

**FACTORS INFLUENCING THE ATTITUDE OF SENIOR SECONDARY
SCHOOL STUDENTS TOWARDS THE STUDY OF MATHEMATICS IN BOSSO
LOCAL GOVERNMENT AREA OF NIGER STATE**

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ABSTRACT

This study was conducted to investigate the factors influencing the attitude of senior secondary school students towards the study of Mathematics in Bosso Local Government Area of Niger. A descriptive survey design was used in carrying out the research; the focus was on senior secondary students in Bosso Local Government Area, Minna Niger. The population of the study is Seventeen thousand three hundred and ninety-one. Students with sample size of One hundred and sixty-eight from three schools were selected. Simple random sampling was used to select the sample size, Krejcie & Morgan formula was used to get the sample size and purposive sampling techniques was used to select the sampled schools. Four research questions guided the study. Mean and standard deviation were used in answering the research questions. The findings revealed that career prospects, having a good teacher, encouragement and support received from others, difficulty, self-confidence, poor background and discouragement from peer group influence the attitude of senior secondary school students towards the study of Mathematics. An attempt to improve students' attitude towards mathematics could be by teachers and parents to find ways to help develop a positive attitude of the students towards the study of Mathematics.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The world is rapidly progressing scientifically and technologically. The economic wellbeing of any developing nation depends to a significant extent on her scientific and technological process. Nigeria being a developing country now encourages the study of science and technology in schools so as to be able to meet up with the man-power needs of the nation.

There is no disagreement on the vital importance of mathematics to both the scientist, the technologist and even to every layman in his everyday life (Omenka, 2013). Mathematics is the key element and activity in the day to day living that every human being practice in one form or the other (Kurumeh, Akure, and Oguche, 2007). The knowledge of Mathematics is an essential tool in our society (Baroody, 1987). It is a tool that can be used in our daily life to overcome the difficulties faced (Bishop, 1996). Due to this, mathematics has been considered as one of the most important core subjects in a school curriculum.

The Nigerian education accorded mathematics a special position in the school curriculum. In fact, it made a core-subject for both Arts and Science students. All the junior secondary school students have to pass it at the junior secondary school certificate examination before they are allowed to register for senior secondary school examination. In other words, mathematics is one of the core-subjects both at the junior and senior secondary school levels. It is also required that a student gets a credit pass in it to get admission for science related courses in the Universities.

Despite the relevance of mathematics and the efforts made by the government to improve the student's achievement in mathematics, the result is not yet satisfactory. The West African Examination Council, WAEC (2018) Head of National Office Report shows that

11,307 candidates sat for external out of which only 17.13% obtained the minimum of credits in five subjects and above including English Language and Mathematics. The percentage of candidates in this category in WASSCE in 2017 was 26.01% (Head of National Office 2017). From the statistics performance, it is safe to say that candidates' performance is not satisfactory.

Several studies and researches have been done to find the factors that influence the student's performance in mathematics. Among these factors, student's attitude towards mathematics is one important factor that has been consistently studied. Often, the studies on relationship between student's attitude and the student's academic performance show a positive relationship (Mohd, Mahmood, & Ismail, 2011; Bramlett & Herron, 2009; Nicolaidou & Philippou, 2003; Papanastasiou, 2000; Ma & Kishor, 1997). Hence students' attitude towards mathematics is a major factor that might influence the performance of the students. Due to this, several studies have been conducted in different countries in order to find out the students' attitude towards mathematics (Tahar, Ismail, Zamani & Adnan, 2010; Tezer & Karasel, 2010; Maat & Zakaria, 2010; Bramlett & Herron, 2009; Köğçe, Yıldız, Aydın, & Altındağ, 2009; Tapia & Marsh, 2004; Fennema & Sherman, 1976) and hence to use these data to suggest the low performance of students and factors affecting it. The aim of this research is to find out the factors influencing the attitude of senior secondary school students towards the study of mathematics in Bosso local Government Area, Niger State

1.2 Statement of the Problem

The student's attitude towards an academic's subject is a crucial factor in learning and achievement in that subject, whether a student views himself or herself as a strong or weak. Despite all efforts towards scientific and technological development which is linked to Mathematics, it is observed that most students have negative attitude towards the subject.

This attitude is reflected in their poor performance in school certificate mathematics examination.

person in a specific subject may be an important factor in his or her academic achievement. According to Schreiber (2002), those who have positive attitudes towards Mathematics have a better performance in the subject. In Kenya, studies done by Auma (2004) and Achieng (2007) looked at the relationship between teacher factors and student Mathematics achievement as factors affecting Mathematics performance but did not consider students' attitude. This study thus focuses on the factors influencing student's attitude towards Mathematics with specific reference to the Mathematics performance in Minna.

1.3 Aims and Objectives

The purpose of the study is to investigate the factors influencing attitude of secondary school students towards mathematics. Attempts would also be made to find solutions to these problems.

The specific objectives of the study are:

1. To ascertain the students' factors influencing the attitude of senior secondary school students towards the study of Mathematics.
2. To determine the teachers' factors influencing the attitude of senior secondary school students in the study of Mathematics.
3. To find out the family factors influencing the attitude of senior secondary school students towards the study of Mathematics.
4. To determine the peer group factors influencing the attitude of senior secondary school students towards the study of Mathematics.

1.4 Research Questions

1. How do students' factors influence the attitude of secondary school students towards the study of Mathematics?
2. How do the teachers' factors influence the attitude of secondary school students in the study of Mathematics?
3. How do family factors influence the attitude of secondary school students towards the study of Mathematics?
4. How does peer group factors influence the attitude of secondary school students towards the study of Mathematics?

