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**FACTORS INFLUENCING THE ATTITUDE OF SECONDARY SCHOOL  
STUDENTS TOWARDS THE STUDY OF MATHEMATICS IN NAGONGERA  
TOWN COUNCIL IN TORORO DISTRICT**

**BY**

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**AUGUST, 2024**

## DECLARATION

I **KHALAYICATHERINE**, hereby declare that this report is my original work and has never been submitted to a college, University, or other organizations for any award.

KHALAYI.....date.....28 / August / 2024.....

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## APPROVAL

This dissertation entitled: **FACTORS INFLUENCING THE ATTITUDE OF SECONDARY SCHOOL STUDENTS TOWARDS THE STUDY OF MATHEMATICS IN NAGONGERA TOWN COUNCIL IN TORORO DISTRICT** has been submitted for examination with the supervision and approval of my university supervisor

Signature  ..... Date 28/08/2024 .....

Dr. Annet Kyomuhangi

## **DEDICATION**

To my lovely father Waneloba Isaac, my lovely Mother Nambobi Sarah, Brothers Daniel and Stanley, my sisters Judith, Constance, Linus and Joyce, you were my inspiration, challengers and cheerleaders during my graduate studies.

## **ACKNOWLEDGEMENT**

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## **ABSTRACT**

This study investigated the factors affecting secondary school students' attitudes towards mathematics in Nagongera, Tororo district, Uganda. A cross-sectional survey of 120 students revealed that background environment, parental involvement, and learning styles significantly impact students' attitudes. The findings show that students' attitudes directly influence their mathematics performance. Parental encouragement fosters a positive attitude towards mathematics. The study recommends organizing seminars and workshops to promote positive attitudes towards mathematics. However, further research is needed to explore other influencing factors, such as gender bias, to address the existing gap in research

## CHAPTER ONE: INTRODUCTION

### 1.1 BACKGROUND

In today's information age, mathematics proficiency is crucial for individuals to navigate everyday situations. However, students' attitudes towards mathematics can be influenced by various factors, including socio-economic backgrounds, leading to anxiety and poor performance. The way students felt and perceived mathematics had a significant impact on how well they achieved and reached their full potential. "Alienated measures of like or disliking of mathematics, a tendency to engage in or avoid mathematics activities (Grootenboer, Grootenboer, & Marshman, 2015), and the belief that mathematics was useful or useless" are Neale's definitions of attitudes toward mathematics. These definitions highlight a few key points: response consistency exists, attitude was learnt, and it led one to adopt a slated or inferred altitude or to have such an attitude as a result of previous influences that favoured ( Emmanuel, 2024). Similarly, attitude was described by Aiken "an individual's learned predispositions or tendency to respond positively or negatively to some objects, situation, concept, or another." (Asiegbu, Powei, & Iruka, 2012).

Teachers' views toward mathematics may imply a desire to impart what they have learned as a duty or as a priceless resource of information that may help their students. As an alternative, the learner's attitudes toward mathematics may be evaluated in connection to their innate tendencies, their exposure to the environment, their personal preferences, or scales of worth.

Further research was necessary to determine the missing piece in the mathematical achievement. An individual's attitude dictated their intended behaviour, which in turn impacted the result (Ajzen, Fishbein, Lohmann, & Albarracín, 2018). He claimed that by analysing an object, a person developed particular attitudes about it based on the model.

Following his thought process, the individual chose whether to have a positive or negative opinion on it. Positive or negative attitudes like these might, in fact, have an additional effect on a person's intents to act in different ways towards that specific thing.

This was viewed as a substantial predictor of the outcome based on the individual's behaviour. Behaviour was influenced by attitudes, which impacted the choices a learner made in the classroom, the way he responded to teachers, the way he used the information, and how he interacted with other students.

Specifically, the distinction between attitudes toward some "object" and attitudes toward a specific action to be performed towards that "object" (e.g., between attitudes towards science and attitudes towards doing school science) was the focus of Ajzen and Fishbein's theory of reasoned action, which is primarily concerned with predicting behaviour. According to Ajzen and Fishbein, the latter attitude type best predicts behaviour. Their theory therefore illustrated the connection between behaviour, intention, and attitude. It was believed that intention determined behaviour, and intention was a result of both attitude toward the behaviour and the subjective norm (beliefs about how one's performance of the behaviour was viewed by others). In the past, there has been a general consensus that attitude could be regarded as a significant predictor of one's academic achievement. Most of these researches illustrated the more positive one's attitude towards academic subject, the high the possibility for him/her to perform well academically (Oguan Jr, Bernal, & Pinca, 2014).

This study aimed at determining the factors that influence the attitude of secondary school students towards the study of mathematics and how those factors impact mathematics instruction and learning. This was due to the pressing need to improve arithmetic since poor performance limit job advancement and involvement in a wide range of occupations.

## **1.2 PROBLEM STATEMENT**

Mathematics is a fundamental subject in secondary education providing the foundation for various and academic pursuits(Lesh, Hamilton, & Kaput, 2007).Therefore understanding factors that influenced students attitude towards the study of mathematics was crucial for educators, policy makers and researchers to develop effective interventions and improve mathematics education outcome. In an ideal education settings students approached the study of mathematics with curiosity, confidence and growth mindset(Peterson & Cohen, 2019). They perceived mathematics as a tool for problem solving, critical thinking and intellectual development. However in reality many secondary school students exhibit negative attitudes towards mathematics due to feelings of anxiety, frustration leading to low academic performance and disengagement from the subject(Blondal & Adalbjarnardottir, 2012). Also several factors such as ineffective teaching methods, peer influences, parental attitudes, lack of confidence and cultural stereotypes contributed to this phenomenon. Therefore, the gap between the real and ideal when understanding the specific factors that shape secondary school students' attitudes towards the study of mathematics remains significant. While numerous studies have

explored the relationship between attitude and academic achievement, few have labored to study the underlying determinants of these attitudes among adolescents. Thus, there was a need for comprehensive qualitative research. If the negative attitudes towards the study of mathematics is not attended to at individual level students then unfavorable attitudes are more likely to face academic difficulties leading to lower grades, decreased self-esteem and limited career opportunities in steel fields. It also led to lack of global competitiveness, innovation and technological advancements posing challenges for economic growth and social development(Dahlman, 2007).

### **1.3 RESEARCH OBJECTIVES**

#### **1.3.1 General Objective.**

To evaluate the factors that influence the attitude of secondary school students towards the study of mathematics in Nagongera town council.

#### **1.3.2 Specific Objectives**

1. To find out students' perception of the difficulty level of mathematics.
2. To determine the role of teachers in shaping students' attitudes towards mathematics.
3. To analyse whether there is gender-based differences in attitudes towards mathematics.

