICES

APPENDIX I: LETTER OF INTRODUCTION

June, 2019

Dear Sir/Madam,

RE: PERMISSION TO CARRY OUT RESEARCH

I am a student undertaking a course in Master of Education in Leadership and Management at Kenya Methodist University. I am required to submit, as part of my research work assessment, a research thesis on “Determinants of Mathematics’ Performance among Girls in Public Primary Schools in Isinya Sub- County, Kajiado County, Kenya”. To achieve this, you have been selected to participate in the study. I kindly request the sampled respondents to, fully, participate in the study. This information will be used purely for academic purpose and your name will not be mentioned in the report. Findings of the study, shall upon request, be availed to you.

Your assistance and cooperation will be highly appreciated.

Thank you in advance.

Yours faithfully,

Grace Wangui Gichaga

APPENDIX II: INFORMED CONSENT FORM

Dear respondent,

The researcher is a student undertaking a degree course in Master of Education in Leadership and Management at Kenya Methodist University, carrying out a research on Determinants of Mathematics' Performance among Girls in Public Primary Schools in Isinya Sub-county, Kajiado County, Kenya. For this study, I will request you to give me some time as you will be asked some questions. I will maintain your privacy and confidentiality about your information. Your name will not be written on any of the materials, and only the researcher will have access to your information. The research will not benefit you personally. Your participation is totally voluntary, and you may change your mind and withdraw at any time before and during the study. We will not pay or give any facilities for this participation. If you want to take part to participate in this research, please sign the form below.

Participant:

-----	-----	-----
Name of Participant	Signature	Date

Researcher:

-----	-----	-----
Name of Researcher	Signature	Date

Section C: Teacher Factors and Performance in Mathematics amongst Girls

Rate the extent to which you agree with the following statements on teacher factors and performance in mathematics amongst girls in KCPE in your school

Key: SA-Strongly Agree A-Agree U-Undecided D-Disagree SD-Strongly Disagree

Test Items	SA	A	U	D	SD
	5	4	3	2	1
My level of education has not improved performance in mathematics amongst girls in my school					
I have taught mathematics for a long time which has really determined KCPE performance in mathematics amongst girls in my school					
I rarely believe that girls can learn mathematics which has negatively determined their mathematics' performance					
My experience has determined performance of girls in mathematics					
I do not feel motivated to teach girls mathematics since their performance in mathematics' examination is low					
In my school, girls lack female mathematics' teachers to model girls to like mathematics					

Section D: Girl Factors and Performance in Mathematics amongst Girls

Rate the extent to which you agree with the following statements on girls' factors and performance in mathematics amongst girls in your school

Key: SA-Strongly Agree A-Agree U-Undecided D-Disagree SD-Strongly Disagree

Test Items	SA	A	U	D	SD
	5	4	3	2	1
Girls show negative attitude towards mathematics which has not improved mathematics' performance					
Peers encourage girls to avoid mathematics since it is difficult which has not improved their mathematics' performance					
In my school, family members and parents rarely act as good role models to girls to enable them work hard in mathematics					
In my school, parents rarely are rarely involved in their girls' study activities as a way of improving performance of girls in mathematics					

Section E: School Factors and Performance in Mathematics amongst Girls

To what extent would you rate the availability of the following in your school?

School Factors	Great Extent	Fairly	Never
	3	2	1
Availability of instructional resources			
Conducive physical facilities			
Development of reward schemes			

Rate the extent to which you agree with the following statements on school factors and performance in mathematics amongst girls in your school

Key: SA-Strongly Agree A-Agree U-Undecided D-Disagree SD-Strongly Disagree

Test Items	SA	A	U	D	SD
	5	4	3	2	1
Instructional resources are not available in my school to supplement teaching of mathematics amongst girls and perform					
My school has no conducive facilities to enhance performance of girls in mathematics					
In my school, there is no reward scheme for girls who perform well in mathematics					

Thank you

Grace Wangui Gichaga

APPENDIX IV: INTERVIEW GUIDE FOR HEADTEACHERS

Dear respondent,

The researcher is a student undertaking a course in Master of Education in Leadership and Management at Kenya Methodist University. I am required to submit, as part of my research work assessment, a research project on Determinants of Mathematics' Performance among Girls in Public Primary Schools in Isinya Sub-county, Kajiado County, Kenya. The information you provide will be treated with confidentiality and entirely used for purposes of this study.