1.5 Scope of the Study

The study focuses on some selected senior secondary schools in Bosso Local Government Area, Minna, Niger State.

1.6 Significance of the Study

It is hoped that this study would reveal the factors that affect students' attitude towards mathematics. On identification of such factors, students would be advised on how best to tackle their problems. The best way to solve a problem is not to shy away from it but to face the problem squarely.

The findings of this research upon completion will help students to understand how their attitude towards mathematics can affect their performance in the subject and also, to determine the extent to which the teacher's attitude towards teaching the subject can affect the students' performance in Mathematics.

1.7 Operational Definitions of Terms

Factor: One of the elements, circumstances or influences which contributes to produce a result.

Influence: The power to affect, control or manipulate something or someone, the ability to change the development of fluctuating things such as conduct, thought or decision.

Attitude: A feeling or opinion about something especially when this shows in your behavior.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

William James once said, “It is our attitude at the beginning of a difficult task which, more than anything else, will affect its successful outcome.” (Van Wagner, 2008). This idea crosses many different aspects of everyday life. Businesses bring in motivational speakers to help inspire their employees to help them have a more positive attitude to help productivity. Businesses also do team building exercises to help employees have a better outlook on their jobs and the people they work with. Athletic coaches spend a significant amount of practice time talking to their players about “believing” and reminding players that any team can beat any other team on any given day. If a team does not have a positive outlook on an upcoming game, their chances of winning the game are significantly lowered. Many athletic teams use the phrase “believe and you can achieve” as their motto for a successful season. This idea is well known and accepted in today’s society. This philosophy is no different in classrooms than it is anywhere else in society. McCleod (1992) said that attitude toward mathematics is related to mathematics success in the classroom.

2.2 Conceptual Framework

2.2.1 Concept of Attitude

In psychology, an attitude refers to a set of emotions, beliefs and behaviors towards a particular object, person, thing or events.

Attitudes are often the result of experience or upbringing and they can have a powerful influence over behavior. While attitudes are enduring, they can also change.

Psychologists define attitudes as a learned tendency to evaluate things in a certain way. This can include evaluations of people, issues, objects, events, politics, academic subjects,

etc. Such evaluations are often positive or negative. We favor the things we think are good and helpful, and oppose the things we think are bad and harmful (Kagan, 1984). The students' attitude towards an academic subject is a crucial factor in learning and achievement in that subject. Whether a student views herself or himself as a strong or weak person in a specific subject may be an important factor in her or his academic achievement. Stodalsky et al. (1991) mentioned that students develop ideas, feelings and attitudes about school subjects over time and from a variety of sources.

Students' attitude towards mathematics is given various definitions in the literature. For example, Kibrislioglu (2016) defines attitude towards mathematics as liking or disliking of the subject; a tendency to engage in or avoid mathematical activities; a belief that one is good or bad at mathematics; and a belief that mathematics is useful or useless. Tahar, Ismail, Zamani, and Adnan (2010) give a simpler definition. They define attitude as a positive or negative emotional disposition towards mathematics. From this, when defining attitudes towards mathematics, both aspects of beliefs and emotions should be considered. We adopt the definition by Tahar, et al. (2010) because it looks better at students in both the cognitive and social perspectives.

2.2.2 Components of Attitude: The ABC Model

Every attitude has three components that are represented in what is called the ABC model of attitudes: A for affective, B for behavioral and C for cognitive. Although every attitude has these three components, any particular attitude can be based on one component more than another.

In other words, each component can also be the answer to the question: where does an attitude come from? There are affectively-based attitudes, behaviorally-based attitudes, and cognitively-based attitudes. Let's take a closer look at some examples.

Affective Component

First, the affective component refers to the emotional reaction one has toward an attitude object. Think of someone - we'll name her Alice - who has ophidiophobia (a phobia of snakes). A snake is an attitude object. Whenever Alice is exposed to a snake - whether she sees one or thinks about one - she feels extreme anxiety and fear.

Now, an attitude that is stemmed from or originally created by an emotion is called an affectively-based attitude. Attitudes about hot-button issues - such as politics, sex, and religion - tend to be affectively-based, as they usually come from a person's values. This type of attitude is used to express and validate our moral belief or value systems.

Behavioral Component

The next component of an attitude is the behavioral component, and it refers to the way one behaves when exposed to an attitude object. Think about Alice and her snake phobia again. We already identified the affective component of her attitude towards snakes - fear and anxiety. How do you think she behaves when it comes to snakes? Most likely, she avoids them whenever possible. If she does see one, she probably screams or cries. This behavior is the second component of that particular attitude.

Cognitive component

The cognitive component of attitudes refers to the beliefs, thoughts, and attributes that we would associate with an object. It is the opinion or belief segment of an attitude. It refers to that part of attitude which is related in general knowledge of a person.

Typically, these come to light in generalities or stereotypes, such as 'all babies are cute', 'smoking is harmful to health' etc.

2.2.3 Attitude Formation

There are a number of factors that can influence how and why attitudes form. Here is a closer look at how attitudes form.

Experience

Attitudes form directly as a result of experience. They may emerge due to direct personal experience, or they may result from observation.

Social Factors

Social roles and social norms can have a strong influence on attitudes. Social roles relate to how people are expected to behave in a particular role or context. Social norms involve society's rules for what behaviors are considered appropriate.

Learning

Attitudes can be learned in a variety of ways. Consider how advertisers use classical conditioning to influence your attitude toward a particular product. In a television commercial, you see young, beautiful people having fun on a tropical beach while enjoying a sports drink. This attractive and appealing imagery causes you to develop a positive association with this particular beverage.