### **1.4 RESEARCH QUESTIONS**

1. What are the factors influencing the attitude of secondary school students towards the study of mathematics in Nagongera town council?
2. How do secondary school students attitudes towards mathematics vary based on their academic performance and grades in the subject?
3. What is the impact of teacher-student interactions on secondary school students' perceptions of the relevance and enjoyment of mathematics?
4. How do extracurricular activities related to mathematics, such as math clubs or competitions, influence secondary school students' attitudes and motivation towards the subject?

## **1.5 SIGNIFICANCE OF THE STUDY**

The study will provide knowledge to teachers and the parents on how to change the attitude of students' towards the study of mathematics in secondary schools. Also the mathematics teachers of secondary schools will be able to vary on their teaching strategies in order to fit the students' needs in studying mathematics.

The study will provide knowledge to curriculum developers in the formulation of strategies aimed at enhancing students' attitude in mathematics. The study will act as a foundation for other researchers.

## **1.6 SCOPE OF THE STUDY**

### **1.6.1 Geographical scope**

This study was carried out in Nagongera town council secondary schools and three secondary schools were selected.

### **1.6.2 Subject scope**

The study is limited to factors influencing the attitude of secondary school students towards the study of mathematics.

## **CHAPTER TWO: LITERATURE REVIEW**

This chapter brings out other researches done that are similar to my research problem. The chapter is sub divided into three sections and these include academic performance of boys and girls, the difference in academic performance between boys and girls, and the factors that lead to the difference in academic performance between boys and girls.

### **2.1 ACADEMIC PERFORMANCE OF BOYS AND GIRLS**

The study on sex difference in academic performance of boys and girls reveals controversial results basing on the different assumptions. One of the assumptions normally made earlier is that boys are good at mathematics and girls are good at language. The common assumption is that girls, who are stereotyped as being by nature better communicators and more vehement, are naturally better at reading and writing. In controversy, boys are expected to be better at mathematics and science, since they are assumed to be more rational than girls. These stereotypes, however, are completely wrong and also damaging to the success of both boys and girls. Although girls do outperform in language, they are also found to outperform at the same level in subjects of mathematics and science in the classroom compared to boys (Voyer et al., 2014). The performance of boys is not reaching the same level as girls in the classroom achievement for these boys is falling behind. This academic difference could easily be dismissed as not an urgent problem; however, students are being stripped of their full potential and in the sense that success of every student in the world defines the future. The issue with differences in performance results is not from girl's biological lack of abilities, but rather because they are categorised to not exhibit enough confidence in places that matter as for boys, due to their socialized competitiveness who have a greater desire to prove themselves in the places that matter.

Culturally, research has showed that girls have outperformed boys globally in language classes (Erikson et al., 2020). Also a study in the UK shows that girls outperform boys in mathematics classes, which is not culturally expected. This is not common in other countries, as there is no common finding that girls do any worse than boys in classroom settings in regard to mathematics and science (Trakulphatkrai, 2017). As students mature and become more aware of the world around them, their academic success changes more and more. However, when it comes to achievement tests, although girls still outperform boys in

language, boys do better in mathematics and science (Erikson et al., 2020). Research has argued that stereotypes have created a self-fulfilling prophecy for girls and inspiring social expectations for boys leading to differences in performance which means that culture is the root of the problem (Voyer et al., 2014; Hadjar et al., 2014).

Research on cultural expectations for girls from their parents affects how they perform in classroom (Voyer et al., 2014). This suggests that parents attribute the success of their daughters to their effort, whereas boys have their success attributed to their innate talents. The girls grow up believing they need to spend more time than boys to achieve in the classroom making them more likely to spend time in studying and reviewing. Along with the effort that girls put into their learning, they engage in positive learning strategies that rely on them and not just preparing to champion in a test. Parental expectations for their daughters partly explain the outperformance girls have in the classroom setting.

However, this is easily combated by looking at girl's lack of self-efficacy and Expectancy Value model. (Voyer et al., 2014) suggests that girls fall victim to the expectancy value model, in which girls expect to do poorly on their achievement tests and so. Therefore, they see no value in even putting forth full effort in the first place. The girls expect to do poorly because of lack of representation in mathematics books during childhood and because of stereotypes that they do not have innate talent boys have (Trakulphatkrai, 2017). Also, (Azer, 2010) explains that due to anxiety about accuracy, girls depend on manipulative such as counting on their fingers, whereas the culturally promoted competitive spirit of boys gives them the inclination to focus on the speed of giving an answer. The difference in methods leads to girls having a hard time of keeping up during timed tests and later leads to anxiety and a decreased sense of confidence. Achievement tests, which are based on speed and time, are more aligned to the methods boys use due to their confidence. Whereas classrooms which are based more on accuracy, are attuned to girls. Another source of anxiety was found by (Dowker et al., 2016) in which he noticed that most teachers in grade schools are females. It was found that the female primary school teachers are less comfortable with mathematics than other subjects. Therefore, the girls in these classes finds a greater level of connection and association to the female teachers than boys do, relate mathematics anxiety the teachers have to their own talent, or rather perceived lack of it. In result, the girls have extreme mathematics anxiety when it come to the achievement tests and then are not capable of showing their actual abilities as they do in the classroom.

Shifting the focus from girls to boys, it is found that boys underperform in school due to an inability to adapt to social expectations. These boys find themselves overwhelmed by feelings of isolation which leads to poor classroom behaviour. (Hadjar et al., 2014) stated that the traditional image of male identity, which includes dominant or even deviant roles contributes to classroom behaviour that leads to underperformance. As mentioned previously, there are characteristics that are considered feminine, such as conformity and submission that are necessary in the classroom. (Hadjar et al., 2014) reports that in an attempt to collect approval from their peers for being manly, the boys reject the feminine characteristics. This condition again leads to underperformance. The boys in these classrooms refuse to conform to classroom expectations because they need validation from peers; however the underperformance enhances this struggle as boys often respond to failure with aggression.

The study found that boys focus on performance and success rather than the actual learning process which would allow them to fully comprehend the topic. This is known as a negative learning strategy. The authors attribute this to socialized characteristics of competitiveness. Similar to the cultural expectations for the girls, the parental expectations for the boys of innate talent are harmful to success. (Voyer et al., 2014) which explains that parents attribute success of their sons to their innate talents and therefore boys do not feel an urgency to place their attention on preparing for tests or completing homework.

## **2.2 GENDER BASED DISPARITIES IN ACADEMIC PERFORMANCE**

Research indicates that gender based disparities in academic performance can affect future career opportunities and perpetuate societal gender gaps (Hyde, 2014). By examining factors such as stereotype threats and teacher bias, understanding gender disparities in education is crucial for education institutions and policy makers. There is emphasizes that addressing these disparities is vital for maximizing human potential and fostering a more equitable society (Else-Quest and Hyde, 2016). Policy makers can use this knowledge to design interventions in promoting equal opportunities in turn Educational institutions benefit by creating inclusive environment that enhance overall academic achievements and contribute to a diverse, skilled workforce (UNESCO, 2016). This awareness helps both entities in shaping effective policies and practices to bridge gender gaps in educational outcome (OECD, 2019).