Section A: General Information

Gender:

What is your highest level of education?

Section B: Levels of Performance in Mathematics amongst Girls

What are the mathematics' performance amongst girls in your school for the last five years?

.....
.....

Section C: Teacher Factors and Performance in Mathematics amongst Girls

To what extent do teacher factors determine performance in mathematics amongst girls in your school?

.....
.....

Section D: Girl Factors and Mathematics' Performance amongst Girls

What are some of the factors which affect girls' ability to perform in mathematics in your school?

.....

What is the extent to girls' factors determine their mathematics' performance in your school?

.....
.....

Section E: School Factors and Performance in Mathematics amongst Girls

How would you rate the level of availability of resources and facilities in your school?

.....
.....

How do school factors determine performance in mathematics amongst girls in your school?

.....
.....

Thank you

Grace Wangui Gichaga

APPENDIX V: INTERVIEW GUIDE FOR GIRLS IN CLASS VII

Dear respondent,

The researcher is a student undertaking a course in Master of Education in Leadership and Management at Kenya Methodist University. I am required to submit, as part of my research work assessment, a research project on Determinants of Mathematics' Performance among Girls in Public Primary Schools in Isinya Sub-county, Kajiado County, Kenya. The information you provide will be treated with confidentiality and entirely used for purposes of this study.

Section A: Teacher Factors and Performance in Mathematics amongst Girls

How does your teacher motivate you to learn mathematics?

.....
.....

In your opinion, do teachers' level of education, experience and attitude determine your ability to perform in mathematics?

.....
.....

Section B: Girl Factors and Mathematics' Performance amongst Girls

To what extent do the following factors affect your ability to perform in mathematics?

Peer pressure

Attitude

.....
.....

Role models

.....
.....

Parental involvement

.....
.....

Motivation

.....
.....

Self-concept

.....
.....

Section C: School Factors and Performance in Mathematics amongst Girls

Does your school provide you with teaching and learning resources in mathematics?

.....
.....

What is the condition of school facilities in your school?

.....
.....

In your school, is there a culture where girls like mathematics?

.....
.....

Does your school reward you whenever you perform well in mathematics?

.....
.....

Thank you

Grace Wangui Gichaga

APPENDIX VI: MAP OF KAJIADO EAST CONSTITUENCY SHOWING ISINYA SUB-COUNTY



Source: Independent Electoral and Boundaries Commission (2012)

APPENDIX VII: KEMU UNIVERSITY DATA COLLECTION LETTER



KENYA METHODIST UNIVERSITY

P. O. Box 267 Meru - 60200, Kenya
Tel: 254-064-30301/31229/30367/31171

Fax: 254-64-30162
Email: deanrd@kemu.ac.ke

DIRECTORATE OF POSTGRADUATE STUDIES

February 25, 2022

Commission Secretary,
National Commission for Science, Technology and Innovations,
P.O. Box 30623-00100,
NAIROBI.

Dear sir/ Madam,

GRACE WANGUI GICHAGA (EDU-3-1522-1/2015)

This is to confirm that the above named is a bona fide student of Kenya Methodist University, Department of Education, undertaking a Degree of Master of Education in Leadership and Management. She is conducting research on, "Determinants of Performance in Mathematics among girls in public primary schools in Isinya Sub-County".

We confirm that her research proposal has been defended and approved by the University.

In this regard, we are requesting your office to issue a permit to enable her collect data for her research.

Any assistance accorded to her will be appreciated.



Dr. John Muchiri, PHD.
Director, Postgraduate Studies
Cc: Dean SESS
COD, Education
Postgraduate Co-ordinator
Supervisors

APPENDIX VIII: NACOSTI LICENSE



REPUBLIC OF KENYA

Ref No: **442350**



**NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY & INNOVATION**

Date of Issue: **01/March/2022**

RESEARCH LICENSE



This is to Certify that Miss. GRACE GICHAGA of Kenya Methodist University, has been licensed to conduct research in Kajjumo on the topic: DETERMINANTS OF PERFORMANCE IN MATHEMATICS AMONG GIRLS IN PUBLIC PRIMARY SCHOOLS IN ISINYA SUB-COUNTY for the period ending : 01/March/2023.

License No: **NACOSTI/P/22/16072**

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APPENDIX IX: DIRECTOR OF EDUCATION CLEARANCE