Conditioning

Operant conditioning can also be used to influence how attitudes develop. Imagine a young man who has just started smoking. Whenever he lights up a cigarette, people complain, chastise him, and ask him to leave their vicinity. This negative feedback from those around him eventually causes him to develop an unfavorable opinion of smoking and he decides to give up the habit.

Observation

Finally, people also learn attitudes by observing people around them. When someone you admire greatly espouses a particular attitude, you are more likely to develop the same beliefs. For example, children spend a great deal of time observing the attitudes of their parents and usually begin to demonstrate similar outlooks.

2.3 Theoretical Framework

The theoretical framework that will be used in this research are:

Hammouri's Theory by Hind A.M Hammouri

Hannula's Theory by Markku S Hannula

2.3.1 Hammouri's Theory (2004)

Hammouri's study was based on attitudinal and motivational variable and their relation to Mathematics success. He used the Third International Mathematics and Science Study (TIMSS) to look at 8th graders students in Jordan. The participants completed a student questionnaire and participated in the Mathematics test.

The variables used in this study were:

(1) Mother's perception of mathematics importance. This variable is based on the students' responses to the statement 'My mother thinks it is important for me to do well in mathematics at school'. A high score means the student perceives great pressure from his/her mother to do well in mathematics.

(2) Friends' perception of mathematics importance. This variable is based on the students' responses to the statement 'My friends think it is important for me to do well in mathematics at school'. A high score means the student perceives a great pressure from his/her friends to do well in mathematics.

(3) Self-perception of mathematics importance. This variable is based on the students' responses to the statement 'I think it is important to do well in mathematics at school'. A high score means the student exerts a great pressure on him/herself to do well in mathematics.

(4) Success attribution to hard work. This variable is based on students' responses to the statement 'To do well in mathematics you need to employ a good deal of hard work

studying at home'. This variable indicates the extent to which success in mathematics is, according to the student, a consequence of plenty of hard work.

(5) Success attribution to luck. This variable is based on students' responses to the statement. To do well in mathematics you need good luck'. This variable indicates the extent to which success in mathematics is, according to the student a consequence of good luck.

(6) Educational aspiration. This variable is based on students' responses to the item 'How far do you expect to go in school?'

(7) Confidence in maths ability. This index was created by TIMSS (Mullis et al.,2000); it is based on students' responses to five statements about mathematics:

(a) I would like mathematics much more if it were not so difficult;

(b) Although I do my best, mathematics is more difficult to me than for many of my classmates

(c) Nobody can be good in every subject, and I am just not talented in mathematics

(d) Sometimes when I do not understand a new topic in mathematics initially I know that I will never really understand it

(e) Mathematics is not one of my strengths.

(8) Attitudes towards mathematics. This index was created by TIMSS (Mullis et al.,2000), and is based on students' responses to five statements about mathematics: (a) I like mathematics

(b) I enjoy learning mathematics

(c) Mathematics is boring

(d) Mathematics is important to everyone's life

(e) I would like a job that involved using mathematics.

(9) Mathematics achievement. This variable is based on a national maths Rasch score on the maths test of the Third International Mathematics and Science Study TIMSS (Beaton et al., 1996). This score had a mean of $M= 150$, and a standard deviation of $SD= 10$ over grades 7 and 8 (13-year-old students) in all countries.

Results from this study indicate that seven attitudinal and motivational variables had positive total and direct effects and two negative total and direct effects on Mathematics achievements.

(1) The significant positive direct and total effects of:

(a) mother's perception of maths importance on maths achievement, attitude towards maths, self-perception of maths importance, confidence in ability, and educational aspiration;

(b) Success attribution to hard work on maths achievement, attitude towards maths, educational aspiration, and self- and friends' perception of maths importance.

(c) Attitude towards maths on maths achievement and self-perception of maths importance.

(d) Confidence in maths ability on maths achievement, attitude towards maths, educational aspiration and self-perception of maths importance;

(e) Educational aspiration on maths achievement and attitude towards maths.

(f) Self-perception of maths importance on maths achievement.

(g) Friends' perception of maths importance on attitude towards maths, educational aspiration and self-perception of maths importance.

(2) The significant negative direct and total effects of:

(h) Success attribution to luck on maths achievement and confidence in ability.

(i) Friends' perception of maths importance on maths achievement.

The research results have both practical and theoretical significance. They provide some ideas for educational and counselling interventions such as designing programmes, in order

to provide students' with more information and counselling about mathematics subject and their future use, and to stimulate further perceptions of maths importance. Attitudes towards mathematics are learned, and therefore can be taught in such a way as to make maths an important educational objective (Mitchell et al., 1999), moreover, attitudes are flexible and can be changed through policy and instructional practice. Educators can work on strengthening positive attitudes that shape a student's educational path (Singh et al., 2002); furthermore, negative attitudes can be modified (Tobias & Weissbrod, 1980; Hembree, 1990).

Accordingly, educators have an opportunity to alter the negative attitudes and strengthen more positive attitudes towards maths by promoting better classroom practices and by providing positive experiences in mathematics classes.

The implications for teachers revolve around the importance of understanding what students believe about the reasons for their academic performance and how to deal with that.

2.3.2 Hannula's Theory (2002)

Hannula (2002) looked at the attitude in cognitive-emotional terms. The study was done on a sample of 160 students. In his research, he states "While a student is engaged in a mathematical activity, there is a continuous unconscious evaluation of the situation with respect to personal goals." When students are evaluated, there are four areas to examine. The first is simply situational and no prior experience of the entity being evaluated (Hannula, 2002). The second depends entirely on previous experience and is the kind that is typically seen on questionnaires. The third evaluation is when the situation is familiar to a degree, but the individual has no personal experience. The fourth is when an individual looks at one's whole life and the value of different goals in it. Hannula stated that "these four evaluations produce attitude" (2002).