For instance, the mid-20th century saw increased emphasis on gender equality in education (Lam, 2010). However, persistent disparities between boys and girls in schools were noted, promoting policy changes in the late 20th century to address systematic issues (Sadker &

Sadker, 2019). Also, recent studies indicate on-going progress, but challenges remain due to lingering biases and socio-economic factors (UNESCO, 2020).

Gender based academic disparities have been studied extensively overtime; research has highlighted improvement in narrowing gender gaps, particularly in access to education. However, disparities may persist in certain fields or at higher educational levels due to factors such as societal expectations, stereotypes and institutional biases (Mahmud and Gagnon, 2023).

Concerning teacher's perception and bias, studies indicate that teachers unintentionally hold different expectations for male and female students affecting assessment and feedback. This bias impact students' confidence, participation and overall learning experience. The strategies to reduce on the bias has been focused on awareness, training and inclusive teaching practices. Research also suggests that professional development programs, workshops, enhance teachers' awareness of their biases, cultivating a diverse curriculum, providing unbiased feedback (Kennedy, 2016).

Research suggests that societal expectations and stereotypes play a crucial role in shaping students' perception of their abilities and potential career path. Societal expectations often steer individuals towards certain academic subjects' based on perceived gender norms (Hagglund and Leuze, 2021). For example girls may feel pressured to pursue humanities and social sciences while boys may be nudged towards mathematics and sciences. Gender stereotypes also influence students' career aspirations. For example. girls may doubt there abilities in mathematics and science due to pervasive stereotypes, impacting there pursuit of mathematics and science related careers. Teachers unintentionally reinforce gender stereotypes through differential expectations and encouragements. This further, shape students' academic choices and aspirations based on societal norms (Starr and Simpkins, 2021).

With regard to gender specific role models, it has been found out that there is significant impact on students learning, such as inspirations, motivating students to pursue academic excellence. It also highlights that having role models who shares ones' gender can enhance the sense of possibility and self-efficiency. For instance, when female students are exposed to successful women in mathematics and science, they are more likely to pursue careers in those fields (Porter et al., 2020).

## **2.3 FACTORS THAT LEAD TO DIFFERENCE IN ACADEMIC PERFORMANCE OF BOYS AND GIRLS**

Studies highlight several factors that influence the academic performance of boys and girls. It is a great idea to note that these differences can vary on individual basis and may not be applicable to every boy or girl.

### **2.3.1 SOCIAL AND CULTURAL EXPECTATIONS**

In accordance with (Brown, 2018), social expectation often influences gender-specific subjects' preferences and cultural norms subtly guide boys and girls towards certain academic disciplines. pressure from peers can reinforce cultural expectations, creating gender-based dynamics within the classroom (Wentzel & Erdley, 2018). This influence and contribute to variations in academic engagement

Research has revealed that, cultural norms often dictate parental expectations regarding academic achievements for boys and girls (Dornbush et al., 2015). Cultural norms may shape perceptions of acceptable learning styles for boys and girls (Jones & Martines, 2019). These expectations impact how students approach their studies. Cultural expectations also influence teacher-student interactions, affecting academic support and feedback (Eccles & Wang, 2016).

Cultural expectations influence educational aspirations, impacting boys and girls differently, this may guide career choices and long-term academic goals (Archer et al., 2017).

### **2.3.2 LEARNING STYLES**

Academic performance disparities between boys and girls in secondary schools can be attributed to variations in learning styles, influencing how students process information and engage in learning. Boys and girls often exhibit distinct learning styles (Jones & Martines, 2019). These difference impact how students approach studying, leading to variations in academic performance. According to (Riding, 2014), cognitive processing styles, such as analytical versus holistic thinking, may differ between boys and girls. This difference can influence problem solving approaches and overall academic outcomes. (Wilson, 2012), states that teachers play a vital role in recognizing and accommodating diverse learning styles. Adjusting teaching methods to align with various styles fosters an inclusive environment. Neurobiological factors contribute to learning style differences between boys and girls. Research highlights that if educators understand this factors, then it helps in formulating teaching methods to suit diverse cognitive preferences and therefore implementing classroom

adoptions that considers various learning styles (Tomlinson, 2017). This approach promotes an inclusive learning environment and helps to reduce on academic discrepancies.

### 2.3.3 CONFIDENCE AND SELF ESTEEM

Confidence and self-esteem play pivotal roles in shaping academic performance, and these factors often exhibit gender-based differences among secondary school students. Boys and girls display varying levels of confidence in academic tasks (Newcombe, 2020). Confidence, Influences a student's willingness to take on challenges and impacts overall academic performance.

Self-esteem is closely linked to academic achievement. Differences in self-esteem levels between boys and girls can contribute to variations in their academic performance.

Attribution styles influenced by self-esteem impact how boys and girls attribute success or failure in academics. These attributions can affect future performance between different genders. Social comparison process influence self-perception and self-confidence levels (Hong et al., 2022). Boys and girls engage in social comparisons that contribute to differences in academic confidence. Teacher feedback and encouragement can significantly impact students' confidence. Differential feedback to boys and girls may contribute to variations in academic self-assurance.

### 2.3.4 TEACHER EXPECTATION

Teachers unconsciously hold different expectations based on gender, impacting their perceptions of students' capabilities. Variations in feedback and encouragement contribute to differential academic outcomes between boys and girls (Spencer et al., 2016). Stereotypical beliefs about gender and academic abilities can create a self-fulfilling prophecy, influencing students' confidence and performance. Subject assessments like grading class perception may be influenced by teacher expectations, leading to disparities in perceived performance.

Unintentional biases in creating classroom environments that align more with one gender's learning style can impact engagement and academic success.

### 2.3.5 EXTRACURRICULAR ACTIVITIES AND PEER INFLUENCES

Participation in extracurricular activities impact time management differently for boys and girls influencing their academic performance. Peer influence within extracurricular groups can contribute to varying levels of academic commitment and success based on gender.

Gender differences in the types of extracurricular activities chosen affect intrinsic motivation

influencing academic engagement and outcomes. Participation in certain extracurricular activities provides different support networks for boys and girls impacting their overall academic experience. Societal expectations and cultural norms also influence the types of extracurricular activities preferred by boys and girls, affecting their academic performance.

### 2.3.6 MOTIVATION AND SELF-CONFIDENCE

The external factors such as rewards or recognition affect boys and girls differently impacting their motivation in academic settings, gender variations in perceived competence can influence students' motivation levels and subsequently, their academic performance. Gender-specific attribution patterns for success and failure impact motivation and self-confidence, affecting academic outcomes (Graham, 2020). Boys and girls may engage in social comparison differently, affecting their self-perception and confidence in academic settings (Eccles et al., 2009). Stereotypical beliefs about gender and academic abilities create a psychological threat, impacting motivation and confidence particularly in challenging subjects.