The results bring out a picture of the attitude towards learning mathematics and also the way some internal factors describing the emotional life influence this attitude.

We could conclude that attitudes toward mathematics learning depend on the quality of emotional life of the students. So we obtained that there are differences in attitudes in terms of emotional intelligence, self-efficacy, positive and negative effect. The results could have practical implications for the teaching and learning practices. In order to be more motivated, more confident and less anxious about learning mathematics, students could benefit from a positive emotional climate established by teacher and the school culture. Also, students could be trained in order to raise their emotional intelligence level so they could also raise their motivation to mathematics activities and to raise the degree of acceptance of mathematics success. The study gave a real image about the differences between students in terms of their age: it is important for the teacher approach to pay more attention to the emotional needs of the younger students. There are studies which show that mathematics anxiety can be reduced through systematic desensitisation (Hembree, 1990 apud Hannula, 2002), so mathematics anxiety could be reduced through enhancing the positive emotions experiences. Learning mathematics is important for every student but for the students who want to become preschool and primary teachers is essential, since they could develop mathematical skills to the future generations.

2.4 Empirical Studies

Several studies have demonstrated that attitudes towards mathematics are directly and significantly associated with students' performance. For instance, Mensah and Kurancie (2013) conducted a study in Ghana and found a significant positive correlation between students' attitude and performance. Similarly, Nicolaidou and Philippou (2003) found that attitude and achievement in mathematics are significantly related. The Trends in International Mathematics and Science Survey (TIMSS) results of 2007 reported in

Gonzales, et al. (2008) also indicate that 4th grade and 8th grade students with a more positive attitude had higher average achievement in mathematics as compared to those with less positive attitudes. In another earlier study conducted by Schofield (1982), a significant relationship between attitude and achievement was also established depicting stronger relationships in boys than in girls. In a more recent study, Ngussa and Mbuti (2017) conducted a study in Arusha, Tanzania, involving secondary school students. They established a moderate relationship between student's attitude and performance when teachers use humour as a teaching strategy. They concluded that the enhancement of students' positive attitude can boost students' performance in mathematics. However, Joseph (2013) in his study of community secondary school students in Kagera, Tanzania found that the majority of students (55%) had a general negative attitude towards mathematics, with a positive and significant correlation between attitude and performance ($r = 0.33$)

Cheung (1998) wrote about the attitude toward mathematics and the ages of 11-13 year olds. He states that these ages are particularly important in the development of a mathematical attitude. This is the time when negative attitudes become most noticeable. Although he goes to say that the reason behind this is unclear. Possible reasons behind this are the greater prevalence of abstractions in mathematics material. In his research, using a Pearson correlation, he found a positive correlation between attitude and mathematics achievement. The correlation showed that the more positive the attitude, the higher the level of achievement was in the student.

2.5 Factors Responsible for Students Liking or Disliking Mathematics

2.5.1 Method of Teaching

Teaching methods are standard procedure of presenting subject matter and organizing teacher- student interaction during a lesson. Each teaching strategy is associated with a method.

According to Tambo (2003), teaching methods are important components for the curriculum for they determine how effective the objectives would be attained. The teaching methods are chosen based on the objectives to be attained.

Some teachers use these methods just as they have seen them without the understanding that each method has its way of teaching which depend on the level of the students and the subject, for instance, most teachers use lecture method in all subjects and classrooms both at the secondary and high schools without considering the age of the students thus, making students not to participate in class or give them inferential thinking skills leading to a situation where students are not active in the classroom and as well have no interest in the subject, this is because most students learn by doing and not listening.

Furthermore, some of these teachers use these methods not because they have seen them but because they are not trained. For a teacher who has not gone through training, he or she might not be able to apply these methods appropriately, this cause them to be ignorant about the methods used in teaching Mathematics which will arose students interest thereby leading to desirable performance.

Education today is geared towards student-centeredness which means that the teacher must be trained in order for them to use the appropriate teaching methods well; this is because they need to direct the students on how these methods are used for the students to perform well and also become active in the teaching and learning process. Thus, a well-trained teacher will be able to teach well and create love for the subject into the minds of the

students but a teacher who is not trained will rather create discouragement and hatred of the subject in the minds of the students.

2.5.2 Family Background

Family background refers to all the conditions and circumstances in the family which influence the child physically, intellectually and emotionally Muola (2010). Children coming from different family backgrounds are affected differently by such family conditions, which is why some children have good family background while some have poor background.

We will look at two family variables that may influence student achievement: parental education, family income.

Parental Education: Better-educated parents are more likely to consider the quality of the local schools when selecting a neighborhood in which to live. Once their children enter a school, educated parents are also more likely to pay attention to the quality of their children's teachers and may attempt to ensure that their children are adequately served. By participating in parent-teacher conferences and volunteering at school, they may encourage staff to attend to their children's individual needs.

In addition, highly educated parents are more likely than their less-educated counterparts to read to their children. Highly educated parents can also use their social capital to promote their children's development. In most studies, parental education has been identified as the single strongest correlate of children's success in school, the number of years they attend school, and their success later in life. Because parental education influences children's learning both directly and through the choice of a school.

Family Income: As with parental education, family income may have a direct impact on a child's academic outcomes, or variations in achievement could simply be a function of the school the child attends: parents with greater financial resources can identify communities

with higher-quality schools and choose more-expensive neighborhoods—the very places where good schools are likely to be. More-affluent parents can also use their resources to ensure that their children have access to a full range of extracurricular activities at school and in the community.

Parents who are struggling economically simply don't have the time or the wherewithal to check homework.

2.5.3 Negative Attitude towards Mathematics

Many studies link attitude towards math to math learning and ultimately, math achievement. Positive attitude has been associated with higher achievement, while negative attitude appears to relate to poor performance.

For every child who looks forward to their next math lesson, there's another who feels confused and defeated. One student might not like math because they think the subject isn't useful, while another dislikes it because they doubt their own ability to succeed.

There are many possible contributors to negative attitudes towards math, including:

The idea that math is for “smart people.”

The perception of math as a “boring” subject.

A general lack of confidence in one's learning abilities.

Being overwhelmed by complex and difficult math problems.

An inability to understand the relevance of math in “the real world.”

2.5.4 Motivation.

Motivation is the state that can maintain students' attention and behavior as well as provides with more energy to needed to lead tasks to completion. Thus, it can help sustain activities over a period of time. In education, motivation can have a variety of effects on students' behavior, preferences, and results. For instance, motivation can:

help us direct our attention toward tasks that need to be done, allow us to do these tasks in shorter periods of time as well as maintain attention during a longer time minimize distractions and resist them better affect how much information we retain and store, Influence the perception of how easy or difficult tasks can appear.

Most importantly, motivation urges to us perform an action. Without it, completing the action can be hard or even impossible.

Motivating students to be enthusiastically receptive is one of the most important aspects of mathematics instruction and a critical aspect of any curriculum. Effective teachers focus attention on the less interested students as well as the motivated ones.

Motivation is either extrinsic or intrinsic: Extrinsic motivation involves rewards that occur outside the learner's control. These may include token economic rewards for good performance, peer acceptance of good performance, avoidance of "punishment" by performing well, praise for good work, and so on.

However, many students demonstrate intrinsic motivation in their desire to understand a topic or concept (task-related), to outperform others (ego-related), or to impress others (social-related).

Teachers of mathematics must understand the basic motives already present in their learners. The teacher can then play on these motivations to maximize engagement and enhance the effectiveness of the teaching process. Exploiting student motivations and affinities can lead to the development of artificial mathematical problems and situations. But if such methods generate genuine interest in a topic, the techniques are eminently fair and desirable.

2.5.5 Peer Group Influence

Burke and Sass (2008) established that positive and highly significant peer effects exist within every level of schooling and for both reading and mathematics. They added that as

much as individual characteristics impacts on students' achievements, they however added that, peer influence also plays a vital role in students' achievements and participation. For example, Sullivan et al (2006) also found that students' positive and negative response and attitude toward school mathematics and engagement are to a large extent influenced by peer influence.

They added that the classroom culture and for that matter peer influence is a strong determinant individual student participation and engagement than the curriculum and other related factors.

Classroom peers are believed to influence learning by teaching each other, and the efficacy of this teaching likely depends on classroom composition in terms of peers' ability.

Researches show that peer teaching is useful and has many benefits for students and teachers. Vasay (2010) reported that peer teaching is helpful for fast learners and slow learners as well. It helps fast learners to master the concepts related to the course and confidently express their ideas. Slow learners improve and develop their performance and get a better understanding of the terms of the lessons. Peer teaching helps both, fast learners and slow learners in developing important values such as sharing, self-esteem, and self-discipline.

Lord (2001) reported that students working in groups perform better on exams especially questions that involve reasoning and critical thinking skills. Actually; peer teaching, a type of collaborative learning, often happens spontaneously with a group of students. In fact, educators have found through experience and their research that peer teaching is an effective strategy in helping learners achieve the educational goals.

Al Deeb (2006), states that peer teaching is one of the most effective strategies in the teaching and learning process because it deals with the social as well as the academic side of learning by creating a comfortable environment for teaching and learning.

The negative influence of peer group in learning Mathematics is, despite the willingness of students to answer questions in class, it is interesting to note that their willingness is influenced by their confidence levels and their ability to provide correct answers as only correct answers are acknowledged in class. In addition to this, students prefer to remain silent in class even when they know the answer to a question because they are not good in mathematics and think they will be laughed at when they give a wrong answer.

2.5.6 Teacher Behavior and Personality.

If a student has a negative emotion such as fear or disliking towards their teacher, that can negatively affect their attitude toward the subject as a whole. If a teacher shows a preference towards certain students or uses derogatory and humiliating language, that can lower their motivation in education.

On the other hand, kindness, optimism, positive feedback, and encouragement can positively affect students' motivation to learn.

2.5.7 Students Performance in Mathematics Examination.

While standardized assessment increases the standards of attainment, it can negatively influence students' motivation in education, especially at a younger age.

It is also common for students to lose motivation if tests are continuously too challenging. This does not provide a sense of achievement and lowers motivation in education over time. Thus, it's important for educators to experiment with and apply different testing methods which would be able to address the different learning needs of students.

2.6.0 Summary of Literature Review

Attitude towards mathematics plays a crucial role in the teaching and learning processes of mathematics. It affects students' achievement in mathematics. The students' factors, teachers' factors, family factors and peer group influence affect the attitudes of secondary school students towards study of mathematics. Usually, the way that mathematics is represented in the classroom and perceived by students, even when teachers believe they are presenting it in authentic and context dependent way stands to alienate many students from mathematics (Barton, 2000; Furinghetti and Pekhonen, 2002).

Researchers concluded that positive attitude towards mathematics leads students towards success in mathematics. Attempt to improve attitude towards mathematics at lower level provides base for higher studies in mathematics. It also causes effect in achievement of mathematics at secondary school level (Ma and Xu, 2004).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research design, area of study, population, sample and sampling technique. The research instruments, validation of the instrument, method of data collection and the method of data analysis.