### 2.3.7 CLASSROOM ENVIRONMENT

Classroom interaction varies based on gender, affecting the quality and quantity of teacher-student interactions, which can impact academic engagement and performance. The presences of gender bias in textbooks and teaching materials affect the way subjects are presented influencing students' perceptions of their own capabilities. Stereotyping and tracking practices may lead to different expectations for boys and girls, influencing their academic self-perception and performance (Retelsdorf et al., 2015). Variance in teaching methods may also align with certain learning preferences, favoring one gender over the other and impacting academic outcomes. The overall classroom climate, including the degree of inclusivity and support contribute to differences in academic confidence and performance between boys and girls (Berkowitz et al. 2017). Peer interactions and group dynamics in the classroom contribute to the greater differences in academic achievements affecting motivation and confidence. Unequal representation of contributions by men and women in the curriculum impact students' sense of identity and belonging hence influencing academic success.

### 2.3.8 SELF-EFFICACY

Self-efficacy is defined as an individual's belief in their capability to succeed in specific tasks (Schunk, 2023). Studies suggest that gender differences exist in self-efficacy beliefs, with boys often experiencing higher self-efficacy in certain subjects compared to girls.

Attribution theory posits that individuals attribute success or failure to internal or external factors (Moehl et al., 2021). These attribution processes impact self-efficacy beliefs influencing subsequent academic performance. Teacher feedback and encouragement play a vital role in shaping students' self-efficacy. Differential feedback based on gender contributes to disparities in academic performance. Peer interactions and comparison also impact self-efficacy. Gender dynamics within peer groups influence students' beliefs about their academic capabilities. Self-efficacy beliefs can be domain specific. Gender differences may emerge in the self-efficacy of boys and girls in different academic subjects, influencing their performance. Teacher expectations, influenced by gender biases, can shape students' self-efficacy beliefs. Higher expectations for one gender enhance their confidence and performance.

### 2.3.9 PARENTAL AND FAMILY ATTITUDE

Parental expectations for academic achievement can vary based on gender, influencing the educational aspirations and outcomes of boys and girls. Family attitudes shaped by traditional gender roles and stereotypes affect the encouragement and support provided to children in their academic pursuits. Differing levels of parental involvement in education may contribute to variations in academic performance between boys and girls. Socio-economic status and family income can support the resources and opportunities available to children, potentially contributing to gender differences in academic achievements. (Upadaya & Eccles, 2014), states that communication patterns including how parents discuss academic matters with their children, contribute to differences in self-perception and academic performance based on gender. Cultural values and expectations within families influence the prioritization of education differently for boys and girls, affecting their academic outcomes (Suizzo et al., 2014)

## CHAPTER THREE: METHODOLOGY

This chapter presents the methods adopted in order to answer the research questions detailed in chapter one. It gives the research design, study population, sampling techniques, data collection instruments, procedure of data collection, mode of data analysis and presentation as well as ethical considerations and limitations of the study.

### 3.1 RESEARCH DESIGN

In this study, two approaches were used which included; an integration of quantitative and qualitative methods of data collection. The reasons for the use of both is that, some data was categorical while the other data numerical. The study used a cross-sectional survey design. This design was used because it collects data from several categories of people about the current phenomenon under study.

### 3.2 STUDY POPULATION

The target population consisted of 120 respondents which included students and teachers from different backgrounds.

### 3.3 SAMPLING PROCEDURES

In the study area of Nagongera, there are many secondary schools but only three were randomly selected. These schools represented a different section including day and boarding, Private and Government secondary schools. The random sample was used because it avoids biasness and it gives equal opportunity to all schools selected to participate.

**Head teachers;** they were one of the targeted populations. Random sampling was used to sample them from the selected schools. As regards selection procedures, the researcher used random sampling technique to sample head teachers because of the positions they hold in schools and reliability in giving in information.

**Teachers;** in this case, the selection procedure used was random sampling techniques. It was used it because it provides equal opportunity to all participate and avoids biasness during the research.

**Students;** these were the major focus of the study and also as for other sample population, random sampling technique was used to select from various selected secondary schools. The random sampling technique was used to eliminate biases and give equal opportunity to participate during the study.

### **3.4 RESEARCH INSTRUMENTS**

The questionnaire was the main instrument used in the data collection from the Head teachers, Teachers and students. The written questionnaire involved the closed and open ended questions which were administered to the selected respondents.

The instrument was used because it is more viable and reliable since it gives freedom and also its ease to be answered by the respondents.

### **3.5 VALIDITY AND RELIABILITY OF THE INSTRUMENT**

#### **3.5.1 VALIDITY**

To ensure the validity of the questionnaires, some steps were followed and this includes ensuring that the content of the instrument comprehensively covers the construct being measured. This was achieved through expert reviews, pilot testing and feedback from the individuals familiar with the subject. Assessing the instrument's ability to measure the intended theoretical construct involved factor analysis, convergent and divergent validity testing, and comparison with established measures. Evaluating how well the instrument conforms with an external criterion that is relevant to the construct being measured.

Confirming that instrument appears on the surface to measure what it intends to measure. This was achieved through expert judgment and feedback from potential respondents and comparing the instrument's scores with those of other instruments measuring similar or different constructs to establish concurrent and discriminated validity respectively.

Administering the questionnaires to a small sample before the main study to identify and address any issue related to clarity was also used.

Finally, regular assessment of the performance of the questionnaire during data collection was done.

#### **3.5.2 RELIABILITY**

To ensure reliability of the instrument used in the research, several steps were involved which included; conducting a pilot test with a small group of students to identify some issues in the instrument. This helped to improve the questions and instructions. Seeking input from experts in the field, such as educators and other researchers, to ensure the appropriateness of the instruments.

Providing clear and concise instructions to respondents to minimize interpretation errors, ambiguous questions can lead to unreliable data and randomization of the order of the questions to minimize order effects that could impact reliability was also done to ensure reliability. The questionnaires were administered to subset of participants at two different times and assessing the consistency of the responses. This helped to estimate the stability of the questionnaires overtime.

Lastly, in students sample population, they were well guided so as to minimize variations in responses.

### 3.5.3 DATA ANALYSIS

During this process of data analysis, all data collected was summarized into tables following the objectives. Data from each of the instruments used was summarized separately with frequencies and percentages of occurrence in the tables. From these tables, descriptive statistics was used to analyse the data and later the results were discussed.

### 3.5.4 ETHICAL CONSIDERATIONS

Before conducting interviews with the respondents, the potential respondents were sought for authorization. The names and identifications of the respondents were anonymous and information collected from them was treated with utmost confidentiality.

### 3.5.5 LIMITATIONS OF THE STUDY

During the study, the following challenges were encountered;

Time constraints as most schools had a fixed teaching timetable which did not provide enough time for data collection, potentially shallowing the depth of the study.

There were limited resources such as funding for materials inform of printing questionnaires or access to specialized equipment which hindered the scope of the research.

Collecting data from students was a challenge due to high levels of absenteeism, varying levels of cooperation and other factors affecting data completeness and accuracy.