3.2 Research Design

The study employs descriptive research of survey type, to investigate the factors influencing the attitude of students towards the study of mathematics in senior secondary schools in Bosso Local Area, Minna, Niger State. The intent of the descriptive research is to describe the qualities, characteristics or facts of a given population, event or area of interest concerning the problem under investigation.

3.3 Population of Study

The population of the study comprises of secondary school students in Bosso Local Government area, Minna, Niger State. The total number of the students in Bosso Local Government Area is 17,391 students including both male and female.

3.4 Sample and Sampling Technique

Out of all the secondary schools in Bosso Local Government Area, 3 schools were selected for the research. Krejcie and Morgans (1970) sample population formula was used to obtain the sample size of 168 senior secondary school students, 56 questionnaires (28 males and 28 females) was administered to each of the 3 schools. A proportionate simple random sampling technique was used to select the sample size; purposive sampling technique was used to select the sampled schools.

The students were randomly selected from each of the following selected senior secondary schools viz: Bosso Secondary School Minna, Hil-Top Model School Minna, Model Science College Tudun Fulani.

3.5 Instrument for Study

This study on The Factors Influencing the Attitude of senior secondary school students towards the Study of Mathematics was done using the Quantitative method. This was done by using a questionnaire where students were asked to use a Likert Scale to gather the data for the quantitative aspect of the study.

A standardized questionnaire was used to collect data for the study. A questionnaire was constructed for only the mathematics students. One hundred and sixty-eight (168) questionnaires was produced which was used to retrieve responses from the students. The students' questionnaire was structured in two (2) sections, section A and B.

Section A contained bio-data and section B contained a multiple choice questions which comprises of 20 questions.

The students were expected to fill and complete the blank spaces appropriately by ticking one of the statements to show how they agree to the statement.

The following are the letters showing the level of agreement to a statement;

SA – Strongly agreed

A – Agreed

D – Disagreed

SD – Strongly disagreed

3.6 Validation of Instrument

The questionnaire was examined and scrutinized by the supervisor and other experts to ensure that the items are related to the research questions and that they measure what they are designed to measure.

3.7 Method of Data Collection

The researcher personally visited the sampled schools in company of an assistant and administered the questionnaires by the approval of the schools' Principal.

The researcher administered 168 questionnaires to the respondents, 168 were collected on the spot.

3.8 Method of Data Analysis

Mean and standard deviation was used to answer the researcher questions. The scoring of the responses is on 4points.

SA = 4 points

A = 3 points

D = 2 points

SD = 1 point

3.9 Potential Ethical Issues

Permission was obtained by the researcher from the principals of the selected Schools to distribute the survey packets. The participants were not required to put their names on the survey to assure the anonymity of all participants.

3.10 Decision Rule

The expected mean of the items is given as;

$$\bar{x} = \frac{fx}{N} = \frac{10}{4} = 2.5$$

Therefore, any item in the questionnaire that has the mean rating of 2.5 and above is considered as agreed. While on the other hand, the mean rating below 2.5 is considered as disagreed which means that it does not affect student's achievement.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter deals with data presentation, analysis, interpretation and discussion of the result of the findings.

4.2 Descriptive Analysis

Research Question 1: How does students' factor influence the attitude of senior secondary school students towards the study of Mathematics?

Table 4.2.1: Students' attitude in Mathematics based on students' factors

S/N	ITEMS	MEAN	SD	DECISION
1	I find Mathematics confusing and hard to do, hence my dislike for the subject	2.83	0.85	AGREED
2	I work well in Mathematics lesson, hence My likeness towards it.	2.61	0.95	AGREED
3	I feel confident in my ability to solve Mathematical problems, hence my love for it.	2.83	0.92	AGREED
4	I will need Mathematics in order to study the course I want in the tertiary institution, hence my dedication to passing it	3.01	0.85	AGREED

Base on the results of the findings, it is observed that in table 1, the respondents agreed to all the items (1, 2, 3 and 4). This implies that, all the items are students' factors affecting the attitude of senior secondary school students towards the study of Mathematics.

Research Question 2: How does teachers' factor influence the attitude of senior secondary school students towards the study of Mathematics?

Table 4.2.2: Students' attitude in Mathematics based on teachers' factors

S/N	ITEMS	MEAN	SD	DECISION
1	I learn Mathematics better whenever I ask the teacher for help in lesson and he responds	3.13	0.80	AGREED
2	I learn Mathematics better whenever the Teacher makes a clear explanation.	3.40	0.61	AGREED
3	My Mathematics teacher is naturally Wicked, making me dislike the subject.	2.04	0.99	DISAGREED
4	The weaker students are being neglected and insulted by our Mathematics teacher, hence my dislike for it.	2.44	1.13	DISAGREED
5	My teacher only likes students who perform well in Mathematics, this affects my love towards it.	2.74	1.10	AGREED

In table 4.2.2, it is observed that the respondents agreed to item 1, 2 and 5 but disagreed to item 3 and 4. It means that, item 1, 2 and 5 are the teachers' factors that influence the attitude of senior secondary school students towards the study of Mathematics but item 3 and 4 are not.

Research Question 3: How does family factor influence the attitude of senior secondary school students towards the study of Mathematics?