## CHAPTER FOUR: RESULTS AND DISCUSSION

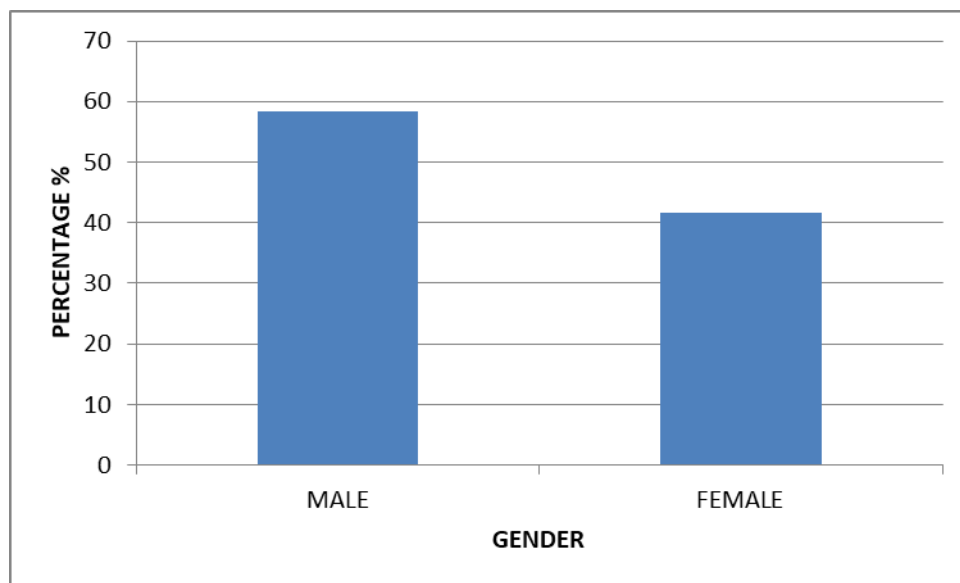
This chapter presents and discusses the findings of the study.

### 4.1 FINDINGS ON THE FACTORS INFLUENCING ATTITUDE OF SECONDARY SCHOOL STUDENTS TOWARDS THE STUDY OF MATHEMATICS

GENDER OF THE RESPONDENT	FREQUENCY	PERCENTAGE (%)
Male	70	58.3
Female	50	41.7

**Table 4.1.1 Gender of the respondents**

#### GENDER



**Figure 4.1.1: Representation of gender distribution of respondents**

From the graph, it's observed that out of the respondents that participated in the study, majority 70 (58.3%) were males while the minority 50 (41.3%) were female. This implies that more of the male gender was interested in answering than the female gender.

PLACE OF ORIGIN OF THE RESPONDENTS

REGION OF THE RESPONDENT	FREQUENCY	PERCENTAGE (%)
NORTHERN	18	15
SOUTHERN	5	4.2
WESTERN	17	14.2
EASTERN	80	66.6

**Table 4.1.2 Places of origin of the respondents**

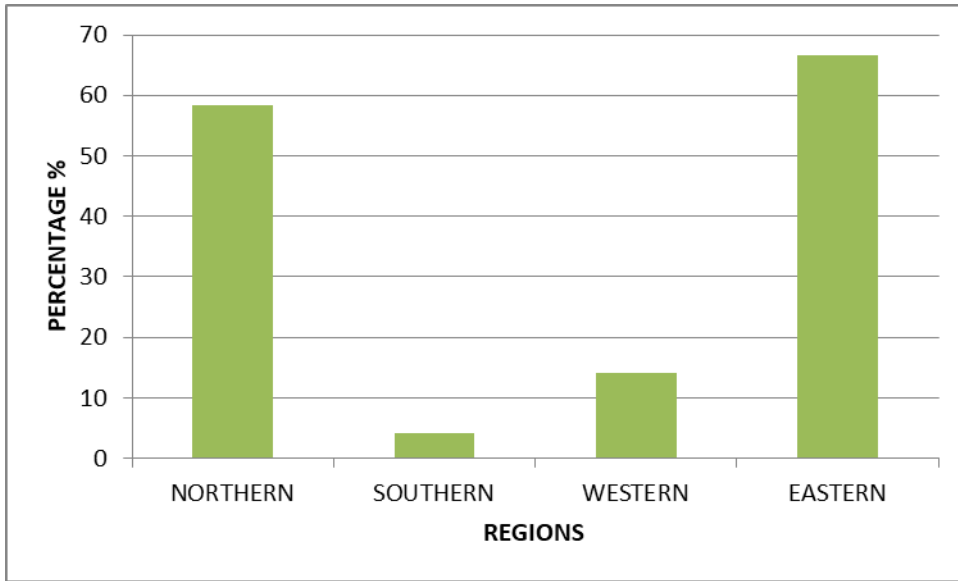


Figure 4.1.2 Representation of places of origin of respondents

From the graph, it's observed that out of 120 respondents that participated in the study, 80 (66.6%) were from eastern Uganda, 17 (14.2%) were from western Uganda, 5 (4.2%) were from southern Uganda and 18 (15%) were from Northern Uganda. This means that the main concern is in eastern with the highest percentage followed by northern, western and then southern with the lowest percentage.

#### 4.2 FACTORS THAT INFLUENCE STUDENTS ATTITUDE TOWARDS STUDYING MATHEMATICS THE MOST

Indicator	Frequency	Percentage (%)
Teaching methods	60	50
Relevance of mathematics to daily life	40	33.3
Availability of resources (text books, technological tools)	10	8.3
Family support	5	4.2
Peer pressure	5	4.2

**Table 4.2 Factors influencing students' attitudes**

Table 4.2 Shows statistically that half (50%) of the respondents are influenced by teaching methods,(33.3%) are influenced by relevance of mathematics to daily life,(10%) are influenced by the availability of resources (text books, technological tools) ,(4.2%) are influenced by the family support and (4.2%) are influenced by the peer pressure.

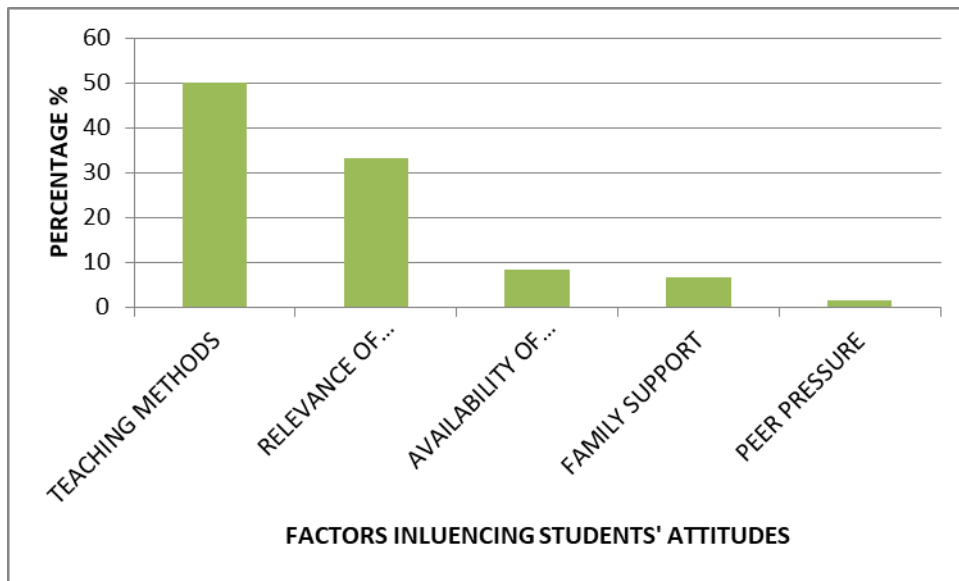


Figure 4.2.1 Factors that influence students' attitude towards mathematics

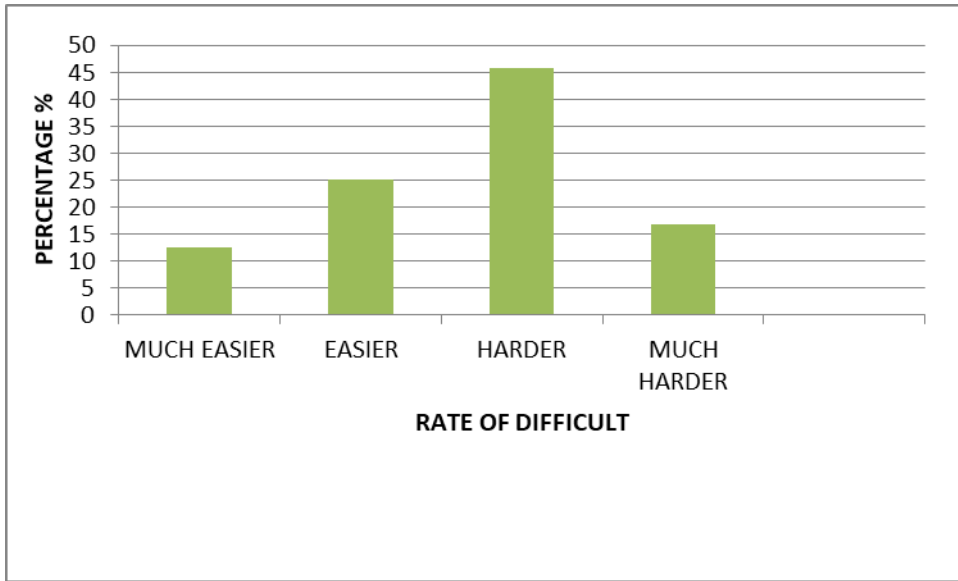
From the graph, it's found out that out of the five factors being investigated, teaching methods highly influence the students attitudes towards the study of mathematics. Therefore, the of attitude of students towards the study of mathematics is greatly influenced by the teaching methods followed by other factors such as relevance of mathematics in daily life, availability of resources, family support and peer pressure.

#### 4.3 The rate of difficult level of mathematics compared to other subjects

Indicator	Frequency	Percentage (%)
Much easier	15	12.5
Easier	30	25
Harder	55	45.8
Much harder	20	16.7

**Table 4.3. The rate of difficult level mathematics compared to other subjects**

Table 4.3. Shows that (12.5%) find mathematics much easier,(25%) find it easier,(45.8%) find it harder and (16.7%) find it much harder.



**Figure 4. 3. 1: The rate of difficult level of mathematics compared to other subjects**

The perception of mathematics in terms of difficulty to be done by students compared to other subjects offered at secondary level is found to be harder as from figure 4. 3. 1.

Therefore, it means that many learners and even the parents already have the mentality that mathematics is the hard subject to deal which affects their attitudes towards the study of mathematics.

#### 4.4 Rate of the effectiveness of the mathematics teacher in explaining complex concepts

Indicator	Frequency	Percentage (%)
Excellent	35	29.2
Good	40	33.2
Average	35	29.2
Poor	2	1.7
Very poor	8	6.7

**Table 4.4 The rate of effectiveness of mathematics teachers in explaining math concepts**

Table 5: Shows that (29.2%) is excellent, (33.2%) is good, (29.2%) is average,(1.7%) is poor and (6.7%) is very poor.

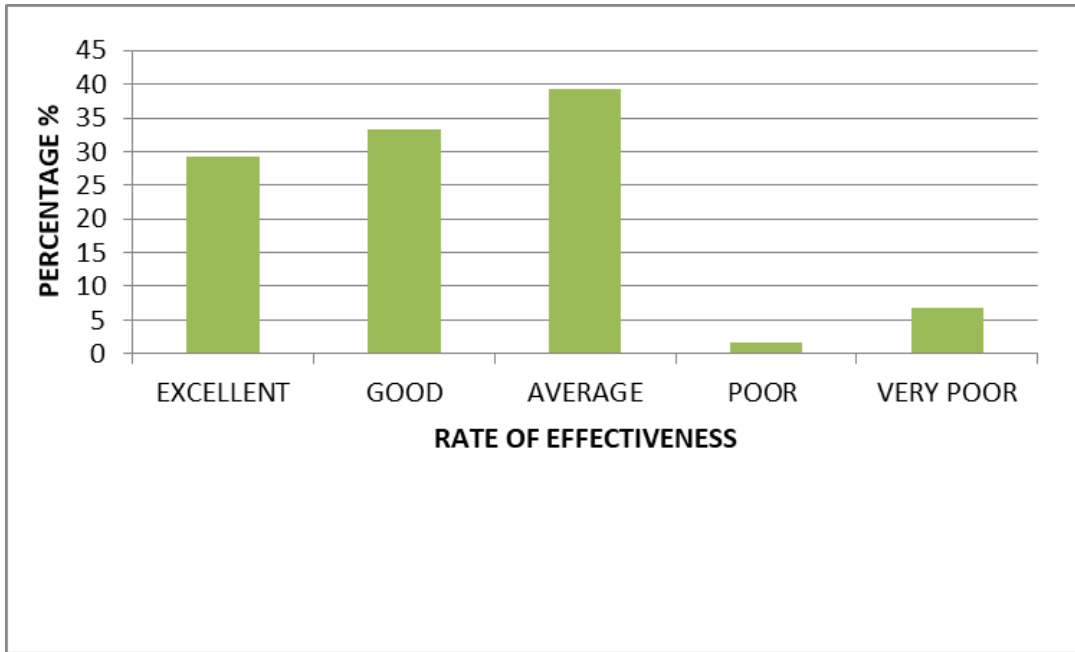


Figure 4.4.1: The rate of the effectiveness of the mathematics teacher in explaining complex