Table 4.2.3: Students' attitude in Mathematics based on family factors

S/N	ITEMS	MEAN	SD	DECISION
1	None of my family is good in Mathematics.	2.68	0.89	AGREED
2	My parents do not ask whether I have an assignment to do or not.	2.45	1.02	DISAGREED
3	I am assisted by my parents to do my homework.	2.74	0.96	AGREED
4	My parents only pay my fees but careless about my performance in Mathematics.	2.33	0.99	DISAGREED
5	My parents always asked about my performance in Mathematics.	2.83	0.94	AGREED

From table 4.2.3, it is noted that the respondent agreed to item 1, 3 and 5 but disagreed with item 2 and 4. This indicate that item 1, 3 and 5 are the family factors that influence the attitude of senior secondary school students towards the study of Mathematics but item 2 and 4 are not.

Research Question 4: How does peer group factor influence the attitude of senior secondary school students towards the study of Mathematics?

Table 4.2.4: Students' attitude in Mathematics based on peer group factors

S/ N	ITEMS	MEAN	SD	DECISION
1	I don't like speaking in front of my peers On issues related to Mathematics	2.39	0.98	DISAGREED
2	I enjoy listening to my peers sharing their knowledge of Mathematics in class.	3.17	0.77	AGREED
3	Listening to my peer's teaching helps me understand Mathematics.	3.15	0.81	AGREED
4	I enjoy sharing my Mathematical Knowledge with the rest of my classmates.	3.08	0.79	AGREED
5	I learn Mathematics better by discussing problems or questions with a friend.	3.04	0.81	AGREED
6	My classmates laugh at me when I give a wrong answer in class, hence my dislike for the subject.	2.76	0.95	AGREED

It is revealed that from table 4.2.4, the respondent agreed to item 2, 3, 4, 5 and 6 but disagreed to item 1. This implies that item 2, 3, 4, 5 and 6 are the peer group factors that influence the attitude of senior secondary school students towards the study of Mathematics but item 1 is not.

4.3 Discussion of Findings

Career prospects: With regards to career development, some respondents said that they expected to study mathematics in advanced levels. They perceived mathematical skills as essential when it is linked with their career aspirations like science, engineering, business, and the like. The following quote illustrates the finding '*I will need Mathematics in order*

to study the course I want in the tertiary institution, hence my dedication to passing it'.

These findings suggest that students at different levels of education understood the value of mathematics in their present lives and future. Thus, mathematics teachers are advised to consider these aspects in their teaching practices.

Having a good teacher: Having a teacher who teaches for understanding, makes lessons enjoyable, a kind person and tolerant, is of crucial importance for students' engagement in mathematics. This is evidenced by quotes from the respondents "*I learn Mathematics better whenever the teacher makes a clear explanation*". This result illustrates the importance of the teachers' personal and professional characteristics in students' liking of mathematics. Thus, teachers should open up for some characteristics that will help students develop a positive attitude towards the subject.

The encouragement and support received from others: The respondents said that they liked mathematics due to the encouragement and support they received from parents, teachers, and fellow students. When students faced some difficulties in solving a mathematical problem, they needed someone to help. This is supported by the following quotes '*I learn Mathematics better whenever I ask the teacher for help in lesson and he responds*', '*my parents always asked about my performance in Mathematics*' and '*Listening to my peer's teaching helps me understand Mathematics*'. This implies that teachers, parents, and peers are crucial in building student's positive attitude towards mathematics.

Difficulty: The respondents opined that they found mathematics difficult, believing that they were not good at mathematics and not being able to pass no matter how hard they tried. This is supported by the quote '*I find Mathematics confusing and hard to do, hence my dislike for the subject*'.

Self-confidence: Some respondents were of the view that they lacked confidence in themselves as mathematics learners. This is evidenced by the quote '*I find Mathematics confusing and hard to do, hence my dislike for the subject*', while others were of the view that they have confidence in themselves as Mathematics learner, supported by the statement '*I feel confident in my ability to solve Mathematical problems, hence my love for it*'. This illustrates the importance of self-confidence and that lack of confidence had a negative influence on the student's attitude towards mathematics. Thus, teachers should use strategies that will boost up students' confidence in mathematics.

Poor background: The respondents mentioned a poor foundation as a factor contributing to difficulties in mathematics. It is evidenced with the statement, '*None of my family is good in Mathematics*'. This implies that poor background is a hindrance to students' career choices.

Discouragement from colleagues: The respondents voiced about peers acting as a hindrance to mathematics learning. Some respondents opined that their peers were a bad influence as they instilled fear in them discouraging these students to learn mathematics. This is evidenced by the following *statement*: '*My class mates laugh at me when I give a wrong answer in class, hence my dislike for the subject*'. This result points out the influence of peers in emotional and academic well-being of students. Peers can have both positive and negative influences regarding their colleagues' mathematics learning.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter deals with the summary, conclusion, recommendations, and suggestion for further study.

5.2 Summary of Findings

This study investigated the factors influencing the attitude of students towards the study of mathematics in senior secondary schools in Bosso Local Government Area of Niger State.

The research questions were answered and tested at mean of 2.5. The research shows that students' attitude is influenced by teacher's method of teaching, the student's background, motivation from either the student or teacher, peer group influence, family background: parents interest and involvement.

5.3 Conclusion

Based on the results from the data analysis, it is concluded that the factor investigated is considered a possibility. The implication is that students' factor, teachers' factor, family factor and peer group factor influence the attitude of senior secondary school students towards the study of Mathematics.

5.4 Recommendations

In general, the implication of these findings could serve as a guideline for teachers, educational practitioners and curriculum developers so that they can ensure that the utilized educational policies, methodologies and activities to help students improve positive attitudes toward school subjects including mathematics.

The findings of the present study are important for Nigerian education in changing attitude of students towards mathematics and improving the teaching procedures in the classroom.