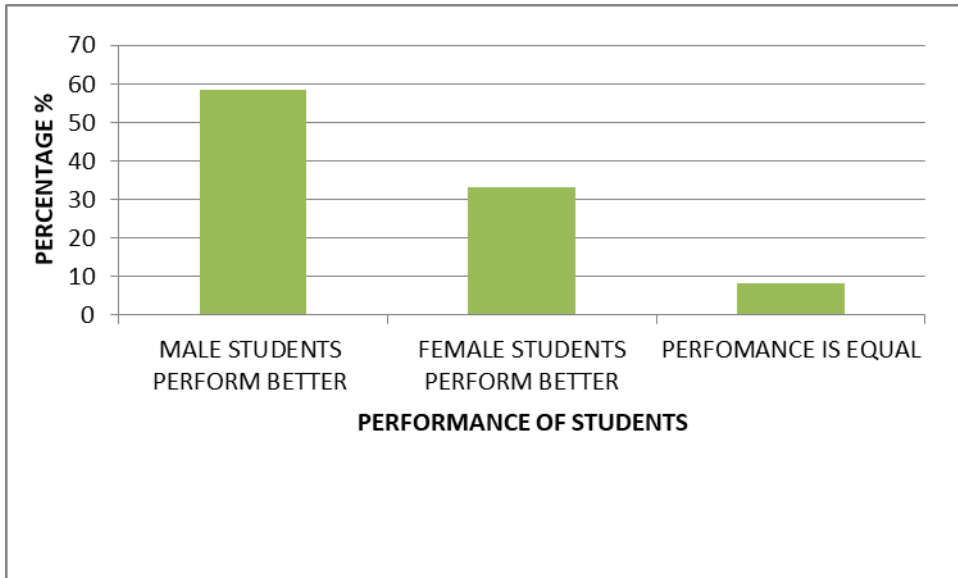
From, figure 4. 4. 1 above, it is observed that teachers who are poor in explaining the concepts of mathematics are very few as compared to those who do it excellent which can positively influence students attitudes towards the study of mathematics.

#### 4.5 The performance of male students compared to female student's mathematics classes

Indicator	Frequency	Percentage ( %)
Male students perform better	70	58.4
female students perform better	40	33.3
Performance is equal	10	8.3

**Table 4.5 The performance of male students compared to female students in mathematics**

Table 4.5: Shows that (58.4%) of male students perform better, (33.3%) of female perform better and (8.3%) performance is equal.



**Figure 4.5.1: The performance of male students compared to female students**

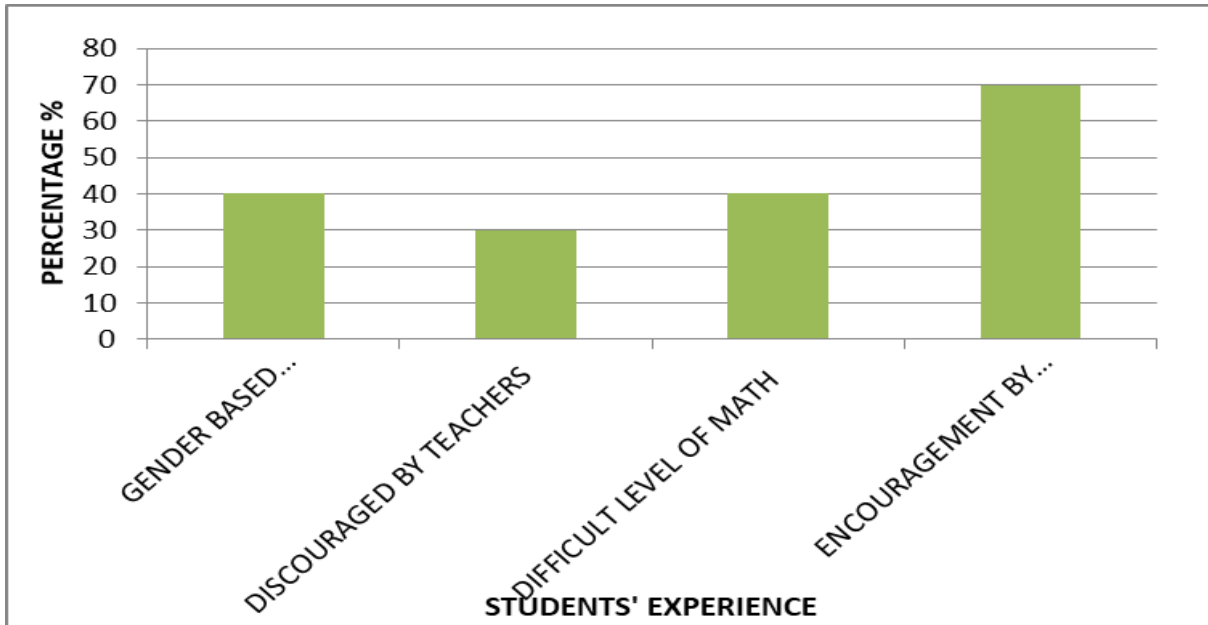
Results show that male students perform better in mathematics with highest percentage of 58.4% which is greater than that of the female 33.3%. Also it's observed people who think that the performance between male and female is equal are very few taking only 8.5%

**4.6 How students experienced gender based discrimination, discouraged by their mathematics teacher’s attitude, the difficult level, received encouragement from their mathematics teacher positively influenced their attitude towards the subject**

Indicator	Yes (%)	No (%)
I experienced gender based discrimination in mathematics education	40	60
I ever felt discouraged by my mathematics teachers attitude towards my performance	30	70
I believe the difficult level of mathematics affects my overall academic performance	40	60
I received encouragement from my mathematics teacher that positively influenced my attitude towards the subject	70	30

**Table 4.6 students' experience**

Table 4.6: Shows that (40%) Yes experienced gender based discrimination in mathematics education and (60%) No. (30%) felt discouraged by their mathematics teacher’s attitude towards their performance and (70%) No. (70%) Yes, received encouragement from their mathematics teacher that positively influenced their attitude towards the subject and (30%) No.



**Figure 4.6.1: Students' experience**

The experience from students shows that many of the students doing mathematics were being encouraged by their teachers which positively impacted them to do mathematics. Those who were discouraged by their teachers take the least percentage which implies that many offering and not offering mathematics is due to the influence from their mathematics teachers.

**4.7 How students performance in mathematics is influenced teachers and motivated by the teaching style**

Indicator	SA (%)	A (%)	N (%)	D (%)	SD (%)
My performance in mathematics is influenced by my perception	20	40	15	15	10
I feel motivated to learn mathematics because of my teachers teaching style	40	20	20	10	10

**Table 4.7 How the teachers' teaching style affects students' performance in mathematics**

Table 4.7: shows that 20% strongly agreed 40% agreed 15% neutral 15% disagreed and 10% strongly disagreed, Believed that their performance in mathematics is influenced by their perception of their own abilities. 40% strongly agreed, 20% agreed, 20% neutral, 10% disagreed and 10% strongly disagreed, that students felt motivated to learn mathematics because of their teachers teaching style.

From the table above, it's observed that many students (40%) agree that their performance (whether good or bad) was due to their own perception about mathematics and few of them (10%) strongly disagreed with the idea that their performance (whether good or bad) in mathematics was not due to their own perceptions meaning there other factors which

influence their performance. This implies that most of the students in secondary schools already have their own perception on how simple or hard mathematics is.