5.5 Limitations

The researcher feels that based on the data that was collected; several limitations could have influenced the data. The scope of this research is limited to Bosso Local Government Area of Niger State. Finance and time constraint has been weighing set back to this research.

5.6 Contribution of study to existing knowledge.

The significance of this study could be used by both teachers and parents of students. Since the study does show a positive correlation, teachers might try and find ways to help students develop a positive attitude and thus improving their overall performance in the classroom. Parents could use this study in a similar fashion to help their children's success with mathematics.

5.7 Suggestion for further study.

If the researcher were to compute this study again, there would be a few additions made to the process. The researcher would begin by gaining school wide permission from the principal to survey all of the students in the school. This would increase the sample size, making the results more valid. It would also insure that more students who do not have a high level of success in the classroom are part of the data as well. The researcher would also include a parental component to the study looking to see what the overall attitude at home is toward math and how it is perceived.

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APPENDIX

**FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA.
DEPARTMENT OF SCIENCE EDUCATION (MATHEMATICS OPTION)
QUESTIONNAIRE ON FACTORS INFLUENCING THE ATTITUDE OF
SECONDARY SCHOOL STUDENTS TOWARDS THE STUDY OF
MATHEMATICS**

Time Allowed: 2 hours

Section A

Class: _____

Gender/Sex: Male [] Female []

Section B

Instruction: Please, tick one box for each statement to show your level of agreement.

QUESTIONS		Strongly Agreed	Agreed	Strongly Disagreed	Disagreed
S/N	STUDENTS' FACTOR				
1	I find Mathematics confusing and hard to do. Hence my dislike for the subject.				
2	I work well in Mathematics lesson. Hence my likeness towards it.				
3	I feel confident in my ability to solve Mathematical problems. Hence my love for it.				
4	I will need Mathematics in order to study the course I want in the tertiary institution. Hence my dedication to passing it.				
	PEER GROUP FACTOR				
5	I don't like speaking in front of my peers on issues related to Mathematics.				
6	I enjoy listening to my peers sharing their knowledge of Mathematics in class.				
7	Listening to my peer's teaching helps me understand Mathematics.				
8	I enjoy sharing my Mathematical knowledge with the rest of my classmates.				

9	I learn Mathematics better by discussing problems or questions with a friend.				
10	My class mates laugh at me when I give a wrong answer in class, hence my dislike for the subject.				
	TEACHERS' FACTOR				
11	I learn better Mathematics whenever I ask the teacher for help in lesson and he responds.				
12	I learn Mathematics better whenever the teacher makes a clear.				
13	My Mathematics teacher is naturally wicked making me dislike the subject.				
14	The weaker students are been neglected and insulted by our Mathematics teacher, hence my dislike for the subject				
15	My teacher only likes students who perform well in Mathematics, this affects my love towards it.				
	FAMILY FACTOR				
16	None of my family is good in Mathematics.				
17	My parents do not ask whether I have an assignment to do or not.				
18	I am assisted by my parents to do my homework.				
19	My parents only pay my fee but careless about my performance in Mathematics.				
20	My parents always asked about my performance in Mathematics.				

Table 1

S/N	ITEMS	S A	A	D	S D	MEAN	REMARK
1	I find Mathematics confusing and hard to do. Hence my dislike for the subject.	37	78	41	12	2.83	AGREED
2	I work well in Mathematics lesson. Hence my likeness towards it.	29	70	43	26	2.61	AGREED
3	I feel confident in my ability to solve Mathematical problems. Hence my love for it.	45	65	43	15	2.83	AGREED
4	I will need Mathematics in order to study the course I want in the tertiary institution. Hence my dedication to passing it.	49	85	21	13	3.01	AGREED

Table 2

S/N	ITEMS	S A	A	D	S D	MEAN	REMARK
1	I learn better Mathematics whenever I ask the teacher for help in lesson and he responds.	55	90	12	11	3.13	AGREED
2	I learn Mathematics better whenever the teacher makes a clear.	81	79	3	5	3.40	AGREED
3	My Mathematics teacher is naturally wicked making me dislike the subject.	19	24	69	56	2.04	DISAGREED
4	The weaker students are been neglected and insulted by our Mathematics teacher, hence my dislike for the subject	40	41	40	47	2.44	DISAGREED
5	My teacher only likes students who perform well in Mathematics, this affects my love towards it.	48	65	18	37	2.74	AGREED

Table 3

S/N	ITEMS	S A	A	D	S D	MEAN	REMARK
1	None of my family is good in Mathematics.	29	75	45	19	2.68	AGREED
2	My parents do not ask whether I have an assignment to do or not.	27	61	40	40	2.45	DISAGREED
3	I am assisted by my parents to do my homework.	38	72	35	23	2.74	AGREED
4	My parents only pay my fee but care less about my performance in Mathematics.	22	53	52	41	2.33	DISAGREED
5	My parents always asked about my performance in Mathematics.	41	78	28	21	2.83	AGREED

Table 4

S/N	ITEMS	S A	A	D	S D	MEAN	REMARK
1	I don't like speaking in front of my peers on issues related to Mathematics.	23	57	51	37	2.39	DISAGREED
2	I enjoy listening to my peers sharing their knowledge of Mathematics in class.	57	93	8	10	3.17	AGREED
3	Listening to my peer's teaching helps me understand Mathematics.	57	92	6	13	3.15	AGREED
4	I enjoy sharing my Mathematical knowledge with the rest of my classmates.	48	98	10	12	3.08	AGREED
5	I learn Mathematics better by discussing problems or questions with a friend.	44	100	10	14	3.04	AGREED
6	My class mates laugh at me when I give a wrong answer in class, hence my dislike for the subject.	37	78	29	24	2.76	AGREED