On the side of teachers influence in terms of motivating learners, many students (40%) strongly agree that their performance in mathematics (whether good or bad) is influenced by the teachers teaching styles as compared to the 10% who strongly disagree. Therefore, students' performance is greatly influenced by the teachers of mathematics.

#### **4.8 HOW OFTEN STUDENTS SEEK HELP FROM THEIR TEACHERS OR PEER AND USE TECHNOLOGY TO AID THEIR UNDERSTANDING**

Indicator	N (%)	R (%)	ST (%)	O (%)	A (%)
I often seek help from my teacher or peers when i encounter difficult mathematical problems	0	10	20	40	30
I often use technology (such as educational apps or online resources) to aid my understanding of mathematics	20	30	30	15	5

**Table 4.8 Teachers versus technology in understanding mathematics**

Table 4.8: shows that 0% never, 10% rarely, 20% sometimes, 40% often and 30% always seek help from their teachers or peers when they encountered difficult mathematical problems. 20% never, 30% sometimes, 15% often and 5% always used technology (such as educational apps or online resources) to aid their understanding of mathematics.

From the table, many students mostly seek help from mathematics teachers to understand mathematics concepts as compared to the very few who uses technology to understand math concepts, which means that in many cases the performance of students in mathematics is influenced by the kind of teachers they interact with.

## **CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS**

This chapter presents, conclusions drawn from the study and also recommendations for educators and researchers for further studies.

### **5.1 CONCLUSION**

The research examined the factors that impact the attitudes of secondary school students towards studying mathematics in Nagongera town council. A total of 120 participants were involved in the study. The attitude of these students towards mathematics was found to be influenced by various factors such as teaching methods, resource availability (use of technology in learning mathematics), teachers' support, gender bias, peer pressure, and the regarded relevance of mathematics to daily life. The study revealed that there were insufficient mathematics teaching and learning resources including, lack of textbooks and instruments, teacher support, gender discrimination, and peer pressure were seen to shape students' attitudes towards mathematics, with males showing more positive attitudes compared to females. In addition;

- Teachers' support was found to have a significant impact on students' attitudes towards mathematics. Students who received encouragement and support from their teachers, tended to have more positive attitude towards the subject, whereas students who lacked teacher support viewed mathematics in a negative side.
- Gender discrimination also plays a role in shaping students' attitudes towards mathematics. Male students were more likely to have positive attitudes towards the subject compared to female students. This could be due to societal norms and expectations that stereotype mathematics as a subject more suited for males.
- Peer pressure was another factor that influenced students' attitudes towards mathematics. Students who were surrounded by peers who valued and excelled in mathematics were more likely to have positive attitudes towards the subject. While students who were influenced by peers who had negative attitudes towards mathematics viewed the subject in a negative way.

### **5.2 RECOMMENDATIONS**

In view of the findings of this study, the following are the major recommendations;

- Since the present study was limited to secondary schools, similar studies could be carried out to cover other levels of education like primary.
- Implementing teaching strategies that make mathematics more engaging and relevant to students' everyday lives.
- Providing additional resources and support for both students and teachers to enhance their understanding and proficiency in mathematics.
- Creating a positive and supportive learning environment where students feel comfortable in asking questions and seeking help when needed. Take an example, setting up “Mathematics Club” in every secondary school to arouse students’ love for mathematics.
- Creating extracurricular activities and competitions related to mathematics to motivate students and showcase the practical applications of the subject.
- Encouraging parental involvement in their children's education, especially in supporting and encouraging their interest in mathematics. Through creating the counselling sessions to enhance positive perception in students towards mathematics.
- Continuously assessing and revising the mathematics curriculum to ensure it is relevant and up-to-date in order to meet the needs and interests of students.
- Providing professional development opportunities for teachers to enhance their teaching methods and approaches to help students develop a positive attitude towards mathematics.

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## APPENDIX

### QUESTIONNAIRE

My name is Khalayi Catherine, a third year student at Nagongera Campus, Busitema University conducting a study on factors influencing attitude of secondary school students towards the study of mathematics in Tororo, Nagongera campus. I am requesting you to spare some of your time to participate in the study by answering the questions below. The information you provide is only for academic research purposes only and will be handled with utmost confidentiality. Thank you for accepting to be part of the study.

#### SECTION A (Tick the appropriate)

1. Age of the respondent.

13-15yrs       16-19yrs       20-23yrs

2. Gender of the respondent

Male       Female

3. Class of respondent

S.1-S.2       S.3-S.4       S.5-S.6

4. Region of the country

East       West       North       South

**SECTION B (Circle the correct alternative)**

1. Which of the following factors do you believe influences your attitude towards studying Mathematics the most?

- A. Teaching methods                      B. Relevance of Mathematics to daily life  
C. Availability of resources (text books, technological tools) D. Family support  
E. Peer pressure

2. How would you rate the difficult level of Mathematics compared to other subjects?

- A. Much easier                      B. Easier                      C. Harder                      D. Much harder

3. How would you rate the effectiveness of your Mathematics teacher in explaining complex concepts?

- A. Excellent                      B. Good                      C. Average                      D. Poor                      E. Very poor

4. How do you passive the performance of male students compared to female students in Mathematics classes?

- A. Male students perform better                      B. Female students perform better                      C.  
Performance is equal

5. Have you experienced any gender based discrimination in Mathematics education?

- A. Yes                      B. No

6. Have you ever felt discouraged by your Mathematics teacher's attitude towards your performance?

- A. Yes                      B. No

7. Do you believe the difficult level of Mathematics affects your overall academic performance?

- A. Yes    B. No

8. Have you ever received encouragement from your Mathematics teacher that positively influenced your attitude towards the subject?

A. Yes      B. No

9. Do you believe your performance in Mathematics is influenced by your perception of your own abilities?

A. Strongly agree      B. Agree      C. Neutral      D. Disagree  
E. Strongly disagree.

10. Do you feel motivated to learn Mathematics because of your teacher's teaching style?

A. Strongly agree      B. Agree      C. Neutral      D. Disagree      E. Strongly disagree

11. How often do you seek help from your teacher or peers when you encounter difficult Mathematical problems?

A. Never      B. Rarely      C. Sometimes      D. Often      E. Always

12. How often do you use technology (such as educational apps or online resources) to aid your understanding of Mathematics?

A. Never      B. Rarely      C. Sometimes      D. Often      E. Always

**SECTION C**

1. Have you personally witnessed any instances of gender discrimination in Mathematics education? If so, how did it affect attitude towards the subject?

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2. Can you describe any experiences where a teacher positively or negatively influenced your attitude towards mathematics?

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3. In your opinion, what role does the teaching style of Mathematics teachers play in shaping students' attitude towards the subject?

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4. Do you think the difficult level of Mathematics varies among different schools or teachers in Nagongera town council? If so, how?

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